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Trajectoire: A methodological tool for eliciting Path of motion

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This paper presents a methodological tool called *Trajectoire* that was created to elicit the expression of Path of motion in typologically and genetically varied languages. Designed within the research program TRAJECTOIRE ‘Path (of motion)’, supported by the *Fédération de Typologie et Universaux Linguistiques*, the *Trajectoire* elicitation tool aims to systematically explore the morpho-syntactic resources used for the expression of Path and the distribution of spatial information across the sentence, with a specific focus on the (a)symmetry in the expression of Source (the initial point) and Goal (the final point). Its main aim is to facilitate typologically-informed language descriptions, which in their turn can contribute new data to typologically-oriented research. Inspired by the research methods developed at the Max Planck Institute for Psycholinguistics (Nijmegen, NL), the *Trajectoire* material comprises 76 video-clips consisting of 2 training clips, 55 target clips and 19 fillers, and it includes 3 distinct versions ordering the clips differently to minimize possible routine effects. The 55 target clips vary for several parameters, namely Figure, Ground, the different portions of Path, Deixis, and less systematically, Manner. The scenes filmed in an outdoor natural environment ensure accessibility to non-Western populations. The paper first presents the structure and the use of the elicitation material. On the basis of the data obtained in about 20 different languages and reports by users, both researchers and speakers, it then discusses the advantages and some drawbacks of the *Trajectoire* elicitation tool, and considers the issue of the tool’s dissemination and online open access.

Keywords: Visual stimuli; dynamic stimulus; Path; Source-Goal (a)symmetry; linguistic fieldwork.

1. Introduction

Questionnaires¹, including visual stimuli, are now largely acknowledged to be useful and efficient methodological tools to support linguistic research. A great variety of such tools has been created in the past decades for eliciting linguistic data in various domains of expression, and many of them have been designed as invaluable tools facilitating cross-linguistic investigations and comparisons (e.g. *The Pear Stories*, Chafe 1980; *Topological relations*, Bowerman & Pederson 1992; *Space Questionnaire*, Levinson 1992; *Route description*, Wilkins 1993; *Event realization*, Pederson; *Posture verbs*, Danziger 1995, to quote just a few from the earliest).²

The TulQuest website (<http://tulquest.huma-num.fr/>; see Lahaussais (2019) in this volume) hosts about a hundred Questionnaires and classifies visual tools according to the specific world area and linguistic domain(s) targeted, the types of data produced as well as the metalanguage and medium (i.e. type of material) used. Among the different parameters of classification outlined in the literature, the most relevant primary distinction is probably the medium used, as it strongly influences the type of data obtained. For instance, San Roque & al. (2012) distinguish between “linguistic stimuli (...) [that] include translation, questionnaire, and explicit translation tasks” and “non-linguistic stimuli” (Majid 2012 also makes this distinction), which are further subdivided according to the type of data collected (extended narrative productions, (short) descriptions and categorizations of comparable sets, dialogical negotiations). Furthermore, within the “pictorial stimuli”, Lüpke (2009) contrasts both the medium used (static, aka. picture stimuli vs. dynamic, aka. video stimuli) and the nature of the task (interactive stimuli where speakers talk to each other vs. semi-forced choice tasks like in the Bohnemeyer et al.’s (2001) *Event Triads*).

The *Trajectoire* elicitation material (Ishibashi, Kopecka and Vuillermet 2006) presented in this paper is a dynamic (as opposed to static) visual tool that consists of video-clips designed to produce descriptions of Path of motion in typologically and genetically varied languages. It was elaborated in the context of the cross-linguistic research project TRAJECTOIRE funded by the *Fédération de Typologie et Universaux Linguistiques* (FR2559 CNRS, France), which brought together about 20 linguists working in different geographical areas on various languages, including languages with oral and written traditions, spoken and signed languages, modern and ancient ones. To

¹ We distinguish *questionnaire* from *Questionnaire* with a capital, the latter being an inclusive term covering any kind of methodological tool used by linguists to support their data collection.

² Many of the Questionnaires, including traditional elicitation questionnaires and visual stimuli (both pictures and videos), were developed at the Max Planck Institute for Psycholinguistics in Nijmegen, the Netherlands, for cross-linguistic investigations. For details, see <http://fieldmanuals.mpi.nl/>.

facilitate the systematic exploration of the expression of Path across these languages, we elaborated an elicitation tool called *Trajectoire* (“Path” in French) in the form of video-clips. The aim of this paper is to present the design of this material, its use and diffusion in order to, first, allow researchers to investigate this domain of expression and, second, contribute to the methodological reflection on best practices that are essential for the validity and soundness of the data collected in a single language and/or for a cross-linguistic survey.

The paper is structured as follows. Section 2 introduces the semantic domain to be explored by means of the *Trajectoire* tool, namely the expression of motion in general, and the asymmetry between Source and Goal of motion in particular. Section 3 discusses the technical aspects of the stimulus set and our endeavor to create an elicitation tool that can be used with speakers from different cultures. Section 4 critically assesses the data collected, presents some of the outcomes based on these data, and shows how we distributed the stimulus set. The organization of our contribution echoes Guastavino’s (2009: 235) recommendations for an experimental method to reach “ecological validity”, i.e. the subject should process the represented world in a similar way as the real world; Guastavino emphasizes the importance of clearly defining the object of research, the target population, and the interaction between the two via the experimental task.

2. An elicitation tool for the expression of Path of motion

2.1 Why the expression of motion?

Spatial organization has long been recognized as being of central importance in human cognition (e.g. Miller & Johnson-Laird 1976; Levinson 1996; 2001), and the expression of location and motion have thus been privileged domains in the study of language for a long time (see the rich bibliography on motion event studies compiled by Matsumoto, Slobin & Akita, 2012).³ Despite the universality of the basic elements present in spatial expressions (cf. Talmy 1972; 1985) – Figure, Motion, Path and Ground –, the actual encoding of these elements displays significant inter-linguistic and intra-linguistic variation. These spatial elements can be encoded through different parts of speech, conflated, or distributed over several parts of speech (cf. Sinha & Kuteva 1995; Wälchli & Sölling 2013).

Looking for instance at the variation in the encoding of the Path element only (i.e. the core element of any motion event consisting of a direction followed by the Figure), the

³ <http://www.lit.kobe-u.ac.jp/~yomatsum/motionbiblio.html>

literature has flourished (see Imbert (2012) for a thorough summary) since the well-known dichotomic categorization of languages into verb-framed vs. satellite-framed by Talmy (1985).⁴ Aske (1989) discusses cases of split-framing in languages where telic Path and atelic Path are encoded differently – also referred to as the boundary-crossing constraint in Slobin & Hoiting (1994) and Slobin (1996). Slobin (2004) argues for the necessity of including a third ‘equipollently-framed’ category for languages having complex verb constructions (see also Zlatev & Yangklang 2004), while Kopecka (2004; 2006) points to the possible coexistence of different frames within a given language and shows the importance of a thorough examination of the verb semantics and of considering various diachronic changes (e.g. loss of productivity of Path morphemes) and their consequences on the type of constructions available in a language. Furthermore, Ibarretxe-Antuñano (2009) argues for a cline of Path salience with high Path-salient languages at one side of the continuum and low Path-salient languages at the other side, whereas Fortis & Vittrant (2011; 2016) propose a more fine-grained typology of (attested) constructions that keeps track of the locus (or loci) where the Path is expressed – the (verbal) Head (see Matsumoto’s (2003) proposal of *Head*-framed rather than *Verb*-framed constructions), the Satellite, the Adnominal phrase and/or the Noun. In brief, these studies show that, when investigating the expression of Path, it is important to take into account both inter- and intra-linguistic variation.

2.2 The expression of Path and the Source-Goal asymmetry

As pointed out by Talmy (1985, 2000), Path is the core schema of a motion event as it represents the direction followed by the Figure that can be oriented away from an initial point (Source), via intermediary points (Median), to a final point (Goal), as schematically illustrated in Figure 1.



Figure 1. *Path of motion and its different points.*

⁴ Languages are verb-framed if they encode the PATH information in the verb (like *enter*), and satellite-framed if in the element in sister relation to the verb (like *go in*). Talmy (1985 [2000: 65]) is however already aware that the lexicalization patterns and framing best describe the constructions available in a language rather than the language itself: “...a language can characteristically employ one conflation type for one type of Motion event and characteristically employ a different conflation type for another type of Motion event. This can be called a ‘split’ or ‘complementary’ system of conflation.”

As is shown in examples (1) from Polish (West Slavic), the expression of Path typically implies a change of location, either with respect to the Source (1a), the Median (1b) or the Goal (1c) (for a discussion of Path and change of location, see among others Slobin 1997; O'Connor 2007; Fortis & Vittrant 2011; Grinevald 2011; Imbert 2012).

(1) Polish

a. Source-oriented event

Kobieta wy-szła z jaskini
 woman.NOM out-walk.PST.3SG.F of cave.GEN
 'The woman walked out of the cave.' {traj025_Bla}

b. Median-oriented event

Chłopiec prze-chodzi przez kamienny most
 boy.NOM across-walk.PRS.3SG across stone.ACC.SG.M bridge.ACC.SG.M
 'The boy is crossing a stone bridge.' {traj050_Pio}

c. Goal-oriented event

Mężczyzna w-szedł w zarośla
 man.NOM in-walk.PST.3SG.M in bush.ACC.PL.N
 'The man walked into the bushes.' {traj056_Nat}

When describing complex Path events which imply two (or more) Grounds, for example the Source and the Goal, speakers might express two reference points, as in (2a), or select only one for the linguistic expression, as in (2b), both examples referring to the same motion scene, which shows a boy walking out of a cave onto the beach.

(2) Polish

a. Source–Goal-oriented event

chłopiec wy-szedł z jaskini na plażę
 boy.NOM out-walk.PST.3SG.M of cave.GEN.SG.F on beach.ACC.SG.F
 'The boy walked out of the cave onto the beach.' {traj028_Woj}

b. Source-oriented event

chłopiec wy-szedł z jaskini
 boy.NOM out-walk.PST.3SG.M of cave.GEN.SG.F
 'The boy walked out of the cave.' {traj028_Nat}

Interestingly, scholars have postulated that there is a bias toward the Goal and that people tend to (1) allocate more attention to the Goal than to the Source or the Median, (2) express the Goal of motion events more frequently, and (3) use semantically more fine-grained linguistic resources to express the Goal. Moreover, it has been postulated

that languages tend to have more grammatical resources to express the Goal than to express the Source (see e.g. Ikegami 1987; Bourdin 1997; Lakusta & Landau 2005; Regier & Zheng 2007). This bias toward the Goal, also known as Source/Goal asymmetry or the Goal-over-Source principle, has often been attributed to the pragmatic relevance of the Goal and its perceptual salience. However, as pointed out by Kopecka & Ishibashi (2011) and Kopecka & Vuillermet (in prep.), most of these studies are based on a limited sample of languages and/or on a limited set of examples (see however Stefanowitsch & Rhode 2004; Verkerk 2017; and Stefanowitsch 2018 for larger corpus-based investigations). Hence, the following questions arise: Do speakers of all languages favor the expression of Goal, and express it more often and in a more elaborate way? What is the role of language-specific resources (lexical, morphosyntactic and constructional) in the expression of different portions of Path and the Source/Goal asymmetry? The aim of creating the *Trajectoire* tool was to investigate these questions cross-linguistically on the basis of comparable sets of data collected with the same method and following the same procedure.

3. *Trajectoire*: a dynamic visual tool

3.1 The structure of the *Trajectoire* tool

The structure of the *Trajectoire* tool is inspired by the visual research methods developed at the Max Plank Institute for Psycholinguistics (Nijmegen, NL) for investigating various domains such as *Cut & Break* (Bohnenmeyer, Bowerman & Brown 2001), *Put & Take* (Bowerman et al. 2004) and *Reciprocals* (Evans et al. 2001). Based on previous research on motion events, several parameters were selected in order to design the material (§3.1.1). The core of the elicitation tool consists of 76 video-clips presented in three different orders (§3.1.2). Besides the video-clips, the tool also contains additional methodological material, namely the protocol for data elicitation (§3.1.3) and a pre-established Excel spreadsheet to facilitate both the treatment and the coding of the data collected (§3.1.4).

3.1.1 The parameters

Based on previous research on motion events and the semantic elements postulated in this conceptual domain by Talmy (1985) and Slobin (2004), the ontology of spatial entities proposed by Aurnague et al. (1997) and Aurnague (2004), and research on deixis (Fillmore 1975, Ricca 1993; Wilkins & Hill 1995), we selected several parameters for the design of the *Trajectoire* stimulus set. The video-clips thus vary in terms of the following parameters (see also Kopecka & Ishibashi 2011; Ishibashi 2015): types of Figures, types of

Grounds, Path of motion, Manner and Deixis. Table 1 below presents these parameters in detail.

FIGURE [F]	INDIVIDUAL (man, woman, child) or group of people
GROUND [G]	PLACES: building (cave), road (path, track, bridge), geographical location (sea, fields)
	OBJECTS: basket, tree trunk, rock
	HUMANS: man, woman, child
PATH OF MOTION [P]	ORIENTATION: horizontal (<i>from, to</i>), vertical (<i>up, down</i>)
	SIMPLE PATH WITH vs. WITHOUT BOUNDARY-CROSSING <ol style="list-style-type: none"> i. source-oriented: <i>out of</i> vs. <i>from</i> ii. median-oriented: <i>across</i> vs. <i>past</i> iii. goal-oriented: <i>into</i> vs. <i>to(wards)</i>
	COMPLEX PATH WITH vs. WITHOUT BOUNDARY CROSSING <ol style="list-style-type: none"> i. source- & goal-oriented (e.g. <i>from - to</i>) ii. source- & median-oriented (e.g. <i>out of - up</i>) iii. median & goal (e.g. <i>down</i> and <i>into</i>) iv. source & median & goal-oriented (e.g. <i>out of - past - into</i>)
MANNER [M]	MANNER OF MOTION: <i>walk, run, jump</i>
DEIXIS [D]	CENTRIFUGAL (<i>away from a deictic center</i>) ⁵ vs. CENTRIPETAL (<i>toward a deictic center</i>) vs. TRANSVERSAL (<i>from left to right with respect to a deictic center</i>)

Table 1: *The parameters underlying the design of the Trajectoire material*

The main aim of distinguishing these parameters is to investigate the types of dimensions that speakers of individual languages are sensitive to and to examine the types of constructions they use to encode motion along different Paths. In particular, as Table 1 shows, specific attention was paid to different portions of Path such as the Source (initial point), the Median (intermediate points) and the Goal (final point), and to the spatial configuration of each of these portions on the vertical and horizontal axes. Hence, the stimulus set comprises scenarios with simple Paths (consisting of one reference point) vs. complex Paths (consisting of two or three reference points), and it contrasts Paths with vs. without boundary-crossing (cf. Aske 1989; Slobin 1994). In doing so, our aim was to enable researchers to examine how speakers of typologically different languages distribute spatial information related to Path and its different portions in the linguistic structure,

⁵ We were expecting the camera to be interpreted as the deictic center.

and to investigate whether they allocate more attention to Goals than to Sources when describing motion events, and how this is correlated with the spatial configuration of Path (e.g. vertical vs. horizontal, with vs. without boundary-crossing).

The pictures below are examples of some of the scenarios in the *Trajectoire* stimulus set, including walking out of the woods toward the camera-observer (Figure 2), walking into a cave away from the camera-observer (Figure 3), and jumping from one stone onto another on a transversal axis with respect to the camera-observer (Figure 4).



Figure 2. Scene 027_path



Figure 3. Scene 053_path



Figure 4. Scene 075_path

The following examples, all collected with the *Trajectoire* stimulus set, illustrate how languages can vary with respect to the parameters their speakers are sensitive to: speakers of Ese Ejja use different markers for human vs. non-human Grounds (3a-b) and speakers of East Futunan tend to encode Deixis when describing motion in space (4a-b).

(3) Ese Ejja (Takanan; Vuillermet, accepted)

- a. *Akwi=yasijje poki-ani.*
 tree=ALL go-PRS
 ‘She is going to the tree.’ {traj061_Soo}
- b. *Kwiiiji poki-ani e-pona=ke.*
 man go-PRS NPF-woman=ALL_HUM
 ‘The man is going to the woman.’ {traj036_Sap}

(4) East Futunan (Polynesian; Moysse-Faurie, accepted)

- a. *E ulu atu le ta'ine i loto o le ana.*
 NPST cross CFG SPC girl STAT inside POSS SPC cave
 ‘A girl is getting out of the cave (going away from the camera-observer who is staying in the cave).’ {traj025_FUD}
- b. *E ulu mai le ta'ine ki loto o le ana.*
 NPST cross CPT SPC girl GOAL inside POSS SPC cave
 ‘A girl is entering the cave (towards the deictic centre who is staying in the cave).’ {traj22_FUD}

3.1.2 76 video-clips

Each of the 76 video-clips lasts for 8 to 14 seconds. They subdivide into:

- **2 warm-up video-clips** (named “_training” in the .xls spreadsheet detailed further below), which help to familiarize the speaker with the task and the nature of the materials, and to prepare him or her for the elicitation session. As highlighted by Miller (1973) and Majid (2012: 66–67), and discussed at length in Cáceres (2017), the training is a very important step in order to get “quality data”. In a similar vein, Lüpke (2009: 73) argues that consultant training is one of the key elements for the speaker to execute the task adequately;
- **55 target video-clips** (named “_path”) which show the spontaneous (as opposed to caused) motion of a protagonist (adult or child) in a natural environment (e.g. field, forest, sea) – see Section 3.2 on the constraints of designing an “ecological” stimulus set to be used across cultures. These video-clips are stand-alone scenarios, i.e. they do not relate to each other to make up a story. Many of them have a corresponding scene, like scenes 43 vs. 44 where a woman runs and passes behind a tree (from right to left) vs. runs and passes in front of a tree (from left to right);
- **19 fillers** (named “_filler”) which show static scenes (e.g. a man reading a book) or other activities (e.g. playing the ball), filmed with the same actors in the same environment. These clips are necessary to distract the consultants’ attention from the main goal of the elicitation (here producing the description of motion events), and to prevent them from producing redundant and/or less spontaneous utterances.

Three versions of the material are available to the researcher. Each contains the same video-clips but they are arranged in three different orders to prevent the influence of a possible routine effect during the elicitation session with the speaker. The different orders prove to be useful to detect or confirm possible influences of previous video-clips; consultants sometimes try to relate individual video-clips or to look for a temporal continuity between the events – see ex. (9). During the elicitation session, each consultant sees a single version of the stimulus. Most investigators report an average recording time of 20 to 40 minutes per consultant.

As mentioned earlier, the additional material includes a protocol for data collection, and an Excel spreadsheet for transcribing and coding the data. A feedback questionnaire geared toward the investigators was developed subsequently to elicit critical evaluations regarding the use of the stimulus set. This questionnaire is discussed in Section 4.2 and is available in Appendix 3.

3.1.3 The protocol for data elicitation

The aim of the *Trajectoire* stimulus set is to allow researchers to investigate the expression of Path of motion and to systematically examine the expression (symmetrical or asymmet-

rical) of Source (initial point) and Goal (final point) in typologically varied languages. To facilitate data collection and to ensure comparability, whether the stimulus is used with different speakers of a single language or across languages, we designed a protocol for a data elicitation session. Here is the instruction as provided in our protocol:

“During the elicitation session, sit with the speaker in front of the computer and explain that she or he will see a series of scenes in which someone (a woman, a man or a child) does something, and that, after each scene, she or he will be asked to say what that person did. The first two clips are training videos in order for the speakers to practice the procedure. You can repeat each clip as many times as the speaker needs. You can also take breaks or divide the elicitation session into two or three smaller sessions.

After each clip, ask the speaker “What happened in this clip?”

You can prompt this question after each clip. However, if you feel that the speaker does not need to be reminded of the question that often and that she or he provides the descriptions spontaneously you can stop repeating the question.”⁶

The guiding question “What happened in this clip?” recommended by the protocol is of importance for reproducibility (see e.g. Majid 2012: 70 or Berez-Kroeker et al. 2018). First, it ensures that researchers using the stimulus set formulate the instruction in a similar fashion when working with individual speakers. Second, it enables the comparability of the data across individual languages. We therefore explicitly advised avoiding the use of other instructions such as, for example, “Please, describe what you have just seen”. This kind of instruction might make the speaker focus on the scene setting and prompt descriptions of the background and the protagonists instead of eliciting descriptions of the motion event. The instruction “What happened in this clip?” or “What did the person do?” is more likely to draw the attention of the speaker to the event of motion, and, as suggested by the data collected so far, to elicit short descriptions depicting the Figure’s motion itself.

In order to account for the use of different constructions and morphosyntactic devices, and to delve into the asymmetry in the expression of Sources and Goals, we advocate collecting the data with 12 speakers (four for each version). This allows for a systematic investigation of both main tendencies observed in a given language and interspeaker variation. However, we are aware that it might not be easy to find that many consultants in endangered languages, in which case two or three speakers will still make it possible to collect sufficient data to explore the expression of Path and its portions. Some researchers suggested inviting a pair of speakers, one to watch the videos and the other to listen to the descriptions, in order to create a more natural speech situation. It has been

⁶ The full protocol can be downloaded online in French and English at <http://tulquest.humanum.fr/en/node/132>.

especially helpful with the Stieng speakers, who, due to their language loss, are affected by linguistic insecurity (Bon, 2014; accepted).

As explained in the protocol, an optional elicitation task is proposed to collect descriptions of Path of motion in a narrative context. The researcher can, in addition, ask speakers to describe their most recent journey or to describe how to go from place X to place Y (e.g. from one village to another). This additional elicitation task compensates for the absence of a context for the motion events in the video-clips and, consequently, the expected absence of specific morphosyntactic elements such as, for example, associated motion morphemes or motion-cum-purpose subordinates. This additional data makes it possible to compare spontaneous descriptions of motion and stimuli-based descriptions and hence enriches both the corpus and the analysis.

3.1.4 The pre-established coding spreadsheet

The Excel spreadsheet, of which an excerpt is presented in Appendix A, contains three sheets which correspond to the three versions of the stimulus set (v1, v2, v3). In each sheet, column A (scene_order) corresponds to the ordering of the clips within each version, and column B (scene_code_description) gives the code and a schematic description for each clip (abbreviations are given in a separate sheet named “Abbreviations”.) The schematic description of each clip allows the researcher to easily retrieve a specific scene:

- **051_Path_F_cross_field_front** stands for the video-clip **51**, where a woman (**Female**) [Figure] walks [default Manner of motion, therefore not specified] **across** [Path] a **field** [Ground] toward the camera (**front**) [Deixis];
- **072_Path_M_jump_over_tronc_back** stands for the video-clip **72**, where a man (**Male**) [Figure] **jumps** [Manner] **over** [Path] a log [Ground] away from the camera (**back**) [Deixis];
- **020_Filler_F_plait_hair** stands for the video-clip **20**, which is a **filler** where a woman (**Female**) **plaits** her **hair**.

The Excel spreadsheet facilitates both the coding and the analysis of the data as the coding of the relevant parameters can then easily be sorted and compared across speakers (see Majid 2012: 69).

3.2 An elicitation tool to be used across cultures: design constraints

As pointed out by Lüpke (2009: 70), “one criticism of [Staged Communicative Events]⁷ concerns the lack of universal applicability of visual stimuli, since objects featured in them

⁷ According to Himmelmann (1998), field linguists might record three types of communicative events: Observed Communicative Events are only affected by the presence of the recording devices (and the

may be unknown in the field context, or their depiction may violate cultural taboos". Hence, designing visual stimuli requires specific attention to objects, physical appearances, and settings in order to avoid (as much as possible) situations which may seem inappropriate or focus speakers' attention on the material aspects of the stimuli (see also Du Bois 1980). Since our aim was to design an elicitation tool which could be used in different linguistic and cultural areas, we endeavored to ensure that our stimulus set is "ecologically valid" that is, that it approximates natural settings (see e.g. Guastavino 2009). The two subsections below address our effort and the attention paid to physical appearances of the protagonists and the natural environment in which the scenes took place.

3.2.1 Physical appearance

The physical appearance of the actors was our first concern, as previous studies had shown that unusual physical appearance might distract the speakers (see e.g. Du Bois 1980). As a matter of fact, when describing visual stimuli, speakers might wonder for instance whether actors are male or female (see e.g. Lovick & Tuttle (2019) in this volume), commenting on their hair (e.g. unexpected short hair for a female or unexpected long hair for a male), unusual hairstyle or color or their clothes (e.g. trousers unexpectedly worn by a woman). To avoid such situations, the protagonists in the video-clips are 'standardized', that is, male actors with short hair and wearing trousers, and female actors with long hair and wearing dresses or skirts. While such appearances are not a universal phenomenon, they remain the norm in many cultures. Depending on their culture, consultants might still be confused or even embarrassed to see uncovered heads or arms (our actors wore T-shirts in many cases), even if these elements were not unfamiliar, due to globalization.

The following anecdote underlines the significance of such guidelines on the actors' outfit. A few video-clips feature two young boys in their swimming suits. We thought that these clips would not disturb consultants given that boys are topless in many cultures. This nonetheless resulted in the only "off-topic" comment that Ese Ejja consultants made. Rose (p.c. June 2018) and Ishibashi (2015) report similar comments with Mojeño Trinitario (Arawak) and Japanese speakers respectively, as illustrated in (5). These side comments were by no means problematic for the analysis, but they highlight the importance of consultants' awareness of the physical appearance of the actors.

linguist) and are thus the most natural ones, while Elicitation is the least natural situation. Staged Communicative Events are somewhere in between, and this is where the communicative events prompted by stimuli belong.

- (5) a. Mojeño Trinitario (Arawak; Françoise Rose, p.c. June 2018)

teterepuekoma 'móperu *tiptsino'e* *tjunopopri'i*
t-etere-pue-koma 'moperu *t-iptsino'e* *t-junopo =pri'*
 3-jump-CLF.earth-ACT ART.M.youngster 3-be_naked 3-run =CONC.MOT.IPFV
 'The **naked** boy jumps and runs.' (in Spanish: El chico salta desnudo y trota.)
 {traj034}

- b. Japanese (Ishibashi 2015)

Etto badaka-no syoonen-ga iwaba-o ori-te-i-masu.
 uh **nakedness**-GEN boy-NOM rocky spot-ACC move.down-CONN-PROG-POLI
 'Uh a **naked** boy is moving down a rocky spot.' {traj076_jp10}

3.2.2 Natural environment

The environment in which the scenes took place was another concern. Our aim was to film places and reference points that speakers living in different cultures and environments could easily recognize and talk about. We therefore chose “natural” locations (i.e. Grounds) such as water, fields, caves, and wooden bridges. Consultants who had never seen the sea did not seem to have difficulties in finding an appropriate substitute (e.g. lake or river). The different types of fields (cultivated vs. uncultivated) were easily identified and named. However, the choice of a cave as a reference location proved slightly problematic. We needed to include a closed space in our Ground types, but did not want to use houses, as they would be culturally marked. The rock cave we filmed seemed appropriate, and turned out to be fine with most consultants, but two colleagues reported the following minor problems with this choice.⁸ In (at least) some areas of Eastern Africa, caves are used as healing areas where witchdoctors perform rituals. Therefore, people “drinking tea” in a cave (like in one filler video-clip) or quietly going in or out of it (like in several target video-clips) would be disconcerting for consultants with this cultural background (Margaret Dunham, p.c., October 2017).

The non-existence of specific reference places such as caves or bridges in the consultant’s everyday life constitutes the second problem. Miller (1973) has underlined the importance of representing familiar objects in pictures shown to consultants.⁹ In cultures and ecological settings where caves or bridges are infrequent and/or are not part of daily life, consultants may resort to at least three strategies. They may use loanwords (as did, for example, Wolof and Ese Ejja speakers), which might have an impact on the morpho-phonology. Alternatively, consultants may compose new words to express the concept. Exam-

⁸ The problems are minor in the sense that they only concern the Grounds, did not traumatize the speakers and did not prevent the collection of data.

⁹ He also showed that adequate training would easily overcome the consultant’s difficulties in identifying an object.

ples in (6) show that one of the three Mojeño Trinitario consultants made two non-standardized compounds, resulting in ‘stone interior’. They may also avoid explicitly mentioning the Ground, as did the two other consultants who hardly mentioned the cave.

(6) Mojeño Trinitario (Arawak; Françoise Rose, p.c. June 2018)

- a. *su 'seno tyuchko te marijeku tyopno te to eskárerera*
su 'seno ty-uchu-ko te mari-jeku ty-opno te to eskarera
 F women 3-exit-ACT LOC **stone-interior** 3-go.up LOC NH stairs(Sp)
 ‘The woman goes out of the cave and goes up the stairs.’ {Traj_038_Mar}
- b. *ma 'chane tyuchko te to mariju'e ene*
ma 'chane ty-uchu-ko te to mari-ju'e ene
 M person 3-exit-ACT LOC NH **stone-interior** y
- tsiopo te to 'pochkoyo mariju'e*
ty-siopo te to 'po-chokio mari-ju'e
 3-enter LOC NH other-side **stone-interior**
 ‘The man goes out of the cave and enters the side of the cave.’ {Traj_043_Mar}

Unlike many visual elicitation tools not specifically designed for field-based research, the *Trajectoire* stimulus set was reported by field-researchers to be user-friendly, ecological and adapted to diverse cultural settings. Filmed outdoors, in the natural environment and with “standardized” actors, this stimulus set was designed to avoid distracting consultants, and as a result to produce more spontaneous data. However, one should keep in mind that any visual tool used cross-linguistically is likely to contain elements that might cause problems for some consultants, and it is our responsibility as investigators to check the material beforehand.

4. Actual use and dissemination

The *Trajectoire* tool proves useful for both individual language analysis and cross-language comparison. However, like all visual stimuli, it has its limits. This section offers an overview of the actual use of the stimulus set and its dissemination. The first subsection (§4.1) presents feedback from users, both researchers and consultants. It shows the range of languages in which it was successfully used (§4.1.1), presents some cross-linguistic observations and individual language (re)analysis achieved with the stimulus (§4.1.2), as well as ancillary benefits (§4.1.3). The second subsection (§4.2) discusses the dissemination of the material.

4.1 Feedback from users (researchers and consultants)

4.1.1 Languages and number of speakers

The *Trajectoire* tool was designed in 2006 and since then, it has been used in a variety of linguistic field sites, first by the members of the TRAJECTOIRE project and then by other colleagues around the world. Table 2 lists the languages investigated within the TRAJECTOIRE project and by other colleagues, the number of speakers with whom the stimulus set has been used, as well as the researcher(s) who conducted the data elicitation sessions. The languages are classified here according to continents to better reflect the numerous geographic areas represented, including several remote parts of Amazonia and South-East Asia.

CONTINENT	LANGUAGE	LANGUAGE FAMILY	# OF SPEAKERS	RESEARCHER(S)
EUROPE	German	Germanic	18	B. Fagard
	Swedish	Germanic	18	J. Blomberg, J. Zlatev
	Polish	Slavic	15	A. Kopecka, B. Fagard
	Piemontese	Romance	11	B. Fagard, M. Cerruti
	French	Romance	20	B. Fagard, L. Sarda
	Romanian	Romance	12	C. Papahagi
	French Sign Lang.	Sign language	2	A. Risler
AFRICA	Wolof	Atlantic-Congo	30	S. Voisin
CENTRAL AMERICA	Huastec	Mayan	4	A. Kondic
SOUTH AMERICA	Ye'kwana	Carib	12	N. Cáceres
	Yawarana	Carib	3	N. Cáceres
	Ese Ejja	Takanan	9	M. Vuillermet
	Mojeño Trinitario	Arawak	3	F. Rose
ASIA	Japanese	Isolate	20	M. Ishibashi
	Mandarin Chinese	Sinitic	12	J. Song
	Thai	Tai Kadai	14	J. Zlatev
	Burmese	Tibeto-Burman	10	A. Vittrant
	Hmong Bjo	Hmong-Mien	10	
	Stieng	Môn-Khmer	2	N. Bon
OCEANIA	Futunian/ Fakafutuna	Oceanic	2	C. Moyse-Faurie

Table 2: (Most) languages with which the *Trajectoire* DVD has been used

The speakers recorded in those areas are from non-WEIRD societies (for Western, Educated, Industrialized, Rich, Democratic, see Henrich, Heine & Norenzayan 2010). No other problems than those discussed in Section 3.2 have been reported by the researchers who used this tool so far, which indicates that the stimulus set proves valid in various cultural contexts. Moreover, as reported by researchers who used the tool in the field, speakers tend to enjoy the *Trajectoire* video-clips and describe them with pleasure.

4.1.2 Possible uses: some outcomes

As is the case of the visual methods elaborated at the Max Planck Institute for Psycholinguistics (Nijmegen, NL), the initial inspiration for our elicitation tool, the *Trajectoire* stimulus set too is a useful tool not only for investigating individual languages but also for cross-linguistic comparisons. It enables researchers to collect systematic and cross-linguistically comparable data and to investigate how speakers of different languages describe similar visual scenarios: what type of spatial information attracts speakers' attention? What type of elements do they select for linguistic expression? What kind of lexical, grammatical, and constructional devices do they use when describing motion events and how do they distribute spatial information across the sentence?

Like previous cross-linguistic research based on other types of methods (e.g. Slobin (2004) on the *Frog Story*), studies based on *Trajectoire* data show great cross-linguistic variation in the types of information speakers encode in their descriptions of motion events. In particular, Fagard et al. (2013) report a cross-linguistic analysis on the type of spatial information expressed in six languages in which data were collected using the *Trajectoire* elicitation tool. The authors have compared the descriptions of ten speakers (or more) of languages traditionally classified as satellite-framed (German, Polish and Swedish), verb-framed (French and Piemontese) and equipollently-framed (Thai).¹⁰ As expected, the analyses show that speakers of verb-framed languages express MANNER with a verb significantly less frequently than the other two types of languages. The authors further distinguished the descriptions of the video-clips where MANNER was marked (running or jumping) from those where it was unmarked (walking), and observed that the difference in MANNER expression between verb-framed and satellite- or equipollently-framed languages primarily concerned motion events unmarked for MANNER. In other words, the stimuli in which MANNER was marked typically elicited descriptions with MANNER verbs in all types of languages. They also explored the influence of boundary-crossing constraints (Aske 1989; Slobin & Hoiting 1994), according to which the use of

¹⁰ See Section 2.1. Fagard and colleagues are aware that a dichotomist view is not fully appropriate and that the framing types available for a given speaker in a given language depend on various factors. However, they also recognize that the typology (and observed correlations) is useful in exploring the expression of motion events in details.

MANNER verbs is more restricted in verb-framed languages when the Figure crosses a boundary. Interestingly, not only did speakers of French and Piemontese (verb-framed) turn out to use distinctly fewer MANNER verbs, but speakers of German and Swedish (satellite-framed) also used significantly fewer MANNER verbs compared to speakers of Polish and Thai (satellite- and equipollently-framed, respectively). Examining the patterns in the expression of PATH, researchers again expected a difference between verb-framed languages, on the one hand, and satellite- and equipollently-framed languages, on the other. What they found, however, was a significant difference between Piemontese, French, and German (two verb- and one satellite-framed languages) on the one hand, and Swedish, Thai, and Polish (two satellite- and one equipollently-framed languages) on the other. Finally, they noticed a much lower frequency of verbally expressed DEIXIS (than MANNER or PATH) for all languages. Consequently, the authors conclude that these results are “consistent with proposals that motion event typology should be performed on the basis of separate constructions or strategies, rather than on languages as a whole” (Fagard et al. 2013: 377).

Beyond its value for cross-linguistic investigations, this stimulus set is also very helpful for the thorough investigation of motion events in individual languages. For instance, Ishibashi (2015) is a detailed study on Japanese, based on data collected with 20 speakers using the *Trajectoire* tool. Her study mostly focuses on the use of deictic verbs *kuru* ‘come’ and *iku* ‘go’ in the description of the video-clips. Ishibashi identifies deictic elements in 68% of the clauses of the *Trajectoire* corpus, but notes that not all the uses are deictic: the deictic verbs *kuru* ‘come’ and *iku* ‘go’ may refer to the Figure’s appearance and disappearance respectively. She also observes that, at least in this data set, deictic verbs are rare as simple verbs and overwhelmingly occur in complex verb constructions: 96% of the deictic uses occur in the *V-te V* construction (one of the three complex verb constructions available in Japanese to express motion). Finally, a close inspection of the distribution of deictic verbs shows that there are three factors that play a role in the encoding of deixis:

- the orientation of the Figure’s motion: deictic verbs are not used in descriptions of vertical motion;
- the distance travelled: confirming the claims in Matsumoto (1997), deictic verbs are not used to describe motion over short distances;
- telicity of the event: in describing atelic scenes, there is a competition between the progressive construction (focusing on the ongoing action) and the deictic verb (choice of speaker’s perspective).

A final illustration of the utility of this stimulus set and of controlled parameters concerns a minor point in a recent study on Source-Goal asymmetry in Ese Ejja (Takanan) (Vuillermet, accepted). The prototypical expression of Source in this Amazonian language involves posture verbs, as in (7).

(7) Ese Ejja

- a. [E-iyə=jo *neki*] *towaa-ani*.
 NPF-hill=LOC **be.standing.NF(.ABS)** jump-PRS
 ‘He jumps from the hill.’
 (lit. **Standing** on the hill, he jumps) {traj064_Soo}
- b. E-pona *kwaya-ki-ani* [jjani-’dojjo=jo *ani*].
 NPF-woman(.ABS) go_out-GO_TO_V-PRS hole-inside=LOC **be.sitting.NF(.ABS)**
 ‘A woman is going out of the cave.’
 (lit. **Sitting** in the cave, she goes out) {traj071_Sap}

Posture verbs in Ese Ejja do not always refer to the actual posture of the Figure. For instance, in (7b), the woman was standing rather than sitting in the cave before walking out of it. The posture verb *ani-* ‘be sitting’ was nevertheless used because both female Figures and cave Grounds (and also houses) are culturally associated with the posture verb *ani-* ‘be sitting’. By contrast, male Figures and field Grounds – associated with work achieved in a standing posture – are associated with *neki* ‘be standing’.¹¹ The posture verb in (7a) could thus refer to the actual posture of the male Figure before jumping, or more generally to his gender.

Table 3 illustrates all the utterances of one speaker with the various factors in play. This speaker consistently associates male Figures with a standing posture, and female ones with a sitting posture (even if they are actually standing), unless the Ground is a field: since the field is typically associated with a standing position, and thus the verb *neki* ‘be standing’ is used in the Source expression to refer to a female Figure.

FIGURE	CAVE		FOREST		CORN FIELD		TOP OF CLIFF	
	Sit ¹²	Stand	Sit	Stand	Sit	Stand	Sit	Stand
FEMALE	5		1			1		
MALE		1		1				
MALE (child)		2						1

Table 3: *Influence of Figure gender and Ground type in one Ese Ejja consultant’s recording*

Further relating to the expression of Source, the Ese Ejja data show that this biclausal expression was in competition with another, undedicated adnominal expression (the perlocative-ablative =*jje*). While the first few recordings led the researcher to think that this

¹¹ Rumsey (2002) reports a similar gender/posture association in Papuan languages, but, unlike in Ese Ejja, only gender and not Grounds seem to have an influence in these languages.

¹² Note that the moving Figure is standing in all the video-clips.

perlative-ablative was restricted to a dialectal variant, the final corpus of nine speakers made it possible to abandon this hypothesis.

The summary of these three studies shows that the *Trajectoire* tool can serve different goals and approaches. Further outcomes of this elicitation method are chapters of dissertations on individual languages (Cáceres 2011 on Ye'kwana (Cariban); Kondic 2012 on Huastec (Mayan); Vuillermet 2012 on Ese Ejja (Takanan); Bon 2014 on Stieng (Austro-Asiatic); Parajuli *in prep.* on Nepali; Song *in prep.* on Mandarin Chinese), various articles mentioned above, and a collection of papers in a special issue of *Studies in Language* (Kopecka, Ishibashi & Vuillermet *in prep.*).

4.1.3 Ancillary benefits

This subsection lists a number of benefits obtained with the *Trajectoire* stimulus set that we did not initially anticipate when designing the material.

Imperfective constructions

The fillers included in the material represent ongoing activities, rarely present in texts (but occurring more frequently in spontaneous conversations). The Ese Ejja speakers produced several instances of the infrequent imperfective construction with double absolutes (Vuillermet 2012: 482-485), as exemplified in (8).

(8) Ese Ejja

- | | | | | | |
|----|--|---------------|--------------|----------------|---------------|
| a. | <i>Kwiji</i> | <i>weshe</i> | <i>ijjia</i> | <i>po-ani.</i> | |
| | male.ABS | banana.ABS | eat | be-PRS | |
| | 'A male is eating a banana (lit. is banana-eating).' | | | | {traj004_Lev} |
| | | | | | |
| b. | <i>Dejja</i> | <i>papeni</i> | <i>a</i> | <i>po-ani.</i> | |
| | man.ABS | paper.ABS | do | be-PRS | |
| | 'A man is reading a paper (lit. is paper-doing).' | | | | {traj003_Nil} |

Associated motion morphemes

Associated motion morphemes associate motion with a (typically) non-motion event¹³ (see Guillaume 2016 for a recent typological account of this category). Their function is to “tag” motion in successive events throughout a story, and they are thus highly discursive. As the stimulus displays stand-alone video-clips, we did not expect speakers to produce such morphemes. However, some Ese Ejja speakers, like consultants in other languages, tried to link some video-clips to others, producing these unexpected mor-

¹³ Unlike directionals, which typically associate *direction* or *path* with a *motion* event (like in ‘move *up*’, ‘move *away*’, etc.).

phemes. In the example (9) below, a woman is described as running “back” (lit. run-**do.re-
turning**) because of a previously displayed corresponding video-clip which show her coming from the opposite direction.

- (9) *E-pona wakwaya kwajikwaji-je’be-’io-ani.*
 NPF-woman here run-**DO.RETURNING**-TEL-PRS
 ‘The woman is running back here.’

Structural homogeneity

Visual stimuli have often been criticized for yielding artificial structural homogeneity, but such homogeneity has advantages, too. Since the video-clips in our stimulus set show separate motion events with no links to each other, displaying new protagonists and new reference points and settings that need to be specified, even speakers of pro-drop languages regularly expressed the arguments of the verb. This hardly happens (if ever) in spontaneous speech. Ese Ejja consultants, for instance, produced more explicit NPs in the *Trajectoire* elicitation sessions than in most other communicative events recorded.

On the other hand, the presence of explicit NPs facilitated the following observation: speakers’ descriptions are overwhelmingly verb-final, nicely illustrating that pragmatic neutrality yields the least marked constituent order in Ese Ejja. (Ese Ejja has a flexible word order in main clauses, but some features show that it can be considered a verb-final language, e.g. it is obligatory verb-final in dependent clauses.)

4.2 Dissemination

When the *Trajectoire* tool was first created (2006), its use was mainly restricted to members of the TRAJECTOIRE research project, and then shared on request. Unfortunately, we failed to keep track of colleagues who used the material to collect data in different languages and were unable to collect feedback from them. Therefore, we subsequently created a spreadsheet with the full name and e-mail address of colleagues, and their language(s) of study.

The full *Trajectoire* tool, including the video-clips, the protocol (in French and in English) and the feedback questionnaire are available and can be downloaded from the Questionnaire website TulQuest (<http://tulquest.huma-num.fr/en/node/132>).¹⁴ We invite linguists interested in using this stimulus set to contact us to help us keep track of languages for which data has been collected, to share their experience with using the elicitation material within a given linguistic community, and to cite it as follows:

¹⁴ The video-clips appear as a disc image and can be read with any DVD (e.g. VLC Media Player, Windows Media Player, QuickTime)

Ishibashi, Miyuki, Kopecka, Anetta & Vuillermet, Marine. 2006. *Trajectoire : matériel visuel pour élicitation des données linguistiques*. Laboratoire Dynamique du Langage, CNRS / Université Lyon 2. Projet de Fédération de recherche en Typologie et Universaux Linguistiques. <http://tulquest.huma-num.fr/fr/node/132>.

5. Conclusion

The initial aim in designing the *Trajectoire* stimulus set was to provide researchers with a methodological tool to collect linguistic data to investigate the expression of Path of motion in typologically varied languages. The first results have shown that the material meets the objectives we set at the beginning, as speakers from diverse cultural backgrounds not only produced highly relevant descriptions of Path of motion and its portions, but mostly enjoyed the elicitation task.

In addition, the stimulus set proved to be an efficient tool for several reasons: the task is clear and does not yield problems of comprehension; it is not time-consuming and does not involve particular effort on behalf of the consultants; and it yields a considerable amount of data (55 target clips and at least as many motion clauses). Furthermore, as for most visual stimuli, the transcription and translation are made easy by the shared context, and the analysis is facilitated by the available spreadsheet. Based on the data collected with this stimulus set, research questions can range from intra- and inter-speaker variation within a single language to cross-linguistic studies.

To conclude, with regard to dissemination, we have observed that authors tend to pay less attention to the correct citation of elicitation tools than of scientific papers, both within articles or chapters and in the final reference sections. We would like to emphasize here that approximate or incomplete citations do not help an efficient dissemination. We hope that our recent archiving at TulQuest will help researchers to cite the elicitation material adequately and facilitate its dissemination, so that the expression of Path of motion and the (a)symmetry between Source and Goal can be investigated in a systematic way in more languages.

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[Trajectoire 2](#) 2008-2011). Finally, we are grateful to Aimée Lahaussais, Françoise Rose, and two anonymous reviewers for helpful comments and suggestions on the previous version of this paper.

Appendix A. Excerpt from the list of the scenes & their description (Version 1)

scene order_version 1	scene code_description
V1_scene01_010	010_training_M_handpass_ball_to_F
V1_scene02_013	013_training_F_spread_blanket
V1_scene03_076	076_Path_C_walk_down_rock_front
V1_scene04_031	031_Path_M_run_outof_sea_sideRL
V1_scene05_006	006_Filler_M_drink_water
V1_scene06_074	074_Path_F_walk_up_from_lake_front
V1_scene07_022	022_Path_F_walk_down_into_cave_front
V1_scene08_072	072_Path_M_jump_over_tronc_back
V1_scene09_050	050_Path_C_cross_water_sideRL
V1_scene10_002	002_Filler_M_sleep_side
V1_scene11_039	039_Path_M_walk_behind_tree_sideLR
V1_scene12_019	019_Filler_F_comb_hair
V1_scene13_065	065_Path_C_walk_up_path_side_LR
V1_scene14_045	045_Path_3_walk_across_bridge_back
V1_scene15_064	064_Path_C_jump_from_cliff_into_water_sideLR
V1_scene16_059	059_Path_C_run_into_sea_sideRL
V1_scene17_036	036_Path_M_walk_toward_F_back
V1_scene18_001	001_Filler_M_pick_fruit_back
V1_scene19_051	051_Path_F_cross_field_front
V1_scene20_068	068_Path_M_walk_front_people_into_cave_back
V1_scene21_018	018_Filler_F_footpass_ball_to_M
V1_scene22_052	052_Path_F_cross_field_back
V1_scene23_042	042_Path_C_run_behind_stone_sideLR
V1_scene24_024	024_Path_F_walk_out_take_walk_into_cave_back
V1_scene25_009	009_Filler_M_footpass_ball_to_F
V1_scene26_069	069_Path_F_walk_into_field_sideLR
V1_scene27_056	056_Path_M_walk_into_bush_back
V1_scene28_034	034_Path_C_jump_from_stone_run_front
V1_scene29_011	011_Filler_F_give_banana
V1_scene30_020	020_Filler_F_plait_hair

Appendix B. Feedback questionnaire about the use of the material

The aim of the “Trajectoire” elicitation material is to facilitate the investigation of the expression of Path of motion in typologically varied languages. We hope that this material will help you to collect interesting data and examine how the language(s) you work on express Path of motion, and Motion events in general. In return, we would be very interested to know if the material proved useful, how easy or difficult it was to use it in your field site, how it was received by the speakers of the language(s) you work with. For this reason, we would be grateful if you could fill in the following questionnaire and send it back to us as feedback.

1. First name / Last name of the researcher / email address
2. Name and family of the language studied
3. Number and (approximate) age of consultants with whom the elicitation material was used
4. Did the elicitation material help to collect Path data? If not, could you explain why?
5. Did you collect other interesting data not related to the expression of Path? If yes, what kind?
6. Did you feel comfortable using this elicitation material in your field?
7. Did the consultants feel comfortable using this material?
8. How did the consultants react on seeing it and using it (e.g. they encountered some difficulties such as they did not recognize characters or did not understand specific video-clips; they enjoyed describing the video-clips, etc.)?
9. Have you ever used another elicitation material(s) in your field? If yes, could you briefly describe what kind of materials (please give a reference if you can)? How the use of the “Trajectoire” material compare to the use of other elicitation tools (e.g. was it easier more difficult)?
10. Do you have any suggestion how this elicitation material could be improved based on the experience you had with it in your field?

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