

3: What does participatory research contribute to linguistics? A view from Africa

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Abstract: This article identifies methodological contributions that participatory research makes to linguistics. Participatory linguistic research emerged in Africa from Kutsch Lojenga (1996). Roles in participatory research are termed here “formal researcher” and “community participant” which describe their invariant attributes. The formal researcher is an organiser and a facilitator, representing an evolution from a traditional linguistic fieldwork role. The community participants are ideally literate decision-makers, producing a telescoping effect on applications of the research. Participatory linguistic research produces accurate data, by avoiding outsiders’ transcription errors and through priming effects on phonemic analysis and collection of lexemes. It produces natural data, through goal-sharing and triangulation among the research participants, filtering against artificial and idiosyncratic language forms or judgments. Triangulation among the research participants may also mitigate against groupthink and entrenched confirmation bias. Participatory linguistic research has innovated the use of group consensus acceptability judgments, and calls for renewed attention to the *etic/emic* distinction.

Keywords: participatory linguistic research, research roles, group research, discovery, telescoping effect, priming effect, triangulation, acceptability judgments, *etic*, *emic*

1 Introduction: The emergence of participatory linguistic research¹

Participatory research has emerged in linguistics in the context of pioneer studies of underdescribed and underdeveloped languages, beginning with Kutsch Lojenga (1996) on the Ngití [niy]² language of the Democratic Republic of Congo. Members of a language community can participate in research on their language by contributing from their *emic*³ standpoint on the language, and by contributing immediate decisions about how to represent and document the findings. This is impacting linguistics both in its methods and in its results.

Participatory research has arisen before in other community-oriented fields, such as social justice (Burns et al 2021), education (Freire 1970/2000), public health (Macaulay 2017), international development (Chambers 1994), natural resource management (Barreteau et al 2014), and sociolinguistics (Truong & Garcez 2012). The expression “participatory research” has emerged as an umbrella term for research in which research professionals include community stakeholders as co-researchers. Participatory approaches from other fields are

¹ My thanks go to the many people I have learned from in the course of becoming a participatory linguist: my colleagues in SIL International, Connie Kutsch Lojenga, Tim Stirtz, and Oliver Kröger as pioneers in participatory linguistic research; community participants I have worked with for various languages in Nigeria and Sudan; my MA students who have learned to do participatory linguistic research with me; audiences at my presentations at the Jos Linguistics Circle; and the editors and anonymous reviewers of this article.

² All language names are followed by their three-letter ISO 639-3 identifier code given in square brackets, as used in the *Ethnologue* (Eberhard et al. 2023).

³ The *emic* standpoint is the standpoint of someone inside the community, as opposed to the *etic* standpoint of someone from outside the community. A generalisation of the phonetic/phonemic distinction, the *etic/emic* distinction has spread widely in anthropology and the social sciences (Mostowlansky & Rota 2020, Headland 1990/2018). See also §§3.1, 4 below.

sometimes applied to linguistics. The participatory action research (PAR) model is applied to linguistic fieldwork in the Mayangna [yan] language of Nicaragua by Benedicto et al (2007). Others explore participation in orthography development in languages of Southeast Asia from a development perspective (Casquite & Young 2017, Lew 2019).

The seminal work of Kutsch Lojenga (1996) on participatory research in linguistics, however, is not an extension of an existing research model from another field, but an original method of participatory linguistic research first used in an indigenous African language community in 1988. Kutsch Lojenga (personal communication) credits her primary school teaching background as the influence behind her research design, which uses linguistically structured social learning activities to achieve phonological analysis, enabling participants to apply their findings to the development of an adequate alphabet for their language. Participatory linguistic research in Africa since Kutsch Lojenga (1996) has been characterised by concern for descriptive accuracy, application to orthography choices, sharing findings in community booklets and dictionaries, replication across linguistically related languages, implementation across multiple countries, and exploring interfaces with computational tools (Kutsch Lojenga 1996, Chapter 9 this volume; Moe 2003; Kröger 2012, Chapter 21 this volume; Norton 2013, 2018a, 2021a; Stirtz 2015, Chapter 15 this volume; Kempton 2017; Rasmussen 2022, Chapter 13 this volume).

There is also an educational dimension in participatory linguistic research in Africa, as seen in the primary education influence on the research design of Kutsch Lojenga (1996), and also in Kröger (2012) and Barnwell (1986/2020) on training community members to discover grammatical properties of their languages. In Nigeria, the African country with the highest number of living languages (520: Eberhard et al. 2023), participatory linguistic research is taught by the present author to students from minority language communities in an MA Language Documentation and Description programme, including a practical session with members of a selected language community.⁴ The educational theme in participatory linguistic research recalls the more long-standing participatory research tradition based on the educational theory of Freire (1970/2000). In Freire's approach, a teacher and learners are co-creators of new knowledge, producing transformative learning in oppressed communities. In participatory linguistic research, similarly, a trained linguist and community members discover the properties of a language together; this co-creative activity is done on minority languages, too often negatively viewed as disposable markers of low status or poverty, but which can be re-framed as resources for education and development (Mufwene 2010).

A contextual factor in participatory linguistic research is the vitality of indigenous languages, as this is a prerequisite for languages to become resources for development. The vitality of indigenous languages remains stronger in Africa than elsewhere (Simons 2019), as "Africa shows how local economic and population structures filter the influence exerted by the outside world" (Mufwene 2012:69). A central motivation for participatory linguistic research in this context has been to meet community requests for consultant help in putting their oral languages into writing (Kutsch Lojenga 1996:1).⁵

Participatory linguistic research thus has a distinct history within the world of participatory research, one that is responsive to needs for linguistic research and development of previously unwritten languages. Participatory research has appeal in any field concerned with effecting beneficial change in human communities, and participatory research is appealing

⁴ Norton (2016, 2018b), Norton & Ngukas (2021).

⁵ An additional dynamic, shaped by urbanisation in African countries, is that endangered speech communities settled in urban centres are motivated to put their languages in writing and feed this development back to the more vigorous rural speech community for the language on its historic lands (Crozier, Hollman, & Harley 2018:94, Norton 2013:215).

in linguistics because languages are human, communal, complex, and developable. Participatory linguistic research goes beyond the idea that participatory methods are useful for sociolinguistic research “in conjunction with other more traditional linguistic research methods” (Truong & Garcez 2012:36), to the use of participatory research to investigate language structure itself. It builds on previous work in linguistics by offering a fresh approach to long-standing methodological concerns about the validity of elicited sentences,⁶ as well as broader concerns about the researcher-speaker relationship.⁷ Participatory linguistic research also builds on and revitalises the etic/emic distinction coined by Pike (1954:8), because the etic standpoint of a linguistics specialist and the emic standpoint of native speakers are both present in participatory research.

In this introduction, I have presented the emergence of participatory linguistic research in Africa. In the main part of the article, I identify ways in which participatory research contributes to linguistics. First, I describe the roles of people in participatory linguistic research, representing an evolution in the traditional roles of linguistic fieldworker and native speaker (§2). I find that doing linguistic research with literate decision-makers from a language community produces a telescoping effect on applications of the linguistic research that benefit the community in which the research is done (§2.5). Next, I describe methodological contributions of participatory research for language description itself (§3). I find that participatory research supports the accuracy of language data by the inclusion of the emic standpoint as well as the etic standpoint among the research participants (§3.1). I also find that participatory research supports the naturalness of language data by goal-sharing and triangulation among the participants (§3.2). In the conclusion (§4), I summarise the contributions of participatory research to linguistics set out in the article, and suggest future directions for linguistics derived from the innovations made by participatory linguistic research.

2 Roles in participatory linguistic research

This section describes the contribution of participatory research on the matter of roles in linguistic research. I propose “formal researcher” and “community participant” as accurate terminology for the roles of people involved in participatory research, based on their invariant attributes (§2.1). This is followed by further description of the responsibilities of the formal researcher as an organiser (§2.2) and a facilitator (§2.3), representing an evolution from the traditional role of a linguistic fieldworker. I also identify ideal traits of the community participants as literate decision-makers (§2.4), and I outline the telescoping effect on applications of the research that comes from doing research with literate decision-makers (§2.5).

2.1 Role terminology

Writers on linguistic fieldwork agree that there are two basic and complementary roles, which have been called “researcher” and “subject”,⁸ or “fieldworker” and “consultant”.⁹ However,

⁶ Lükpe (2010:90-97), Chelliah & De Reuse (2011:357-412), Wasow & Arnold (2005:1483).

⁷ Mithun (2001), Mc Laughlin & Sall (2001), Leonard & Haynes (2010).

⁸ Leonard & Haynes (2010:270). Leonard and Haynes also use “researcher” and “researched” (2010:268) or “researcher” and “community member” (2010:270) depending on the context.

⁹ Chelliah & De Reuse (2011:161). See also Chelliah & De Reuse (2011:165-167) for a more detailed range of sub-roles that native speakers and fieldworkers might perform.

ever since Nida (1981:169) advocated the proto-participatory position of recognising native speakers as “colleagues”, there has been interest in reducing the rigidity of the role distinction.

The terms adopted here are “formal researcher” and “community participant”. These terms are chosen because they highlight the invariant attributes of the two roles in participatory research. The qualifier “formal” distinguishes a researcher who has a formal research training, framework, affiliation, and peer accountability from an institution and a wider community of practice. The other participants from the community can, and ideally will, be co-researchers, but they do not characteristically have formal research credentials or responsibilities. The invariant attribute of the participants who are not formal researchers is that they belong to the community who use the language being researched, hence “(language) community participant”. The roles of community participants can be further elaborated as “subject” or “co-researcher” when needed. When referring to the formal researcher(s) and community participants collectively, we will call them “the research participants”.

2.2 The formal researcher as organiser of group research

This is not the place to present one particular method of participatory research (for which see the rest of this volume), but rather to make a general point about how the role of the formal researcher changes in participatory linguistic research, representing an evolution from the role traditionally adopted by someone doing linguistic fieldwork.

The formal researcher no longer works alone to pose questions to a native speaker and sort the answers into an analysis of the language, but becomes an organiser of group research activities, with the community participants as co-researchers. The formal researcher may guide the community participants on research tasks to collect, write, sort, label, or enter language data to produce findings. Correspondingly, the role of community participants also changes, not only responding to requests for language data, but also conducting research tasks with the guidance of the formal researcher, and making collective judgments and decisions on the data. As co-researchers, they also observe the answers that emerge from the research, together with the formal researcher.

These characteristics of participatory linguistic research are no doubt prefigured in some earlier linguistic scholarship. The more rewarding relationships between a linguistic researcher and a native speaker are surely those in which the native speaker has effectively become a co-researcher. There are also countless occasions, intentional and unintentional, when the emic perception of a native speaker has enabled progress to be made by a formal linguistic researcher. A systematic example of this is the use of native speaker judgments on the acceptability and interpretation of sentences, introduced by Chomsky (1957:15). What is particularly notable about the example of acceptability judgments is that syntax researchers have often provided informal judgment data themselves when studying their own native language, and this merging of researcher and subject roles in one person is also used by community participants in participatory linguistic research. We will return to this point below in §3.2.4. Another long-standing technique, used for underdescribed tonal languages, is to ask native speakers to whistle the pitch sequences of words. Introduced by Pike (1947:44), this technique harnesses an emic ability of native speakers not only to produce utterances of their language but also to abstract the production of pitch from the rest of the utterance. This, too, can be harnessed in group participatory research (Kutsch Lojenga 1996:9).

2.3 The formal researcher as facilitator of discovery

Participatory linguistic research enables community participants to make discoveries about their language. Discovery is central to the history of science, and is important in theories of learning, because discovery has to do with gaining knowledge that was previously unknown to the discoverer. In linguistics, one influential text for speakers of local languages has a chapter on “discovering the grammar of your language” (Barnwell 1986:247). Kröger (2012:157) notes that a discovery approach to the grammar of local languages is able to “combine research and knowledge transfer”.

A general problem for language discovery that the formal researcher must contend with is that discovery is constrained by the instrument used to achieve it. If the formal researcher uses a closed taxonomy such as a sound chart, a list of parts of speech and their diagnostics, a list of paradigm slots (such as personal pronoun distinctions, noun cases, or verbal tense-aspect-mood) or another list of grammatical functions, this may well discover an impressive amount, but it may or may not be sufficient to discover all there is to know about a language. Taxonomies are helpful in breaking down the complexity of language into accessible chunks, and this is important for making discoveries understandable to community participants, but the taxonomy will also predetermine what discoveries can be made. This problem can be mitigated if the taxonomy is honed from pre-existing knowledge about the language or about closely related languages.¹⁰

For participatory research on sounds, a formal researcher might use a chart of selected sounds, and invite participants to document words from their language that begin with (or otherwise contain) each sound. If the language already has a well-understood phonemic inventory, collection of familiar words as exemplars of each of the phonemes can be worthwhile to support the development of language primers for the community. However, when knowledge of the language’s phonemes is at a more preliminary stage, as is often the case, there is a risk of failing to discover sounds that were not anticipated when the sound chart instrument was drawn up. To avoid missing sounds, participants can assemble a corpus of words by non-phonetic criteria. This is, of course, achievable by familiar linguistic research tasks of collecting translations of a sufficiently long word list, or collecting words from many semantic domains, and identifying all the sounds in this corpus. In grammar, likewise, a well-known means for getting a broader view than predetermined taxonomies is to collect a text corpus (Barnwell 1986:247). It must be remembered, however, that text analysis itself involves imposing some taxonomy when labelling sentence constituents, so we never escape taxonomy entirely, but we can be on the look-out for unanticipated discoveries in one area while categorising another area of the language.

The formal researcher also needs to manage the effects of another, opposite vulnerability of taxonomies, which is the risk of over-discovering more categories than are actually present in the language. For example, if a sound discovery instrument includes a distinction between two mid front vowels [e] and [ɛ], which are known to be in contrast in some languages, participants might then “discover” word exemplars of [e] and [ɛ] even in languages where variation in vowel height in the mid region between [e] and [ɛ] does not actually produce any difference in the meaning of words. Likewise, participants might “discover” both adjectives and verbs in a language using a semantic distinction between descriptions and actions, perhaps drawing on the parts of speech of another language they learned at school. This can be misleading in languages where descriptive concepts fail to form a separate adjective word class,

¹⁰ Norton (2018a:1), Kröger (2012:160).

and are essentially verbs in their distribution and their morphology.¹¹ To avoid over-discovering, one tactic is to limit one's discovery instrument to a small set of units (phones, parts of speech, etc.), and only add further units when demanded by evidence of additional contrasts (Norton 2013:198).

2.4 Community participants as literate decision-makers

The presence of community participants constitutes an ideal from the world of development, where it is generally accepted that development is hard to sustain unless it has community participation. In language development, this calls for the involvement of representatives of the language community in planning activities to develop their language (Archer 2006). Language developers from the community may be responsible for the design of an orthography, the creation of written literature and other products in the language, operating mother-tongue literacy programmes, and developing new terminology for mother-tongue curricula or pedagogical grammars.

An ideal quality of community participants in linguistic research, then, is that they are recognisable in their community as decision-makers for the language. If community participants in linguistic research are (or become) recognised decision-makers, then their research can have a lasting effect on the development of their language. If, on the other hand, participants in linguistic research are not recognised decision-makers, then their participation may produce technically valid answers (which is not an insignificant achievement, see §3 below), but the impact of their findings on the wider language community is doubtful.

A further ideal trait, needed in the many cases where designing an orthography is an essential task in the development of an unwritten language, is that at least some community participants are already literate in another language. This trait may seem surprising, but it contributes decisively to orthography development. Nearly all languages in the world that have orthographies acquire them through a process of ADAPTATION of an existing orthography of another language at points where it is initially inadequate for the new language.¹² It follows that those who are literate in another language are the ones who are in a position to adapt that language's orthography to their own language. It should immediately be added that literacy in another language is not necessary for every participant; this is particularly important in respect to elders, who may need to be involved by presiding over decisions to be made about the community's language,¹³ whether or not they are literate in the language from which the orthography is adapted.

Community participants who are literate in another language typically learned to read and write it at school. The school language is often the same as the bridging language used for oral communication with a formal researcher from outside the community, but its significance in participatory linguistic research goes further, because the orthography actively being adapted from this language is necessary for writing the language data during the research process. It is also used to document the research findings for a wider community audience. This language has further implications still, because the other language that the orthography is based on is

¹¹ Care must be taken on this point: in some Benue-Congo languages such as Igbo [ibo] and Eggon [ego], many descriptive concepts are encoded as verbs but a small number of descriptive concepts are encoded as adjectives.

¹² The view of orthography development as adaptation derives from Olson (1993), who proposes that script innovations in the history of writing (syllabary, abjad, alphabet) appeared by "adapting a script to be read in a language other than that for which it was originally developed" (Olson 1993:11). If adapting to a language other than that for which it was originally developed is the basis for script innovations, then it is also the basis for all of the more ordinary instances of orthography design happening all over the world by additions, removals, modifications, or change of function in specific letter symbols.

¹³ Kröger (2012:158), Norton (2013:215).

also the transfer language for the new orthography, such that community members who are already literate in the transfer language can transition to literacy in their own minority language, and any future community members who become literate first in their minority language can transition to literacy in the transfer language.

The number of minority language speakers who are literate in another language through schooling is increasing.¹⁴ This is a crucial reason why it is becoming possible and desirable for linguistics to transition from individual linguistic fieldwork in oral communities, to participatory linguistic research with literate decision-makers who will apply the findings to the writing of their language.

2.5 Telescoping of applications to language development

Finally, when doing research in human language communities, there is an ethical obligation “to apply the research to benefit maximally the community from which it is drawn” (SIL International 2009). While all linguistics researchers can endeavour to achieve benefit to the community, participatory linguistic research offers particularly direct ways of sharing the benefits of linguistic research with the community. Participatory linguistic work blends research and development together in the same activity, as when language data is expressed in an emerging orthography by making immediate orthography decisions during the research. The decision-making role and literacy skills of community participants enable participatory linguistic research to achieve a TELESCOPING¹⁵ of orthography decision-making. In traditional linguistic fieldwork, linguistic research (by a fieldworker with a native speaker) must then be followed by analysis (by the fieldworker), then recommendations (from the fieldworker to decision-makers), and decisions (by decision-makers). These four steps are necessarily distinct because they involve different sets of people. When the decision-makers become co-researchers, however, orthography decisions can be made within the research itself. These decisions mean

Model 1: Linguistic research → Analysis → Recommendations → Decisions



Model 2: Participatory linguistic research
[Decisions within the research]



Figure 1. Telescoped orthography development decision-making.

¹⁴ Increase in minority language speakers educated in the languages of national education systems is anecdotal, but it is an expected consequence of the general increase in the world adult literacy rate from 70.93% (1985) to 86.68% (2020), a 22% increase in the period 1985-2020. The Sub-Saharan Africa adult literacy rate, where participatory linguistic research has emerged, increased from 49.05% (1985) to 65.86% (2020), a 34% increase in the same period. Source: UNESCO, via *Our World In Data*: <https://ourworldindata.org/grapher/literacy-rate-adults?tab=table&time=1985..2020>

¹⁵ telescope *verb* ‘to make something shorter; to reduce something so that it happens in less time’. *Oxford Advanced Learners’ Dictionary* https://www.oxfordlearnersdictionaries.com/definition/english/telescope_2

the language data obtained by the research is written in a way that is acceptable to the community participants (see Figure 1).

Other telescoping effects may be possible, for example in the creation of community booklets that present the research findings. The results of participatory linguistic research can be shared with the rest of the community beyond the initial group of research participants, by creating A5-sized booklets that present the discovered material to a community audience.¹⁶ In some settings, it may be the formal researcher who produces a booklet as a record of the findings for the community, but literate community participants can also be involved in creating community booklets, by entering the language data themselves in a shell document, printed out to take with them at the end of the research.¹⁷ Thus, telescoping can apply to booklet production as well.

3 Contributions to descriptive linguistics

Participatory linguistic research is not only beneficial to language development. It also provides general advantages to language description, concerning the accuracy and naturalness of data. We take each of these in turn.

3.1 Accuracy

Accuracy is enhanced in participatory linguistic research by contributions from the emic standpoint of the community participants in addition to the etic standpoint of the formal researcher. The simplest and most widely used interpretation of the etic/emic distinction is the difference between the standpoint of an outsider and the standpoint of an insider of a community. It can also be understood in a related structural sense, as the difference between perceiving the language through cross-community categories (such as phonetic distinctions) or

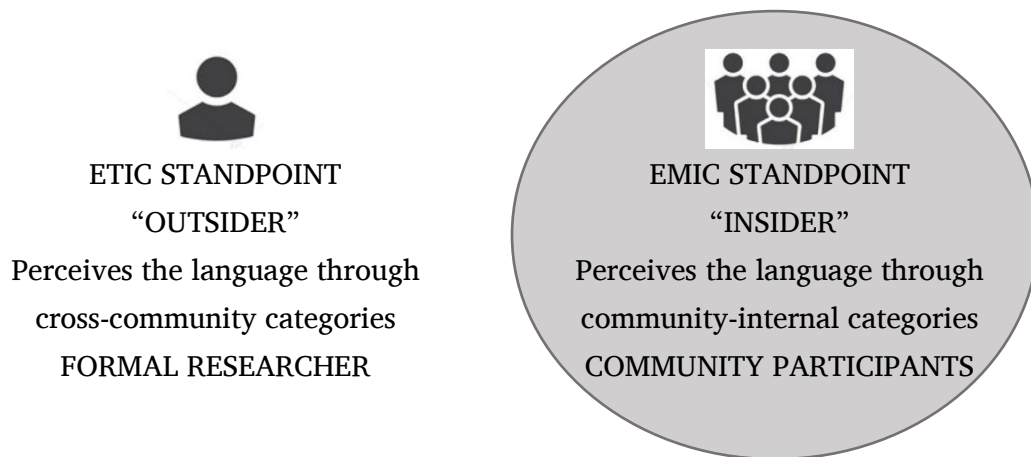


Figure 2. The etic and emic standpoints in participatory research

¹⁶ Kröger (2012:166), Norton (2013:215), Stirtz (2015:2).

¹⁷ Kroger (2012:158), Norton (2018a:2).

through community-internal categories (such as phonemic distinctions) (Headland 1990/2018). This is shown in graphic form in Figure 2.¹⁸

The accuracy of participatory linguistic research data is seen in the forms of the expressions supplied by community participants, which can eliminate transcription errors by a formal researcher from outside the community, and in same-or-different judgments supplied by community participants, which produce a priming effect on phonemic analysis. We examine each of these in turn.

3.1.1 Elimination of outsiders' transcription errors: Transcription errors by a linguistic fieldworker from outside the language community typically occur for phonetically subtle contrasts not present in the fieldworker's first language. These hearing errors by outsiders can be eliminated if the community participants are responsible for the correctness of the research data in a phonemic orthography,¹⁹ which may or may not be under development during the research. It is particularly noticeable that phonemic spelling has enabled native speakers to produce more accurate spellings of the name of their language, or other names, than previously in circulation.

Among consonants, hearing errors by outsiders often occur in word-final plosives. The name of the *Kuteb* [kub] language of Nigeria has a history of being spelled (and mispronounced) as “*Kutep*”, even captured by the *Ethnologue* entry (Eberhard et al. 2023).²⁰ However, the final consonant is perceived as a voiced /b/ from a speaker's emic standpoint. This is reinforced from an etic standpoint by distributional evidence that the only plosives that occur word-finally in *Kuteb* are /b/ and /g/,²¹ in which position they are phonetically unreleased, making their voicing harder for outsiders to hear, thus [tub̚] ‘spit’, [g̚bug̚] ‘push’. Hence also [kuteb̚] ‘*Kuteb*’.

Likewise, contrasts among rhotic sounds such as trills [r], taps [ɾ], or flaps [ɾ̥]²² can be difficult for outsiders but readily perceptible to community participants, who are therefore in a position to supply accurate data. This was my own experience in *Acheron* [acz] of Sudan, as in the minimal pair [zɔɾɔŋ] ‘wing’ vs. [zɔɾɔŋ] ‘mountain’. In *Dagik* [dec], closely related to *Acheron* [acz], there is even a three-way contrast accessible to the awareness of native speakers, [sura] ‘ox’ vs. [suɾa] ‘rat sp.’ vs. [sura] ‘monkey sp.’ (Norton and Alaki 2015:79). This discovery supported a phonemic spelling of their indigenous tribal name *Duwa* [ɾuwa] that is distinct from the spelling of *ruwa* [rúwá] ‘foxes’.

In such cases, a linguistic fieldworker can find an emic solution to phonetically subtle contrasts in “review elicitation”, in which words containing the problematic sounds are

¹⁸ The schema in Figure 2 represents a default pattern of one formal researcher from outside the community, but other variations are possible. The formal researcher could be a native speaker from the community who is also linguistically trained, or there could be more than one formal researcher (some or all of whom could be native speakers). These are not merely abstract possibilities. My own primary job is in formal linguistics training of students from minority language communities, who learn to combine the etic and the emic. The teacher-student relationship includes my inquiries from an etic standpoint and my students' responses from an emic standpoint, but the student also adopts an etic standpoint when doing fieldwork, and other community members respond to the student's inquiries from an emic standpoint.

¹⁹ Hearing errors can also be eliminated when the data is transcribed by a formally trained native speaker-researcher, or by a trained research assistant who speaks a language of the same phonological type. If desired, data in a phonemic orthography for a language community audience can be re-transcribed by a formal researcher in IPA symbols as an accurate record for an academic audience (Norton 2018a:1).

²⁰ <https://www.ethnologue.com/language/kub>. The headword is “**Kutep**” with *Kuteb* entered underneath as the autonym used by the community.

²¹ An exception is the loaned man's name *Polt* ‘Paul’.

²² See Ladefoged & Maddieson (1996:215-245).

checked with a native speaker consultant (Chelliah & De Reuse 2011:378). In participatory research, however, literate community participants can write the words themselves, producing phonemically accurate data in an orthography with different symbols for different phonemes. Or if phonemic distinctions are still being established, community participants can be invited to sort the words in question into separate piles or lists by judgments of the sounds in question as the same or different, and choose how to represent the two phonemes differently.

Vowels are intrinsically difficult for outsiders, who do not know the boundaries between different vowel phonemes in the vowel space inside the mouth cavity. Alago [ala] of Nigeria has five vowel phonemes /i e a o u/, confirmed by community participants working with the author, but outsiders may hear tokens of /o/ as either [o] or [ɔ], due either to their phonetic training or due to having a first language with an /o/-/ɔ/ contrast such as Igbo [ibo] (Norton 2021a:9-12). A further challenge for formal researchers of Niger-Congo and Nilo-Saharan languages of sub-Saharan Africa is in distinguishing the relatively close vowels [i][ɪ][e] and [u][ʊ][o] (Casali 2017) where [i][e] and [u][o] have Advanced Tongue Root (ATR) which is absent in [ɪ] and [ʊ]. Formal researchers from outside the community may fail to distinguish [i][u] from [ɪ][ʊ] by missing the acoustic cues for tongue root advancement in [i][u]. Or in languages where [ɪ][ʊ] are a little more open in quality, formal researchers using the cues for vowel quality but not tongue root position tend to misinterpret them as [e][o], which a native speaker would not do (Kutsch Lojenga 1996:6). When I returned to studying Acheron [acz] after a hiatus of several years, I found that words that I previously transcribed with [o] in Norton (2000) were now spelt by native writers with <u> representing the correct phoneme /ʊ/. A similar case is the language name “Laro” [lro] of Sudan (Stevenson 1964:83), where the final vowel is now confirmed as /ʊ/ rather than /o/. Interestingly, a linguistically trained Laru writer has published material that supports the revised phonemic representation from an etic standpoint. The mid back +ATR vowel [o] never occurs in Laru, even to the extent that vowel harmony rules change both /ɔ/ and /ʊ/ to [u] in a +ATR environment (Abdalla 2012:24). Furthermore, the phonemic vowel melody /a/-/ɔ/ implied by the spelling “Laro” (because *[o] does not occur) is one of several vowel melodies that never occur in Laru roots (Abdalla 2012:19-20).

An example from a different kind of vowel system comes from a native speaker’s re-assessment of the phonology of Bura [bwr], a Central Chadic language of Nigeria, that reveals that the frequently used term “Hyel” ‘God’, for example, is a mis-spelling of phonemic *Hyal*, because [ɛ] is an allophone of /a/ following /j/ (Malgwi 2018:64).

Accurate phonemic spelling also raises the question of marking boundaries, most often word spaces. In Shatt [shj] or Caning, an Eastern Sudanic language of Sudan, the existential marker *-andäng* (see Table 1) had previously been described as a predicator word that requires a subject noun in the so-called simple form e.g. *gax* ‘stick’ rather than the modified form *gaxs-*, thus [gáx àndìŋ tì ñáxìc] ‘There is a stick in the grass.’ (Boyeldieu 2009:10). In a participatory workshop, however, community participants agreed that the existential predicator is part of the noun, as when used in stories to introduce a participant: *Wane ka sagalandäng...* ‘Long ago there was a girl (*sagal*)...’. The emic perception that it is joined to the noun stem agrees with evidence from rounding assimilation of the central vowel *ä* after stems with rounded vowels, thus *luku* ‘pool’, *lukundung* ‘there is a pool’. Since rounding of *ä* occurs in suffixes, and not across words, it follows that the existential predicator is best interpreted as a suffix, like other suffixes with *ä*.²³

²³ I am grateful to Tim Stirtz for drawing my attention to this example. For more on emic perception of word boundaries, see §3.2.3 and Norton (2021b/forthcoming).

While consonants, vowels, and word spaces are the staples of alphabetic orthographies, contrastive prosodic features such as tone are less widely marked in these orthographies. The need, and inclination, to do so appear to rest on not only the presence of contrast but also its

Table 1: Rounding assimilation in suffixes in Caning (Alfira et al 2017:10,77-8,104-5)

Suffix	Form	Gloss	Form	Gloss
Plural	<i>ya</i>	‘meat’	<i>yadäg</i>	‘meats’
	<i>bugun</i>	‘kingdom’	<i>bugundug</i>	‘kingdoms’
Inalienable	<i>penäwan</i>	‘son’	<i>penggäwan</i>	‘sons’
	<i>bonuwan</i>	‘mother’	<i>bongguwan</i>	‘mothers’
Existential	<i>gax</i>	‘walking stick’	<i>gaxandäng</i>	‘There is a walking stick.’
	<i>luku</i>	‘pool’	<i>lukundung</i>	‘There is a pool.’
Possessive	<i>gaxsägi</i>	‘your walking stick’	<i>gaxsäma</i>	‘his walking stick’
	<i>awunugi</i>	‘your eye’	<i>awunuma</i>	‘his eye’

functional load in distinguishing words.²⁴ Moreover, it turns out that training native writers to read and write tone is unfortunately not reliably accurate in general (Roberts & Walter 2021). Potentially, however, research participants can increase their accuracy of perception of tones through participatory research on which tone melodies occur in a language.

3.1.2 Priming effect on phonemic analysis: When the emic judgments of community participants are added to the etic view of the formal researcher in participatory linguistic research, the research is loaded with more input with which to arrive at a correct analysis. The phonological study of words for alphabet and dictionary work provides a particularly clear example: the formal researcher groups words by part of speech and by C/V word shape so that sounds will be compared in similar environments (contributing an etic perspective), while the community participants speak, write, and sort the words in each group by their contrastive sounds using same-or-different judgments of the sounds (contributing an emic perspective).²⁵

Importantly, same-or-different judgments are not just any data, rather they bear very directly on discovery of the phonemic units of the language. A phonemic analysis might otherwise require painstaking work by an individual working from an etic standpoint to identify phonemic units from transcriptions of the audible phonetics (Burquest 2006:31-79, Pike 1947), whereas same-or-different judgments of sounds by community participants produce a PRIMING effect on the analysis, taking the research participants straight to the answers they want. Priming occurs when “exposure to a stimulus in one context influences the way people think or behave in other contexts” (Hartin & Long-Crowell 2022).²⁶

²⁴ See Roberts, Boyd, Merz & Vydrin (2020) concerning functional load of tone. See Roberts, Merz & Reeder (2021:65) for an example of not marking contrastive length with low functional load.

²⁵ See Kutsch Lojenga 1996:2-9, Norton 2013:197-208, Norton 2016, 2018b, 2018c, Rasmussen 2022.

²⁶ Consider their following instructive example: “Leon’s neighbor is an avid gardener and often grows tropical plants and fruits. One day while chatting, this neighbor tells Leon that it’s possible to grow pineapples by chopping off the tops and planting them into soil. His neighbor also told him that some grocery stores sell topless pineapples, which makes it difficult to grow them in a home garden. Now, every time Leon goes to the grocery store, he automatically notices whether or not the pineapples in the fruit section have tops. This is a detail Leon never noticed prior to his conversation with his neighbor.”

For the formal researcher, approaching the data from an etic standpoint, the data from community participants' same-or-different judgments means that further phonetic stimuli heard in words read aloud during the research can now be immediately understood either as representing different phonemes (if judged by the community participants as emically different), or as conditioned allophones (if judged by the community participants as emically the same). The accumulation of same-or-different judgments enables each phonetic stimulus to be put into one category or another until the analysis converges on a complete set of phonemes for the available word corpus, visible to all research participants.

In the Acheron [acz] language of Sudan, for example, the phonetics of vowels makes it difficult for a linguist to determine correct phonemic representations, but same-or-different judgments by community participants sort words according to their respective phonemic vowels (Norton 2013). To take words with a CVC shape containing a front vowel as an illustration (see Table 2), there is an audible height range from [i] to [ɛ] that could be expected to support at least one height contrast, but from an etic standpoint it is difficult to identify further distinctions due to the difficulties of interpreting various prosodic features present on the vowels. The community participants' same-or-different judgments, however, were straightforward and rapid, distinguishing three front vowels /i/, /ɪ/, and /ɛ/ in CVC words in the corpus.

Table 2: Acheron CVC words with front vowels

/i/			/ɪ/			/ɛ/		
<i>zik</i>	[zɪk̚]	'eye'	<i>zik</i>	[zɪk̚]	'season'	<i>zek</i>	[zɛk̚]	'colleague'
<i>mik</i>	[mɪk̚]	'likewise'	<i>mik</i>	[mɪk̚]	'seasons'	<i>mek</i>	[mɛk̚]	'colleagues'
<i>zing</i>	[zɪŋ]	'thigh'	<i>zing</i>	[zɪŋ]	'egg'	<i>zeng</i>	[zɛŋ]	'coconut'
<i>ming</i>	[mɪŋ]	'thighs'	<i>ming</i>	[mɪŋ]	'eggs'	<i>meng</i>	[mɛŋ]	'coconuts'
<i>wik</i>	[wɪk̚]	'many'	<i>wik</i>	[wɪk̚]	'forest hen'			
<i>gik</i>	[gɪk̚]	'eyes'	<i>gik</i>	[gɪk̚]	'forest hens'			
<i>bik</i>	[bɪk̚]	'mosquitos'	<i>dik</i>	[dɪk̚]	'gun'			
			<i>rik</i>	[rɪk̚]	'guns'			
			<i>ngir</i>	[ŋɪr̚]	'water'			

One challenge for the formal researcher in distinguishing the vowels is nasalisation. Although vowel nasalisation is allophonic in Acheron and only occurs on vowels next to a nasal consonant, nasalisation is a feature that obscures the perception of other vowel features, especially in non-open vowels.²⁷ Same-or-different judgments by community participants overcome this difficulty. The separation of three emically distinct front vowels by community participants included words with nasalisation on the vowels such as [mɪŋ] 'thighs', [mɪŋ] 'eggs', and [mɛŋ] 'coconuts'. In these words, we see not only the expected height contrast between high and mid vowels, but also a contrast in high front vowels for advanced vs. retracted tongue root [i̠] and [i̠], conventionally transcribed phonemically as /i/ and /ɪ/. This contrast is more difficult for an outsider to perceive, not helped by the obscuring effect of nasalisation, whereas priming from emic judgments produces immediate answers.

²⁷ Burquest (2006:51). Reduced perception of distinctions among nasalised vowels is used to explain reduced nasalised vowel inventories in some languages, and also the merger of /ɪ/ and /ɛ/ before nasal consonants in Southern American English as in *pin* and *pen*.

A second challenge for the formal researcher in distinguishing the vowels is voice quality. In Acheron, there is assimilation to the voice quality of a following plosive, but voice quality may also be associated with the tongue root position of the vowel itself. In particular, creaky voice [V̤] accompanies retracted tongue root [V̠] in the Acheron vowel /ɪ/, but stiff voice [V̥] occurs on a vowel that has assimilated to stiff voice in a following plosive. The subtle difference between creaky voice [i̤] in [ɲĩr] ‘water’ and stiff voice [i̥] in [zi̥k] ‘eye’ could easily be missed by an outsider without priming from emic judgments.²⁸ Again, however, the classification of CVC words by the same-or-different judgments of community participants distinguishes three front vowels before plosives in words such as [zi̥k] ‘eye’, [zi̥k] ‘season’, and [zɛ̤k] ‘colleague’. These emic judgments rapidly establish the contrast between non-creaky stiff voice [i̥] in [zi̥k] ‘eye’ and creaky stiff voice [i̤] in [zi̤k] ‘season’ that is obscure to an outsider.

All the CVC words with front vowels grouped by same-or-different judgments from community participants are shown in Table 2. There is a tongue root contrast in high front vowels /i/-/ɪ/ in addition to the mid front phoneme /ɛ/, but no further mid vowel */e/ was distinguished from /ɛ/. These judgments are convincing from an etic standpoint, because the /i/-/ɪ/-/ɛ/ contrasts are well supported by minimal pairs, and the small number of CVC words with mid front vowels in the corpus is unlikely to support a further phoneme /e/. The results are written firstly in the phonemic orthography in which the research data was represented, and secondly in a phonetic transcription showing the features we have discussed.

The full analysis based on the same-or-different judgments of community participants found an 8-vowel system /iɛəɑɔu/ in Acheron, represented by 8 vowel letters <iiēāouii> agreed on by the community participants (Norton 2013). With these phonemic distinctions clarified by same-or-different judgments, all other phonetic features heard by the formal researcher can be associated with conditioned environments. This is illustrated by six selected Acheron words in Table 3. The six words have a central vowel from the set /ɑ, ə/ and a high vowel from the set /i, ɪ, u, u/. There is RTR and creaky voice [V̤] on /ɪ, ɑ/ but not /i, ɛ, ə, ɔ, u, u/; there is stiff voice [V̥] before word-final or geminate plosives, which themselves take stiff voice [C̥]; there is nasalisation [Ṽ] in syllables containing a nasal consonant; there is gradient ATR [V̠] on non-high vowels in words with ATR vowels /i, u/; there is lengthening [V:] in non-final open syllables, with some exceptions for /ə/; and there is high tone on the mid central vowel /ə/. The phonemic accuracy of these words was established through same-or-different judgments to classify two-syllable words with a central vowel and a high vowel (Norton 2013:206-207). Without priming from emic judgments, correct transcription of the individual words or even comparison between one word and the next is not easy from an etic standpoint, at least for the present author.

Table 3: Selected Acheron words with a central vowel and a high vowel²⁹

<i>maccing</i>	/massɪŋ/	[m̥ɛ̃ss̥ɪŋ]	‘yesterday’
<i>Gänzi</i>	/gənzɪ/	[g̥ɛ̃nz̥ɪ]	‘God’
<i>bädi</i>	/bədi/	[b̥ə̃d̥i]	‘oil’
<i>gädük</i>	/gədu̥k/	[g̥ə̃du̥k̥]	‘splashing’
<i>gadduk</i>	/gaddu̥k/	[g̥ə̃tt̥u̥k̥]	‘spear’
<i>ya'rii</i>	/jaɾu/	[j̥ə̃:ɾu]	‘lion’

²⁸ See also Ladefoged and Maddieson (1996:316-17) on stiff voice and creaky voice in vowels.

²⁹ The astute reader may notice that the umlaut in Acheron orthography was chosen to represent [+RTR] in the high front vowel *ï*, but [+ATR] in the high back vowel *ü*. See Norton (2013:212-216) for analysis and discussion.

3.1.3 Priming effect on lexeme collection: There may not be clear analogues for discovering emic linguistic units other than phonemes by same-or-different judgments.³⁰ However, participatory research on lexemes has been able to capitalise on a different priming effect. In practical lexicography, a semantic domain term such as ‘sky’ can be used as a prompt for community participants to provide words in that domain. A semantic domain prompt triggers rapid recall of multiple words in that domain (Moe 2003:218). This priming effect from semantic domain prompts is valued not for accuracy in the sense of correct differentiation between lexemes, but in the sense of fuller coverage of the large quantity of lexemes that exist in any language, achieved through the speed with which words can be collected by this method. Accuracy also applies to the individual lexemes as well, in a partial way, because the association with the semantic domain prompt becomes part of the correct description of each lexeme thus collected. For example, the collected item ‘sun’ can be correctly described in a dictionary as belonging to the ‘sky’ domain if its collection was triggered by the semantic domain prompt ‘sky’, because this is a real meaning network for the participant who supplied it, as opposed to a dictionary compiler identifying the entry ‘sun’ with the domain ‘sky’ by *post hoc* etic analysis.

3.2 Naturalness

The elicitation method in linguistics suffers from a well-known problem as to whether elicited responses are natural or unnatural in the language (Lükpe 2010:92-95). The potential for unnaturalness applies to both elicited utterances and elicited judgments. Much participatory linguistic research now uses elicitation, so the problem of unnaturalness has to be faced, but there is reason to be optimistic that unnatural elicitations are unlikely in participatory research.

3.2.1 Goal-sharing and triangulation of participants: In linguistic fieldwork, subjects sometimes produce forms that are not actually used in their language community, but instead constructed on the spot in order to provide a non-null response to the formal researcher’s question. Subjects might be tired, bored, or confused, and offer an artificial answer purely to keep the formal researcher happy (Chelliah & De Reuse 2011:174, 204, 375). They may produce forms such as calques or regularisations (Chelliah & De Reuse 2011:175,385). The detachment of the native speaker from their answers in such situations indicates that they do not share the goals of the research. Such problems are unlikely in participatory research, where there is a collective assumption shared by community participants that the object of research is their language, especially when the goal is to develop that language. Community participants are not only subjects, but also co-researchers and stakeholders, and therefore they will have no

³⁰ Lexemes include several variant word-forms with different sentence functions, for example the English lexeme EAT has word-forms *eat, eats, eating, ate, eaten*, but rather than being judged emically ‘the same’, the variants can obviously be judged as different by their different phonemic content. On the other hand, speed-competitive judgments of word repetition in discourse, a kind of word-sameness judgment made by contestants in the BBC Radio game show of the past 60 years *Just a Minute*, often identify lexeme sameness (repetition of *leak* as *leaks*, etc.) and not just word-form (phonemic) sameness. However, it is not clear whether speed-competitive tasks are useful in participatory research.

interest in constructions that are not used in the language, because these fail to meet the goals of discovering, documenting, and developing their language.³¹

In group research with several community participants, even if one participant were to produce an unnatural expression, we would expect it to be turned down by the other community participants as not meeting their goals. If there is any confusion about the goals, they can be re-asserted by one of the community participants, or by the formal researcher. There is thus a TRIANGULATION between the community subject producing an utterance, other community participants reviewing the subject's utterance in real time from an emic standpoint, and the formal researcher reviewing utterances from an etic standpoint. This triangulation gives group participatory research a built-in filter against forms that are unusable.

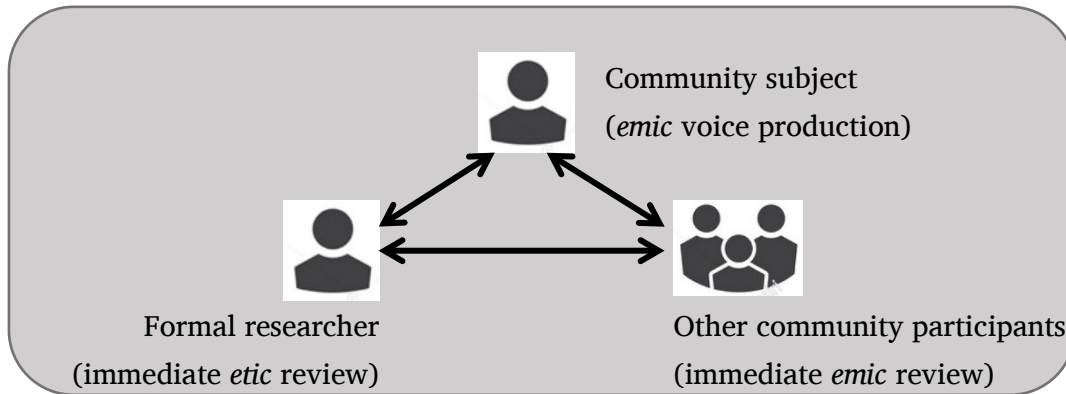


Figure 3. Triangulation of the research participants

For example, literacy developers for the Ama [nyi] language of Sudan joined the author to investigate verbal morphology. Ama orthography marks high tone < ˈ >, low tone < ˉ >, and leaves mid tone unmarked. Ama verbs have a dual suffix *-en* and a ventive applicative extension *-ideëg*, so the formal researcher asked the community participants how to dualise a sentence with a ventive applicative verb. They briefly produced, considered, and rejected verb forms that added a further stem-forming suffix *-ar* and/or dropped the final suffix *-ëg*, before agreeing on the dual form below. By this triangulation process, unuseable forms were filtered out and a verb form acceptable to the community participants as a whole was settled on as data, shown below. The data showed the research participants that even a complex ventive applicative verb can be dualised by the regular suffix *-en*. The data was also crucial in revealing that the long ventive applicative extension *-ide-ëg* consists of two suffixes, a ventive applicative suffix *-id* (with a following mid tone linked to the next vowel *e*) and a directional suffix *-ëg*, which were separated by the dual suffix *-en*.

³¹ An exceptional case where novel constructions are beneficial in language development is for terminology development, a consultative process of coining new terms that are needed to develop the language for certain new functions, such as a mother-tongue education curriculum, or a pedagogical grammar of the language. Herein lies a pitfall that a reviewer warns about: a community participant may take it upon themselves to use research sessions to innovate previously unsayable expressions in an attempt to expand the oral language in new ways, instead of using sessions to discover the existing language for documentation and development of writing. This reinforces the point that naturalness requires research participants to share common goals for the research. If one community participant were to attempt to innovate previously unsayable expressions without a commonly agreed goal for terminology development, then triangulation should filter this out as other participants turn down the expressions and reinforce the proper goals of the research.

1) Ama ventive applicative verb forms

- a. Fá Kamalung ameér dhij-ídeëg. ‘Don’t throw a pencil to Kamal!’
- b. Fá Kamalung ameér dhij-íd-en-ëg. ‘Don’t both throw pencils to Kamal!’

In another example, Ama has a passive imperfective past extension *-óü*, consisting of an imperfective past suffix *-ów* and an additional low tone that marks passive. With this extension, the community participants indicated they were unable to produce a dual form. As a formal researcher working from an etic standpoint, I can imagine candidate forms *-ów-eën* in which the low tone is added to the last dual suffix, or *-ów-en-äg* since the passive low tone is a variant of an imperfective passive suffix *-äg* that goes in the final suffix slot after the dual suffix. In forms actually produced by the community participants, however, the passive past low tone always links to the imperfective past suffix, producing *-óü*. When a dual suffix intervenes, linking of the passive low tone to the imperfective past suffix is blocked by the mid tone of the dual suffix (**-ów-en-`*). This shows that community participants were willing to give a null response precisely in a situation where a paradigm gap is a plausible analysis, because other verb forms do not provide a generalisation that would determine a dual passive imperfective past verb form (cf. Albright 2009). They were also willing to give a null response in this case despite having provided a dual form of another complex verb, the ventive applicative verb immediately above. The community participants thus did not attempt to avoid a null response by answering every question with something, however unnatural. Rather, their null response reflects a goal to identify what is sayable in the language, by refraining from supplying a form when they could not think of how they would say it as Ama speakers.

2) Ama imperfective past verb forms

- Äi ba asidhai-ów. ‘I was painting’
- Äní ba asidhai-ów-en. ‘We both were painting’ (dual)
- Äní ba asidhai-íd-ów. ‘We each were painting’ (distributive)
- Äi ba asidhai-óü. ‘I was being painted’³²
- *‘We both were being painted’ (dual)
- Äní ba asidhai-íd-óü. ‘We each were being painted’ (distributive)

3.2.2 Idiosyncrasy: Group participatory research in linguistics is by nature oriented towards consensus, and this filters out idiosyncratic forms, as well as artificial ones. In Ama [nyi], verbs have two stems, which in their most regular form are distinguished by an added final theme vowel in the stem used in perfective aspect. Verbs fall into classes that take different theme vowels, although at least one verb *baljing* ‘love’ can take either of two possible final vowels, *baljinge* or *baljingo*. Most community participants felt there was no difference in meaning between *baljinge* and *baljingo*, but one participant felt that one is used with a 1SG subject *äi a baljinge* ‘I love’ and the other with a 2SG subject *yí a baljingo* ‘you love’. The participant maintained this view even when the other community participants declined to agree, but it has not been used in subsequent language description or mother-tongue literature. Triangulation during participatory research thus prioritises consensus data, and a view of a language as a shared reality over an individual reality. This renders idiosyncrasy more invisible, but has the

³² ‘I was being painted’ is a natural sentence in Ama because body painting is, or was, a traditional activity in the Nuba Mountains region where Ama is spoken.

advantage of greater replicability of the results (Wasow and Arnold 2005:1487), as well as greater utility of the data for use in mother-tongue literature for the whole community.

3) Ama verb stems

Progressive	Factative	gloss
<i>sang</i>	<i>sango</i>	‘search’
<i>kir</i>	<i>kire</i>	‘cut’
<i>baljing</i>	<i>baljinge, baljingo</i>	‘love’

In addition, the formal researcher, as the third element in the triangle of research participants, who views the data from an etic standpoint, saw no other evidence to corroborate a 1SG/2SG analysis of *baljinge/baljingo*. Other Ama verbs do not have an alternation in the final stem vowel, and Ama’s nearest relative, Afitti [aft], marks 1SG/2SG subjects by prefixes *ká-/é-* rather than suffixes (Norton 2020:115). Since the subject marking reported by one participant on one verb has no other corroboration from other Ama verbs nor from Afitti, it seems an idiosyncratic innovation in which the variant stem vowels for *baljing* became associated with a 1SG/2SG distinction, which is otherwise not marked on the verb in Ama. In more traditional linguistic research with one native speaker, it can take longer for idiosyncrasy to come to light. In Dagik [dec], an affricate [tʃ] was documented in a word list taken from one individual (Schadeberg 1981:61), but when linguistic fieldwork was possible again decades later it was reported that the affricate is a rarer variant of [s] (Vanderelst 2016:26). In group participatory research, by contrast, the triangulation of participants means that idiosyncrasy in the speech of one community subject generally becomes clear immediately.

3.2.3 Acceptability judgments: Acceptability judgment data also presents a dilemma concerning naturalness. The question format “can you say X?” is generally intended to probe whether the expression X is acceptable in the language, but some subjects might interpret it as a request to confirm their personal ability to imitate X as an abstract exercise, even if it is unacceptable in the language community, so this technique could produce false-positive judgments. Again, however, if language community participants are not only subjects but also co-researchers and stakeholders, then as a group they will have no interest in personal abilities to imitate an expression if it has no relevance to their goals of discovering and developing their language. Instead, their judgment responses will reveal their emic view of what is sayable in the language community. The naturalness of an expression X can and should be further confirmed by asking community participants to mention realistic contexts in which X could be said.

For example, Acheron [acz] community participants were asked for yes-or-no judgments to assess the word or affix status of preverbal inflection. They were asked whether it is possible to say expressions like *?b-oga* ‘I am’ or *?b-iya* ‘I will’ on their own without a following verb stem such as *orägo* ‘eat’, to test whether the progressive and future inflections are bound verbal prefixes or free words in their own right. The natural context for a word spoken in isolation is as a response to a question where the response is reduced by removing other constituents already mentioned in the question. Sentences that only express a progressive or future inflectional meaning (as in English ‘I am’, ‘I will’) are ellipted sentences that would occur, if at all, as a reply to a question querying a progressive or future proposition. Such question-answer pairs should be relatively straightforward to establish, if indeed they are possible in the language. Thus, *b-oga* ‘I am’ is sayable in Acheron, moreover it is actually used every day, in

response to the standard greeting *Boga boring a?* ‘Are you good?’. On the other hand, the future inflection **b-iya* is unsayable alone. If one wishes to give an affirmative response that one will do an action, which is the force associated with future inflection, it must be said with a following verb stem, hence *b-iya-* is bound to a following verb.

4) **Isolability of *b-oga* (progressive)**³³

- | | | |
|----|----------------------|-------------------------------------|
| a. | <i>Boga orägo a?</i> | ‘Are you eating?’ |
| | <i>Boga orägo.</i> | ‘I am eating.’ |
| | <i>Boga.</i> | ‘I am.’ |
| b. | <i>Boga borij a?</i> | ‘Are you good?’ (standard greeting) |
| | <i>Boga borij.</i> | ‘I am good.’ |
| | <i>Boga.</i> | ‘I am.’ |

Non-isolability of *b-iya-* (future)

- | | | |
|----|--------------------|-----------------|
| c. | <i>Biyarägo a?</i> | ‘Will you eat?’ |
| | <i>Biyarägo.</i> | ‘I will eat.’ |
| | (* <i>Biya</i>) | |

The isolability test is primarily a yes-or-no judgment about whether the item is sayable in isolation, but a ‘yes’ judgement can also be supplemented in participatory research by discussing real contexts where it is sayable. Other wordhood tests involve elicited expressions, but these can be immediately reviewed for acceptability as well in participatory research. In a separability test, for example, a community subject supplied the Acheron anaphoric preposition *nang* ‘on it’ that separates the progressive *boga nang orägo* ‘I am eating on it’ but not the future *biyarägo nang* ‘I will eat on it’, consistent with the isolability test above. Other community participants present agreed with the subject who produced these forms, hence they are adopted as consensus language data. This is the triangulation filter at work.³⁴

3.2.4 Groupthink and confirmation bias: While group participatory research in linguistics filters out artificial and idiosyncratic language and outsiders’ transcription errors, there remains a methodological vulnerability of its own: GROUPTHINK, in which a group of people form a consensus that is irrational.³⁵ I have not witnessed this happen, and it seems unlikely in settings where the linguistic evidence unfolds in front of all the research participants in an undeniable physical form, such as when moving words on slips of paper into separate piles as evidence for perceptually distinct phonemes. If the formal researcher is from outside the community, this also introduces a diverse element that may help to disrupt a false consensus from spreading among the research participants; it may also help to disrupt an incorrect hypothesis of the formal researcher from spreading to the community participants. However, groupthink may be more of a risk at an earlier stage, if potential research participants choose not to go ahead with research that they suspect may undermine their preferred views of the language.

³³ The *b-* is a singular subject prefix whose default interpretation is first person ‘I’ in a statement and second person ‘you’ in a question.

³⁴ For more tests of wordhood for Acheron preverbal inflections, see Norton (2021b/*forthcoming*).

³⁵ *Groupthink* is a “mode of thinking in which individual members of small cohesive groups tend to accept a viewpoint or conclusion that represents a perceived group consensus, whether or not the group members believe it to be valid, correct, or optimal.” (*Encyclopedia Britannica* <https://www.britannica.com/science/groupthink>)

Unjustifiable views of the language may be due to CONFIRMATION BIAS, in which we are inclined to look for evidence that confirms what we already think.³⁶ A formal researcher may be biased towards a description that fits their previous training, or that was previously found in another language. A community participant may be biased towards a spelling practice known from another language or from earlier usage in their own language, or towards a grammatical description learned for another language in school. In practice, however, participatory linguistic research has proved able to replace these existing impressions with new evidence observed by the participants during their research. For example, Ngiti [niy] participants initially assumed their language should be written with 5 vowels like Swahili, but when they found 9 phonemic vowels through participatory research, they chose to represent all 9 in their alphabet (Kutsch Lojenga 1996:6). Similarly, Alago [ala] participants had assumed that their language needed 7 vowel letters that are familiar from other written West Benue-Congo languages such as Yoruba and Idoma, but during participatory research with the present author, just 5 vowel phonemes were confirmed by same-or-different judgments, so they chose to retain only 5 vowel letters for writing (Norton 2021a:10). These disconfirmations of analyses derived from major languages illustrate participatory research overcoming confirmation bias that interprets the language through the lens of a major language.

The concern about confirmation bias also arises for acceptability judgments. The raising of community participants to the role of co-researchers as well as subjects, though empowering, risks confirmation bias in which a community subject may be tempted to provide judgments that confirm their own hypotheses about their language. Many trained syntax researchers, likewise, take the role of subject as well as researcher by providing their own judgment data, where concerns have been raised about biased judgments. One study tested this by checking a random sample of linguists' own judgments from ten years of the journal *Linguistic Inquiry* with naïve subjects: the researchers found that switched judgments of sentence pairs by naïve subjects, that could falsify a published analysis, have been fairly rare in practice, but not absent entirely at 5% (Sprouse, Schütze, & Almeida 2013). In participatory research, triangulation among the research participants may help to protect against confirmation bias in acceptability judgments of sentences. Thus, if a community subject offers a judgment that confirms their own hypothesis, this is still subject to immediate review by the other community participants and the formal researcher. The judgment may be turned down for inclusion in the research data if it is not shared by others or if the hypothesis behind it does not survive scrutiny by the group.

4 Conclusion: Integrated quality research and development

Doing linguistics on underdeveloped languages is a context in which participatory research can become compelling. The formal researcher becomes an organiser of group research activities that will bring forth evidence of the language's structures, and a facilitator of discovery who manages the use of discovery instruments and their possible limitations. The community participants will ideally be decision-makers for the development of the language, and literate in another language if they want to adapt an orthography for their own language.

The rewards of participatory research in linguistics are worth considering. Having literate decision-makers as community participants achieves a *telescoping* effect on orthography development, which occurs within the linguistic research itself. Participatory linguistic research produces *accurate* data, as phonemic spellings by literate community participants can avoid

³⁶ *Confirmation bias* is “the tendency to process information by looking for, or interpreting, information that is consistent with one’s existing beliefs.” (*Encyclopedia Britannica* <https://www.britannica.com/science/confirmation-bias>)

transcription errors by outsiders, and same-or-different judgments by community participants produce a priming effect on phonemic analysis. In addition, semantic domain prompts produce a priming effect on the collection of words from that domain, and become part of an accurate description of the lexemes they trigger. Participatory linguistic research also produces *natural* data, as shared goals and triangulation of the research participants can filter against unconventional and idiosyncratic expressions or judgments. Triangulation of the research participants may also protect against groupthink and confirmation bias.

Finally, the advent of participatory linguistic research suggests some future directions for linguistics. Recent linguistic research has compared “informal” acceptability judgments made by syntax researchers with “formal” acceptability judgments obtained using the methodology of experimental psychology.³⁷ However, both the informal and formal judgments are made by individuals, whereas participatory linguistic research has innovated *group consensus* acceptability judgments. This invites future comparison of group vs. individual judgments. Group judgment encourages overt qualitative discussion of realistic contexts in which sentences could naturally be said, replacing inward reflection during the production of individual judgments. Separately, the presence of both etic and emic standpoints in a group of researchers is distinctive to participatory research, and this calls for renewed attention to the *etic/emic distinction* in linguistics. This includes the question of which emic linguistic units are accessible to the minds of native speakers who participate in research. The participatory research reported here converges with other work that supports the reality of phonemes³⁸ and lexemes.³⁹ Some other emic units may be relevant as well.

People in many African language communities, and perhaps elsewhere, feel at home with group participatory research in linguistics. It is commended to other researchers to continue to probe what it can achieve.

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³⁷ Culbertson and Gross (2009), Sprouse, Schütze, & Almeida (2013), Häussler & Juzek (2017).

³⁸ Burquest (2006:89), Mohanan (1986:189-190), Ladefoged and Maddieson (1996:1-8).

³⁹ See Aronoff (2018) and Spencer (2013) on lexemes in morphology, Saeed (2016:53-78) in semantics, Norton (2019) in dictionary making, and Boguslavsky & Wanner (2011) in Meaning-Text Theory.

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