

Linguistic fieldwork as team science

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Linguistic fieldwork is increasingly moving forward from the traditional model of lone fieldworker with a notebook to collaborative projects with key roles for native speakers and other experts and involving the use of different kinds of stimulus-based elicitation methods as well as extensive video documentation. Several cohorts of colleagues and students have been influenced by this inclusive and interdisciplinary view of linguistic fieldwork. We describe the challenges and benefits of doing multi-methods collaborative fieldwork. As linguistics inevitably moves into the direction of multiple methods, interdisciplinarity and team science, now is the time to reflect critically on how best to contribute to a cumulative science of language.

Keywords: multiple methods, collaborative fieldwork, interdisciplinarity, Avatime, Siwu

1. Introduction

Over the last few decades linguistic fieldwork has increasingly moved away from a traditional, ethnography-inspired model of an outsider armed with a notebook towards more diverse, inclusive, and collaborative modes of learning about languages. Felix Ameka has been at the forefront of this development in several ways (Ameka 1992a; Ameka, Dench & Evans 2006; Ameka 2018; Ameka & Terkourafi 2019), inspiring and influencing multiple cohorts of colleagues and students along the way.¹ Here we describe some of the lessons learned, and review some of the challenges and benefits of linguistic fieldwork.

1. The authors have all had the privilege of being taught and supervised by Felix Ameka through various stages of their career, starting at Leiden University and continuing at the Max Planck Institute of Psycholinguistics. Felix, *akpe na wò* for your provocative brilliance and broad-ranging vision.

Fieldwork is one of the most consequential areas for the working linguist: it is where social relations are forged, where theory meets practice, and where linguistics is held accountable to language in all its aspects. Fieldwork practices stand in a mutually dependent relationship to conceptions of language, and so changes in either may cause ripples far and wide. As noted field linguist Madeleine Mathiot remarked, “the ‘instruments’ utilized by the analyst have theoretical significance” (Mathiot 1983: 54). Our goal is to explore some of the theoretical, methodological and interpersonal aspects of linguistic fieldwork.

Linguistic fieldwork is “the collection of primary data outside of the controlled environments of the laboratory or library” (Majid 2012: 54; and see Enfield 2013a). It does not necessarily imply distant travel; Labov’s work on English in New York department stores is as much fieldwork as Sapir’s work on Takelma in Oregon. Here we focus on multi-methods collaborative fieldwork. By multi-methods fieldwork we mean any combination of stimulus-based elicitation, experimental tasks, and audio/video corpus collection in the field. By collaborative fieldwork we mean working together with a range of people that bring expertise of various kinds, from close linguistic knowledge to disciplinary specialisations.

Perhaps *team science* offers a useful and adequate frame of reference for understanding the transdisciplinary, collaborative nature of multi-methods collaborative fieldwork. Team science involves bringing together researchers from different backgrounds to address complex puzzles that touch on multiple disciplines (Ledford 2015). Linguistic fieldwork offers just such a problem, perhaps especially when it focuses on languages that are underdescribed or endangered, or on areas or topics that straddle multiple disciplines. Team science also usefully foregrounds the importance of teamwork, generosity, and attribution – features we recognize in Felix Ameka’s work and that we think are crucial for working together in the language sciences today.

2. Why team science fieldwork?

Multi-methods collaborative approaches play a particularly important role in extending the diversity of languages studied across a broader range of topics. Much of what we know about human language and cognition is based on data obtained from speakers of only a few widely-spoken languages of western, industrialized and literate societies (cf. Henrich, Heine & Norenzayan 2010; Majid & Levinson 2010). Given that most of the world’s languages are spoken by smaller groups of people in rural settings without a traditional literate culture, this sample is too small and non-representative to serve as a basis for generalizations on language and human cognition more generally (Levinson 2012; Speed, Wnuk &

Majid 2018). The inclusion of more diverse languages and people in all types of linguistic inquiry is crucial to increase the general validity of linguistic work and get a better picture of the true diversity of all aspects of language and language use. Serious engagement with this diversity often involves the use of multiple methods and collaboration across different groups. Such team science fieldwork has the potential to hugely benefit our understanding of language and cognition.

One field of research within which the importance of interdisciplinary and collaborative fieldwork has been recognized from the start is language documentation (Himmelman 2006). Thanks to this emerging discipline, the traditional picture of a single researcher going to the field with a notebook and, perhaps, an audiorecorder, interrogating native speakers, is slowly changing into one where researchers collaborate closely with the community and with other researchers to collect a diverse audio-video corpus of communicative events. From a language documentation point of view, the motivation for interdisciplinarity is driven by the need to document a language as broadly as possible. Collaborating with community members and with experts in e.g. anthropology, ethnobiology, ethnomusicology and oral history allows the researchers to identify more relevant communicative events and collect a more comprehensive vocabulary which in turn has the potential to lead to new insights in the grammar of the language (cf. e.g. Evans 2012).

Even though the importance of interdisciplinary work is often stressed, there has been little reflection on the challenges and benefits of this type of work beyond improving language description and documentation (Glenn 2009; Penfield 2018). As noted by Penfield (2018), interdisciplinary is often taken to mean including a researcher from a different discipline in order to collect more or better data in addition to the 'regular' language documentation work. Documentation projects are rarely interdisciplinary from the start, where researchers from multiple disciplines work together in formulating research questions of common interest.

Multi-methods collaborative approaches to fieldwork can yield benefits across all domains of inquiry. For instance, Hellwig and Jung's (2020) exploration of Qaqet child language acquisition led to the resolution of an outstanding question regarding adult Qaqet morphology since the distinguishing environment only occurred in child directed speech. However, these approaches are especially well suited to answer questions related to semantics and pragmatics, conversational practices, language acquisition and language processing, as well as broader questions related to the interplay between language, culture and cognition. These kinds of questions cannot be answered by the traditional field methods of elicitation combined with the analysis of texts. They require a wider range of methods, including the collection of larger corpora of spontaneous interaction, the

use of stimulus-based elicitation and psycholinguistic methods, as well as richer ways of annotating and analysing data, for example using insights from conversation analysis and gesture studies (Whalen & McDonough 2015; Ameka & Terkourafi 2019; Hellwig 2019; Dingemanse 2020). These kinds of investigations can lead to new insights in language evolution and language change, as typological constraints on language structure might be related to language processing, language acquisition, conversational principles, and more (Norcliffe, Harris & Jaeger 2015; Schmidtke-Bode et al. 2019; Bornkessel-Schlesewsky & Schlesewsky 2016). They can also generate new insights into the universals and diversity of human cognition more generally (Evans & Levinson 2009; Majid & Burenhult 2014). For example, the World Colour Survey, a large-scale comparative study of colour terms among non-literate and non-western communities, has provided important insight into human colour cognition (e.g. Bornstein 2007; Kay, Berlin & Merrifield 1991). There can also be more applied benefits for other disciplines. For instance, insights from the linguistic study of landscape vocabulary across cultures, can benefit the adaptation of Geographic Information Systems (GIS) to local contexts (Mark et al. 2011).

Our conception of team science includes both a multi-method approach as well as collaboration with other academics and with the language community. In principle, these two aspects are distinct: the use of multiple methods doesn't require collaboration, and many collaborations don't involve the use of multiple methods. Yet, it is the combination of the two that harbours the greatest potential. In order to address truly interdisciplinary questions, field workers often need to collaborate with experts in other domains (e.g. psychology, biology) who have detailed knowledge of the relevant field or research method. In this type of collaboration, the fieldworker is the "insider", who has to ensure that the methods to be used are appropriate in the local setting and that community interests and needs are preserved. The inclusion of such language experts is crucial given that "outsider" domain experts do not have the necessary knowledge of the local setting, even if they can get physical access to the community (Levinson 2012; Speed, Wnuk & Majid 2018). At the same time, field workers are often "outsiders" themselves (Ameka 2018) who rely on close collaboration with community members for their relevant knowledge of the language, local setting and interests. Furthermore, taking the perspectives of community members into account may itself lead to the development of novel research methods that can be more suitable for shedding light on interdisciplinary questions than the methods traditionally used in other disciplines. This can for instance be seen in the way the Australian Indigenous practice of yarning is becoming increasingly recognised as a method within Western academia across a range of disciplines (Shay 2021; Bessarab & Ng'andu 2010; Byrne et al. 2021).

All this means that the linguistic fieldworker must be a team player *par excellence*: being able to inhabit different social roles and tactfully deal with social asymmetries and ambiguities, accepting they will often be an outsider from some perspective while having insider knowledge from other perspectives. Multi-methods fieldwork, therefore, is a demanding task, and one that deserves proper reflection. But when done right, it can be rewarding in many ways and lead to rich insights.

3. Three case studies

Fieldwork as team science includes a wide range of approaches and projects, such as experimental phonology and psycholinguistic studies in the field (Whalen & McDonough 2015; Norcliffe, Harris, & Jaeger 2015; Speed, Wnuk & Majid 2018) language acquisition studies across communities (Eisenbeiss 2005; Norcliffe, Harris & Jaeger 2015), semantic typology (Evans 2010), conversation analytic studies in smaller communities (Williams, Stenzel & Fox 2020), language documentation projects involving experts in other disciplines (Evans 2012; Penfield 2018), studies of the multimodal aspects of language use (Ferrara & Hodge 2018), and more. In order to explore some of the challenges and benefits of fieldwork as team science more concretely, we present three case studies from our own work. We choose to focus on studies we have been involved with as often many of the details of how multiple methods or collaborations were developed or managed are not reported. Each case study focuses on one of three complementary aspects of multi-methods collaborative work. The first case study focuses on the benefits of using multiple methods to shed light on a single phenomenon in a single language (Section 3.1). The second case study focuses on collaboration between researchers working across languages and disciplines for systematic data collection and analysis (Section 3.2). The third case study focuses on collaboration with the community, in particular the visibility of the contributions of language consultants, which often remain implicit (Section 3.3). All case studies show the importance of using methods that go beyond traditional pen-and-paper elicitation, such as the use of stimulus materials, recordings of conversations and video recordings of paraphrases. Together they illustrate how team science can be helpful to both the documentation of individual languages as well as to answering broader theoretical questions.

3.1 Serial verb constructions and single events: Interdisciplinary multi-methods investigation

The first case study exemplifies the benefits of using multiple methods to elucidate a grammatical phenomenon. It shows how psycholinguistic theory and methods can be used to inform claims about grammatical structure as well as the importance of looking beyond single, isolated sentences. It also exemplifies the challenge of developing psycholinguistic methods that can be applied across communities.

The research question driving this project was whether serial verb constructions (SVCs) refer to single conceptual events. Serial verb constructions (SVCs) are syntactic constructions with two or more verbs in a single clause with no coordination or subordination (Christaller 1875; Aikhenvald 2006). They have often been claimed to refer to single conceptual events (Durie 1997; Aikhenvald 2006; Bisang 2009). However, empirical investigation of this claim was proving intractable using traditional methods (Senft 2008; Foley 2010; Pawley 2011). Defina (2016b) used an interdisciplinary multi-methods approach to provide new evidence of the relationship between SVCs and single events in the Ghana-Togo Mountain language Avatime.

Next to traditional descriptive linguistic methods, which were used to get an understanding of the form and functions of SVCs in Avatime (see Example (1) below), three different methods were used. Each of these was carefully tailored to suit the specific language and cultural requirements of Avatime through modifications of method and development of language specific stimuli. The first of these was an implicit measure of event segmentation known as dwell time (Hard, Recchia & Tversky 2011). The dwell time method converts a video stimulus to a slide show of images and asks participants to click a button to progress through the slide show. The participant is asked to click through the images in order to understand what is happening and the time between when an image is shown and when they press the button to trigger the next image is recorded. It is similar to the commonly used self-paced reading procedure (Just, Carpenter & Woolley 1982). Just as longer times in self-paced reading coincide with syntactic boundaries, longer times here are indicative of event boundaries. Using this method, Defina (2016b) was able to show that Avatime speakers who had been using SVCs segmented events more coarsely, i.e. tended to group more actions together as single events, than participants who had been using coordinated clauses.

The second method used was a recognition memory task using a set of video stimuli created specifically to suit Avatime SVCs. The goal for this study was to investigate whether Avatime speakers remembered actions which they described using SVCs as a single events (Defina & Majid 2012; submitted). It was based

on the observation that Avatime speakers describe most placement actions using SVCs that combine the verbs ‘take’ and ‘put’, as in Example (1), whereas a small class of placement actions referring to putting on clothes or accessories or pouring liquids are described with simple clauses.

- (1) *a-kò kòranti=ε kpε ní kàsɔ=ya mè*
 3SG.PFV-take banana=DEF put LOC basket=DEF inside
 ‘S/he put the banana into the basket
 (literally: she took the banana put into the basket).’

This leads to the hypothesis that Avatime speakers encode placement events for which they use SVCs as ‘take and put’ events, which will cause them to falsely remember having seen the taking event when they have only seen the placement event. The results were in line with this prediction. However, to test whether this memory difference was linked to SVC use rather than inherent differences in the events, the experiment was also conducted with Dutch and English speakers who showed the same difference in memory as the Avatime speakers even though they don’t distinguish the events linguistically. This suggests that although the stimuli items were constructed to suit the specifics of Avatime SVC usage, the differences in how people remember these events are actually more general. This raises broader questions which likely would not have been asked without looking at event cognition beyond languages such as Dutch and English.

The third method used in this project was the analysis of co-speech gestures, in order to gain insight into event structure during conceptual planning. Defina recorded a set of narratives and procedural descriptions and investigated how the speakers in these recordings used co-speech gestures with SVCs (Defina 2016a). The analysis showed Avatime speakers produced at most one gesture during an SVC and this was often timed to extend over all verbs in the construction. In contrast, multiple gestures were often used with different verbs within other coordinate or subordinate constructions. This suggested that Avatime speakers are indeed conceptualising the events described by SVCs as a single unit in contrast to other multi-verb constructions.

This project brought together multiple methods – linguistic description, gesture analysis, recognition memory testing, and dwell time measurement – in order to investigate the relationship between SVCs and conceptual event units in Avatime. The novel applications of these methods, but more importantly the combination of a variety of methods, enabled a more nuanced and detailed response to the question of whether Avatime SVCs describe single conceptual events.

Applying psycholinguistic tasks in the field also comes with its challenges. One of these is making sure the task is appropriate for the local population. Within this project, the initial plan was to investigate event units using an explicit

segmentation task where participants watch a video recording and press a button to indicate where one event ends and the next begins (Newtson 1973). This task has been run extensively with English speaking undergraduate students. However, it proved to be unsuitable for Avatime participants during piloting of the method. All participants reported that they did not feel comfortable in their understanding of the purpose of the task or what they were being asked to do and no participant wished to continue with the task beyond the initial trial. There are several potential explanations for this. This task is likely easier for people who have followed certain styles of schooling or socialization where the breaking down and analysing of things into components is encouraged and practiced. Literacy skills may also be helpful. Difficulties in understanding the task may also be linked to differences in language, for instance Avatime has no simple translation equivalent for 'event', so various alternatives such as 'what the person is doing' were trialled instead. Whatever the motivations underlying this difference, the result was that the traditional explicit event segmentation task was not suitable for this group of participants, hence the use of the more implicit dwell time task described above.

Another challenge may be recruiting enough participants, especially when researcher time in the field is limited and the community is small. In this project, the recognition memory and dwell time studies together required 250 Avatime-speaking participants, a sizeable proportion of the local population. However, recruiting participants proved to be relatively easy, thanks to the extensive support of the Avatime community. Defina approached five of the eight Junior High Schools in the Avatime region to ask if it would be possible to conduct the experiments with their students. Four of these enthusiastically agreed, with almost the entire student cohort at each school choosing to participate. Students and teachers at participating schools reflected that having a foreigner show interest in learning and studying the local language gave them confidence and pride.

Several forms of collaboration were vital throughout the design and execution of these studies. Majid and Defina combined the former's expertise in psychological experimentation with the latter's knowledge of the language and cultural setting to design the experiments. The experimental stimuli were all specially developed to be culturally, linguistically, and experimentally appropriate for the specific context. The experiments were then trialled with community members. Their comments were considered, and the experiments adjusted or redesigned accordingly. The gesture study also offered an opportunity to incorporate some of the community's goals. The scientific goals of the study were flexible in that they did not place specific requirements on the types of narratives or procedural descriptions used. The community had, however, expressed concerns about potential loss of cultural knowledge and was keen to work together to document it. This was then an opportunity to record a set of traditional narratives and

descriptions of cultural practices which could also be analysed to investigate gesture alignment patterns. Finally, the collaboration with the community members as participants and assistants in the execution of the project and especially the collaboration with the Junior High Schools described above was invaluable for the success of this project.

3.2 The language of perception: Interdisciplinary cross-linguistic studies

The second case study highlights the use of large-scale systematic data collection to answer typological questions related to the meaning and use of linguistic forms. This kind of work requires close collaboration between multiple researchers to ensure that, e.g., suitable stimuli are designed, corpora are comparable and common annotation and coding principles are followed. Two such interdisciplinary cross-linguistic projects are described in this section, the first focusing on the use of stimulus-based elicitation and the second on the use of conversational data. Both projects combine expertise in various fields, including psychology, anthropology, linguistics and conversation analysis. They both address questions related to diversity and universality in the conceptualisation of sensory perception.

The first project compared the vocabularies for different sensory modalities across languages. Sensory stimuli were obtained or created for the five traditional senses, e.g. a booklet with materials of different textures that participants explore while blindfolded, a collection of sounds that differ in pitch and amplitude and a booklet with colour chips sampling from the entire colour spectrum (Majid and Levinson 2007; Majid et al. 2018). These stimuli were presented to speakers of 20 different languages, in many cases lesser studied languages spoken in small communities. Descriptions of the stimuli were recorded and transcribed. The main research question was whether there is a single hierarchy of the senses across languages in terms of how accessible they are to linguistic description, such that experiences in some senses are easier to express in words than others. Results showed much variation between languages and no single universal hierarchy (Majid et al. 2018).

The second project focused on the use of perception verbs in conversation across languages. Researchers working on 13 languages collected and transcribed a corpus of six 10-minute fragments of everyday conversation. Within these corpora, all utterances containing basic perception verbs were further annotated for several categories, such as the basic verb meaning, the verb meaning in context and the sensory modality referred to. Results showed that verbs referring to vision were most frequent in all languages, but that there was no universal rank ordering of the other perceptual modalities (San Roque et al. 2015). A follow-up paper

focused in more depth on the semantic extensions and conversational functions of the perception verbs encountered in the corpus (San Roque et al. 2018).

Both projects involved methods of data collection that go beyond traditional linguistic elicitation techniques in order to answer interdisciplinary questions. Stimulus materials make it possible to investigate how languages carve up semantic domains into words, while at the same time ensuring comparability across languages. Conversational data provides important information on how language is used in its most natural habitat, social interaction, something that tends to be missing from more commonly collected genres such as narratives. While the topics of informal conversation may not be as controlled as the topics of comparative narrative collections, conversational corpora offer a promising baseline for comparative research into structures and patterns of language in interaction (Floyd 2021).

The data collection methods used in both projects were not only valuable to answer novel comparative research questions, but also for the more general purpose of language description and documentation. The use of sensory stimuli made it possible to describe and document sensory language that might not easily show up in other data types. The findings from the stimulus elicitation tasks provided starting points for further investigation into the domain of sensory perception in many of the languages involved (Majid & Levinson 2011). The collection and transcription of a corpus of everyday conversation was a valuable addition to the ongoing documentation of several of the languages involved, for which such corpora were not yet available. Conversation also provides a rich data source for the analysis of virtually any aspect of language structure in relation to communicative pressures and social structures (Enfield 2013b).

The methods used for these projects strike a balance between researcher and community interests. Stimulus description tasks provide some control to the researcher while at the same time being interesting to the community, while more controlled and abstract psycholinguistic experiments may be hard to understand or even stressful, and may feel unimportant to a community that is faced with the endangerment of their language (Hellwig 2019). Describing stimulus materials is often enjoyable to the participants and they can relate to the idea that the task will provide the researcher with new words or phrases to document. This was certainly the case for some of the sensory stimulus materials. For instance, many Avatime participants enjoyed describing textures, for which they had a variety of ideophones at their disposal. However, this advantage only holds true when the stimulus materials are relevant to the language and culture, which cannot always be the case for standardized stimulus materials developed for comparative purposes. For example, many languages have only a limited number of colour terms which do not exhaustively divide up the colour space (Levinson 2000). In such a

language, participants have to come up with idiosyncratic descriptions for many, if not most of the colours. In Avatime, for instance, speakers were often frustrated having to describe 80 colour chips for most of which they did not have a colour term. In these cases, stimulus description tasks may actually be less engaging and interesting to community members than psycholinguistic experiments that are well adapted to the community, such as those described in Section 3.1.

Similarly, the collection of a corpus of video-recorded conversations can be seen as more or less valuable by the community. Recording various genres of texts is generally in line with community wishes to preserve their language and culture, as was also pointed out in relation to narratives in Section 3.1. However, the recording of everyday conversation may not align with community ideas of what needs to be documented. For instance, when listening back to the Avatime conversations with native speaker consultants, it was not uncommon for them to be embarrassed by what they viewed as unimportant gossip and they would regularly try to correct 'wrong' language use (see also Ameka 2015). One way to make the collection of such data more valuable from a community perspective is by embedding it in the recording of local practices or festive events, which is what several researchers participating in this project have done (Enfield 2013a).

A key aspect of field work as team science that is illustrated by this case study is collaboration between multiple researchers. The type of data collection used in these projects needs to be done by researchers with knowledge of the language and cultural setting. For the stimulus description tasks, cultural and linguistic knowledge are necessary in order to know how to present and explain the tasks to the participants as well as how to interpret the responses. Video recordings of everyday conversation can only be made by researchers who are known and trusted by the community. Transcribing such conversational data in detail will usually need native speaker input as well as a good knowledge of the language by the researcher. This means that multiple researchers need to be involved in order to collect data for multiple languages, which in turn means that close collaboration is required to ensure methods of data collection and annotation are similar.

All in all, the two projects on the language of perception are clear examples of field linguistics as team science, involving collaboration at several levels and using methods that go beyond the traditional repertoire of descriptive linguistics. They have benefited both the description and documentation of individual languages as well as contributed to answering wider questions that transcend the boundaries of linguistics, anthropology, sociology and cognitive science.

3.3 Folk definitions in semantic fieldwork

Capturing meaning is fraught with many difficulties, and the challenges are compounded in linguistic fieldwork that involves multiple languages at any point in the process. While stimulus-based methods, such as those discussed in Section 3.2, offer some respite by providing an etic grid that helps comparing like with like, capturing the subtle semantic nuances that permeate everyday language use requires a deep contextualised understanding and greatly benefits from native speaker sensibilities (Owusu 1978). Linguists realise this when they rely on their native intuitions (Ameka 1990) or work together closely with native linguists and consultants to elicit explanations and judgements (Samarin 1974; Bowerman 2007). This makes semantic fieldwork a natural area for fieldworkers to team up with local community members.

Field linguists approach the challenges of representing and translating meaning in several ways, but one step that features in almost any approach involves paraphrase. Paraphrase is sometimes an end-goal, as in the carefully crafted explications of Natural Semantic Metalanguage, a systematic approach that aims to describe meanings in terms of a small set of about 60 semantic primes (Ameka 1992b; Goddard & Wierzbicka 2002). But usually, paraphrase plays a much more ephemeral role, as a quick way to gauge native speaker intuitions on the way to the analyst's more technical grammatical or lexicographic descriptions of linguistic items (Samarin 1967b; Sakel & Everett 2012). Many language descriptions provide rich (if partial) views of the nuances of semantics and pragmatics without showing the joint work of consultants and linguists that went into producing these analyses. Paradoxically, then, here we have a tool used by every field linguist but recorded for posterity by practically none.

And yet, as Ameka has noted, “unless the records of the languages being documented are the product of collaboration between trained native speaker and non-native speaker (anthropological) linguists, they will not be real, or optimal descriptions representing the realities of the languages” (Ameka 2006:70). Folk definitions are a way of making visible that collaboration. They also represent some of the primary data that informs analyses of the meaning, use, and cultural context of linguistic items and systems, and as such should be recorded and analysed.

For a long-term research project on ideophones, Dingemanse collected folk definitions in Siwu, a Ghana-Togo Mountain language spoken in Eastern Ghana (Dingemanse 2015). Four Siwu speakers (and some onlookers) provided informal paraphrases of a representative selection of 60 ideophones. Ideophones are marked words depictive of sensory imagery, found as an open lexical class in many of the world's languages (Ameka 2001). They are known for their rich sensory

meanings that can be hard to pin down, and so are a useful target for an approach that involves native speaker paraphrase.

Folk definitions can be defined as “native, informal, multi-modal explanations of linguistic items” (Dingemans 2015: 217). They are NATIVE, produced in the consultants’ own words rather than in a metalanguage; INFORMAL, produced in an informal interactive setting in which speakers feel at home; and MULTIMODAL, produced as composite utterances that combine multiple semiotic resources. These features make them a useful instrument in the toolbox of field linguistics. They provide rich contextualized information that is easily lost in translation; bring out tacit knowledge of language use that is difficult to get at in other ways; and combine verbal and visual resources that can give us unprecedented access to lexical structure and imagistic semantics.

Consider the following example. Foster Kallai, language consultant and native speaker of Siwu, provides a paraphrase of the word *petepete*, an ideophone in the domain of haptic touch. The paraphrase consists of a series of gesture-speech composite utterances (Enfield 2009), approximated here as an interlinearized transcript with gestures marked *Gn*.

Folk definition of *petepete* ‘thin-fragile’ by Foster Kallai (from Dingemans 2015: 220).

- (1) *fira né ñ-se petepete-petepetepete*
 thing REL SCR-be IDPH.thin.fragile-EM
 † G1 †

‘Something that is *petepete-petepetepete* [thin-fragile].’

- (2) *ì-i-gbògbòrò*
 IT-NEG-IDPH.tough
 † G2 †
 ‘It is not *gbògbòrò* [tough].’

- (3) *ì-i-tòtòrò*
 IT-NEG-IDPH.thick
 † G3 †
 ‘It is not *tòtòrò* [thick].’

- | | |
|-----|--|
| G1: | both hands symmetric, gently pinching an imaginary thin object between thumb and forefinger |
| G2: | both hands symmetric, clenching fists at chest-level and flexing arm muscles |
| G3: | right hand index finger being pinched with thumb and forefinger of the left hand as if measuring thickness |
| G4: | left hand palm up, right hand palm down, lightly tapping at the fingertips of the extended index fingers |

- (4) *ì-se †petepete-petepetepete †*
 IT-BE IDPH.thin.fragile-EM
 † G4 †

‘It is thin and fragile.’

‘Something that’s *petepetepetepetepete* [thin-fragile]. It’s not *gbògbòrò* [tough]; it’s not *tòtòrò* [thick]; it is †*petepetepetepetepete* † [thin-fragile].’

A few things stand out about this succinct folk definition. First, it characterizes the target by juxtaposing it to other words of the same lexical class of ideophones: something that is *petepete* ‘thin and fragile’ is not *gbògbòrò* ‘tough’ nor *tòtòrò* ‘thick’. These words function as semantic anchoring points and help us see meanings not as singular points to be defined, but as places in a larger multidimensional network of meanings: a view of lexical structure that is congenial to both Wittgensteinian meaning-as-use perspectives and modern psycholinguistic insights (Casagrande & Hale 1967; Mathiot 1979). Second, the pithy verbal formulation is complemented by rich depictive gestures that efficiently help visualize the key semantic dimensions: clenched fists and muscle flexing depicting strength and a measuring gesture depicting thickness, flanked by two manual demonstrations of gentle pinching and tapping to evoke the thin fragility of the target word *petepete*. Such depictive gestures of course play a key role in everyday language use (Enfield 2009; Ferrara & Hodge 2018). In folk definitions, they can provide unprecedented insight into sensory and imagistic aspects of semantics.

Of course not all folk definitions are as succinct as this one, and many offer a broader array of strategies, including common expressions and contexts of use (Samarin 1967a; Werner 1993). Indeed, one of the major strengths of folk definitions, when systematically collected and recorded with the help of multiple native speakers, is that they can help shore up semantic analyses while also making variation visible. There may be variation in speakers’ approaches to paraphrase: where one speaker may prefer to draw on semantically contrasting words to narrow down to a target meaning, others may describe typical uses or enact dialogues featuring the word in context. Or there may be variation in people’s conception of word meanings, which only consultation of multiple people can bring out. For this reason, too, it is good to work with multiple speakers, as relying only on a single consultant can easily lull one into a false sense of certainty about complex matters (Owusu 1978).

In reflecting on the process of providing folk definitions, several Siwu consultants provided insightful comments. For them, the task was about “illuminating things so that people will see and learn”; and the paraphrases provided a way to “see things in terms of other things” (Dingemanse 2015: 232–33). The Siwu speakers involved in the project – Foster Kallai, Ruben Owiafe, Ella Owiafe, and Beatrice Adoboe – took pride in their paraphrases and were happy to be identified by name, expressing the hope their work would travel far and wide to help others “see and learn” about Siwu. This process of seeing and learning never stops for the field linguist, or indeed for anyone interested in linguistic diversity. Folk definitions, then, can help us pull back the curtain and make visible a plurality of perspectives that can do more justice to linguistic structure than the disembodied voice of the omniscient analyst. They present an opportunity to answer Ameka’s call for *real descrip-*

tions (Ameka 2006), by showing how subtle and sensitive descriptions of meaning and use can be produced interactively and collaboratively.

4. Looking forward

The case studies above provide three perspectives on aspects of team science in linguistic fieldwork. The studies discussed in Section 3.1 feature the use of multiple methods in order to yield a more thorough understanding of serial verb constructions in one language, Avatime. The language of perception studies of Section 3.2 feature teams of disciplinary and language specialists working together to comparatively investigate perception across a number of languages. Finally, the folk definitions method described in Section 3.3 offers a way of more accountably incorporating collaboration between community members and researchers, which can be applied broadly across studies of meaning.

Linguistic fieldwork is grounded on an appreciation of the diversity between and within languages. It is this linguistic diversity that motivates the quest to better understand the possibilities of human language and their implications on other domains of life. However, the same linguistic diversity poses challenges for many research endeavours. Many research methods are intertwined with language, and materials developed for research with one language are rarely immediately usable with another language. The three case studies review multiple ways in which such challenges may be addressed. In-depth studies of a particular language (as in the serial verb constructions of Avatime) allow language-specific tailoring of stimulus items. In such cases, the proper level of generalization to achieve comparability is the conceptual structure of the domain itself, in this case event structure. Large-scale comparative studies like the language of perception project require systematic sampling to afford maximal comparability, necessarily sacrificing some language-specific detail. Such methods require exquisite attention to the local setting, and may reveal that some procedures are unsuitable for use with diverse communities. Semantic fieldwork using folk definitions inevitably yields language-specific material, but the contextual and multimodal richness of the data provides insights into multimodal language use in general, and the method is ready to be applied in a wide range of field settings.

The importance of data beyond isolated elicited sentences is one of the fundamental starting points of fieldwork as team science. Language documentation traditionally includes audio and video recordings of various genres such as narratives and (descriptions of) cultural practices. Narratives are often valuable from a community point of view, as they are recognized for their aesthetic value and practices of storytelling may be disappearing. For researchers, they provide a

great data source for the study of many linguistic phenomena in a natural context including multi-modal behaviour, as was shown in the case study on serial verb constructions in Section 3.1. Video recordings of natural speech including gestures were also crucial to the study of folk definitions discussed in Section 3.3. Everyday conversation is not yet a standard part of the repertoire of documented genres, potentially because it is difficult to transcribe and potentially because it is not seen as valuable to the community. However, it is a crucial data source for the study of any phenomenon in a more interactional context and can provide useful baseline for comparative research into language use across communities, as in the study on perception verbs in interaction discussed in Section 3.2.

In many cases, research questions do not yield to a single method of investigation. For instance in the serial verb construction studies, the use of multiple methods yielded a clearer understanding than what had been possible with a single method. This is one of the advantages of a team science approach. Researchers can eclectically combine methodological and theoretical insights from a broad range of approaches to better investigate and interpret the behaviour in question. However, the combination of approaches can and often does lead to diverging requirements and assumptions. This is an issue Hellwig (2019:13) describes well where she discusses the need to “reconcile two very different research fields” (language documentation and psycholinguistics, in her case) while “guarding against compromising the standards” of both. This reconciliation without compromise calls for intensive collaborative effort between discipline and language specialists throughout the research process.

Collaboration between the researcher and the community is a vital component to all linguistic fieldwork (Kutsch Lojenga 1996; Ameka 2006; Yamada 2007). The degree and type of this collaboration can vary greatly. A deep consideration of the nature of this collaboration, the interests and roles of the researchers and community members and how each can be best accommodated and acknowledged throughout the course of the project, is a key element of team science linguistic fieldwork. In some cases, community members share a deep interest in the researchers’ scientific goals. Such cases are sometimes discussed under terms such as ‘community-based research’ or the ‘empowerment model’ (e.g. Yamada 2007; Rice 2011). These situations are prime examples for where the separation between researcher and community member breaks down and the collaboration becomes one between ‘outsider’ and ‘insider’ researchers. In some cases, the collaboration is reflected in coauthorship (e.g. Minutjukur et al. 2019; Brown et al. 2018; Wafer & Turpin 2017; Koni-Muluwa & Bostoen 2010) or may turn into a long-term academic collaboration (e.g. Schaefer & Egbokhare 1993, 2008).

It is equally possible, however, that the community does not take a primary interest in the researchers’ scientific goals (e.g. Arka 2018). In such cases, it is just

as important to consider the interests of the community members. Recognition, compensation, or contributions towards community needs can come in many forms. Above we discussed how flexibility in data collection can make it possible to meet research goals as well as community needs, for instance by recording narratives of local interest (Defina 2016a). Sometimes community-led enterprises can also lead to serendipitous research findings. For instance, Dingemans was recruited by local community leaders to help record a collection of traditional funeral dirges (Agawu 1988) in Siwu and in the process discovered that they harboured many examples of ideophones. Finally, sometimes the primary motivation is a simple trade of money for goods. The researcher wants the help of native speakers to address a research question, and the community members are happy to assist in exchange for money, a mode of working that is perhaps closest to the researcher-participant relationship in most lab-based western research.

Whatever the nature of the collaboration between researchers and community members, it is important that community members are given appropriate attribution and acknowledgement for the role they played. The folk definition methodology discussed in Section 3.3 brings to the forefront the role of native speaker consultants in what is a common fieldwork practice and provides greater acknowledgement and representation of their voices and contributions as expert consultants. In these and many other situations, there is often a tension between giving proper attribution versus the standard practices of anonymisation of research participants. Researchers and consultants should decide whether the contribution (definitions, narratives, responses to questions, etc.) should be treated as the language consultants' own work and knowledge and acknowledged accordingly; or whether the contributions are better seen as data points collected from people participating in a study which should then be anonymised to protect their rights (Seyfeddinipur et al. 2019). Importantly, discourse about rights, privacy and intellectual property is itself culturally relative, and requires careful negotiation of cultural differences (Ameka & Terkourafi 2019).

In general, we can summarise the key features of team science linguistic fieldwork in the following three points:

1. *Taking linguistic diversity seriously.* A key goal of linguistic fieldwork is to document linguistic diversity. Such diversity, when well described and probed in systematic ways, can make us aware of empirical gaps and theoretical blind spots (Ameka 2001).
2. *Being eclectic in methods and theory.* Linguistic inquiry is not a closed-off enterprise with predefined, immutable goals; instead, it requires being open to a variety of methods and theories (Ameka & Terkourafi 2019).

3. *Working well together.* The sheer complexity of language in the context of culture, cognition and communication puts a premium on teamwork between native and non-native speakers, and between experts from across disciplines (Ameka, Dench & Evans 2006).

Together, these recommendations capture the spirit of linguistic fieldwork as team science.

5. Conclusion

A century ago, Malinowski's immersive approach to fieldwork set new standards for the fields of anthropology and linguistics (Malinowski 1922). Yet it also formed a mould for the twentieth century model of a lone fieldworker producing the definitive monograph on the basis of sometimes underspecified and uncredited sources (Owusu 1978). Since then, the language sciences have developed into a sprawling multidisciplinary field and the true extent of linguistic diversity is more widely appreciated, spurred on perhaps by the inevitable realities of language endangerment and encroaching globalization. Fieldwork is no longer the province of soloists. Here we have argued that the most productive examples of fieldwork involve close collaboration at every level.




We started out by observing how Felix Ameka has in many ways been a trailblazer for the resolutely multi-methods collaborative mode of fieldwork many of us have gravitated towards. It is probably no coincidence that many of the areas tackled in his work – from interjections and interactional routines to ethnopragmatics and the grammar-culture nexus – seem uniquely suited to the multi-methods collaborative approach. These topics are challenging and often appear to lie at the fringe of linguistic inquiry. But if they seem marginal, that is merely because traditional methods render them hardly visible, and addressing them head-on requires that elusive combination of native speaker sensibilities, deft scholarship, and a broad interdisciplinary outlook. Felix Ameka is the rare scholar who has combined all these qualities in one since the very start of his career (Ameka 1990). Fortunately, he has also shown by example how people with differing expertise and specializations can come together from across the language sciences to work towards the goal of rich, compelling, real descriptions of language in its social and cultural context.

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