Interdisciplinary research in language documentation: The benefits and present limits of a more sustainable documentation methodology

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Abstract

Interdisciplinary Research (IDR) in language documentation furnishes linguists with the knowledge they require to access and explain linguistic practices inextricable from their extra-disciplinary context. By heightening the validity of documentation in this way, as well as generating linguistic data of novel importance to other disciplines, the use of interdisciplinary methods moreover creates a more sustainable documentary model. In spite of this, IDR does not secure any sizeable disciplinary and financial interest relative to mono-disciplinary models. The following paper examines the extent to which this lesser uptake of IDR within documentation projects may be caused by the particular disadvantages of its related methods, such as investigating language-specific Traditional Ecological Knowledge (TEK) or cross-disciplinary domain-based concerns, and to what extent this may be caused by its lower levels of exposure and funding in the academic community. Finding the answers to resolve IDR's lesser prominence within Linguistic academia should, in turn, facilitate its increased teaching and more proficient practice within language documentation. This paper does not present primary research, but instead aims to summarise relevant arguments and studies in a manner accessible to the general reader.

Keywords
Interdisciplinary Research (IDR), Traditional Ecological Knowledge (TEK), interdisciplinary domains, indigenous taxonomy, extra-disciplinary data, ethnobotany, ethnography, language documentation

1. Introduction
Interdisciplinary Research (IDR) involves linguists and specialists from other external disciplines mutually contributing to the investigative processes involved in the documentation of a language. This includes conceptualization of research concerns, methodology and the final analysis (Penfield 2020: 2). Conventional multi-disciplinary approaches often isolate non-linguistic data as evidence to complement linguistic documentary findings. In contrast, IDR integrates relevant "information… techniques… [and] perspectives" (Amith 2020: 72) from disciplines such as anthropology or ecology. Furthermore, the research concerns addressed by IDR are purposely designed to be of relevance and interest to all parties involved.

As this paper will demonstrate, the increased practice of Interdisciplinary Research within language documentation could offer considerable advantages. As a result of its integrated approach, IDR enables precise or nuanced "explanations of [certain] complex phenomena" which are best explored from a combined linguistic and extra-linguistic perspective. Its cross-disciplinary research concerns, moreover, generate revolutionary analyses which "no single discipline [could] create on its own" (Derrick et al. 2011: 3).

Holton draws attention to this principle in terms of linguists requiring collaborators to extricate particular language practices from their biological context. Without the collaboration of the right specialists, linguists could not make complex botanical distinctions such as identifying subtly different plant families; thus, their corresponding separate lexical terms might never be searched for (Holton 2018: 7).

In order to enumerate the further benefits of this approach, it is necessary to examine the methods that interdisciplinary language documentation can entail. Methods to be discussed include employing cross-disciplinary domain-based research concerns and recording extra-disciplinary but language-specific Traditional Ecological Knowledge (TEK). The ways in which shared domain-based concerns can be used to expedite and expand linguistic data collection, and collaborative TEK documentation can elucidate languages' cultural histories will be illustrated. There will, additionally, be an exploration of how collaboration with ethnographers, social anthropologists or biologists can give linguists the knowledge they require to document certain linguistic practices that are unexplainable without their extra-disciplinary context. It is important to note that this analysis looks at the benefits of IDR principally from the perspective of the linguist.

Apparent drawbacks of this approach will then be outlined. The practical implications of non-linguists joining fieldwork teams can both positively and negatively affect language consultant contributions and chances for funding. Domain-based language research can also distort linguistic documentation by overestimating the equivalency of linguistic representational strategies across languages. The author will argue, however, that IDR's lesser academic exposure, alongside linguists' inattention to the principle that IDR-based projects should provide equal benefits for collaborators, represent the commensurately large obstacles preventing the wider use of the methodology in linguistics. No primary research is presented; rather the paper aims to summarise relevant arguments and studies in a manner accessible to the general reader.

The publications of several linguists, in particular, are greatly drawn upon to prove these points. Niclas Burenhult (2020) is cited in order to assess the proficiency of using domain-based research concerns when documenting language. The aforementioned Gary Holton's (2018) work is used extensively; first, to indicate the multi-faceted nature of researcher-consultant rapport in IDR. He is also referenced to detail how biologist collaborators ensure documentation on language specific TEK or species classifications contains unambiguous lexical terms for phenomena. The first of these publications to be discussed is by Jeff Good who, in conjunction with Bulmer (1967, cited in Si 2011), introduces the complex ways in which different disciplines can intersect and elucidate linguistic phenomena.

2. Language practices inextricable from cross-disciplinary contexts
Interdisciplinary consultation is essential when the true meanings or motives underlying linguistic phenomena prove inextricable from their cultural or ecological environments. In such instances, linguists must consult extra-linguistic resources, and specialists who can provide the relevant ethnographical or ethnoecological expertise.

It is ethnographic knowledge that reveals how a language interacts with its community's "subjective cultural attitudes and belief systems" to encode meaning in "objective" semantic categorizations or lexical forms (Si 2011: 170-1). As a result, through the study

of the mythology of the Kalam speech community for instance, Bulmer was able to arrive at an accurate explanation of their categorisation of the cassowary bird. Distinguished from their broader category of *yakt* 'flying bird or bat' it was not, Bulmer found, due to its relatively large size or inability to fly, but rather because of the "special (kin) relations [that it shared] with humans" in their folklore (1967, cited in Si 2011: 171). Similarly, collaboration with ethnobotanists is critical to linguistic documentation of plant classifications. This is due to their ability to reliably identify organisms using standardised biological taxonomies, and to then delineate which extra-linguistic factors from botany or social anthropology (flora morphological aspects, traditions, agriculture) may have coincided to create their language-specific nomenclature (Holton 2018). Employing purely linguistic processes to analyse phenomena such as these could lead to the loss of fine distinctions of lexical meaning. Using methods uninformed by extra-disciplinary insight can, moreover, create unrepresentative research parameters.

One problematic parameter of linguistic research can be found in the documenting of multi-lingual populations. Traditional approaches commonly prioritise recording a single ancestral code. This derives from the assumption that the multi-lingual environment is forced on the indigenous language community by a "dominant colonial" linguistic presence. It also derives from the assumption that this second language serves only to push the ancestral language towards shift or endangerment (Good 2020: 67). Documentary linguists additionally presume speech communities view any consequent lesser use of their first language as a lessening of their identity. This is because, according to "Herderian equation" language ideology theory, they interpret language as "a marker of immutable ethnicity" (Good 2020: 68). This interpretation comes at the expense of multi-lingual practices not being sufficiently documented. It also heightens the risk that linguists will not fully consider the social significance of multi-lingual practices to the speech community in question.

By contrast, ethnographers tend to place emphasis on discovering what the languages used in a community culturally represent to their speakers. Collaboration with them can thus reveal to linguists how ancestral and contact language varieties can positively and meaningfully coexist. An example of this is in Good's (2020: 68) documentation of the highly multi-lingual West Cameroon Lower Fungom community, where his investigations into the social contexts of their varying language choices were directly instigated by ethnographic interdisciplinary research.

These investigations found that the individual linguistic varieties used by the Lower Fungom community represented different "socio-political identities". Said identities could be taken on at will by any variety user to gain powerful affiliation with the relevant linguistic group. Language use, therefore, did not indicate permanent but rather *ephemeral* linguistic identities that users moved between according to circumstantial needs or interests, such as ensuring social "co-operation" or to "access…the resources of different groups" (Good 2020: 68). Ethnographic collaboration consequently can be seen to encourage documentary methodologies inclusive of multi-lingual or other sociolinguistic contexts and augments documentary explanations surrounding language perception and use.

Furthermore, historical, and geographical documents can vitally supplement linguistic theory with knowledge of the social causes behind atypical patterns of linguistic divergence. If this knowledge is not harnessed in the documentation of a language, unusual patterns may be written off as insignificant, or the explanations behind them could remain incomplete.

In his same study of Lower Fungom, Good (2020: 48) identified a Mungbam language variety from the village of Missong that showed significant lexical and grammatical divergence from other varieties in neighbouring villages. Linguistics might typically attribute such linguistic divergence to language drift. This concept identifies language change as dependent on how much time has elapsed between the migration of speakers from a formerly united language community to new dispersed settlements. As time elapses, linguistic divergence in the new settlement areas increases. In this process, individual alterations emerge, and over time distinguish the new variety from its linguistic starting point (Sapir 1921: 74). Generally, such alterations are seen to occur unconsciously and cumulatively. However, in consulting historical documents from the Buea National Archives, Good (2020: 55) evidenced that the Missong village community had only "recently" re-settled. By citing colonial documents from the early twentieth century that described the community as a "historically shallow…break-off [settlement] from the village of Munken" (Good 2020: 64), Good uncovered that language change following resettlement must have been relatively rapid.

Good (2020: 62) then created his own geo-linguistic material which corroborated these historical findings. By mapping the locations in Lower Fungom that Mungbam speakers identified as "sites of memory" (places referenced in their ethnohistorical lore), he unearthed that in 1860, Missong had far fewer memory sites than other nearby villages with similar population sizes at that time. Having established the divergence of the Missong variety through linguistic analysis, and the recentness of the village settlement through geographical and historical documents, Good (2020: 55–56) was then able to explain the cause of rapid language change by documenting material of an ethnographic nature: Missong origin stories. The speakers he recorded suggested that the village had been created "by immigrant groups" from outside the local area. These groups, they claimed, had actively adopted, or "stolen" Mungbam from other villages.

From all this multi-disciplinary material, Good (2020: 65) thus concluded that the reason behind the language change was not due solely to one community of Mungbam speakers having resettled and quickly innovated. Instead, he clarified the highly divergent Missong variety was the result of considerable grammatical and lexical borrowing from the multiple and diverse language groups who settled in the village. The rapidness with which this new variety emerged, Good proposed, could be attributed to the need to quickly create a lingua franca. What's more, drawing upon the ethnographic observation that Lower Fungom speech varieties were commonly used to represent different identities, (Good 2020: 68) he posited that some aspects of the variety may have been purposefully designed to distinguish its speakers as a unique "kin group federation" (Good 2020: 57). This demonstrates how extra-linguistic information can address documentary linguistic queries in situations where linguistics alone might not suffice.

Linguists could, as Good (2020) has done, compile cross-disciplinary detail for documentation either on their own or with strategic extra-disciplinary consultation. However, switching to IDR, which is here defined as collaboration with other specialists throughout the research process, might more efficiently signpost them to linguistic phenomena that intersect closely with other disciplines. While it is not always easy to predict which disciplines these may be, and so still hard for linguists to know what their interdisciplinary team should look like, examining previous documentation can most certainly indicate common connections. Extrapolating from the studies shown in this section, for example, diachronic linguistic change could be elucidated through directly collaborating with ethno-historians instead of using historical material; while accurate representation of any ecologically influenced taxonomies or biological nomenclature could be assured by working alongside social anthropologists and ethnobotanists.

3. IDR: a more sustainable model of language documentation

IDR also promotes a more sustainable model of language documentation in several ways. Firstly, by drawing attention to previously unexplored cross-disciplinary research concerns, it generates a larger scope for future documentary inquiry. Secondly, IDR enables extra-linguistic information to be incorporated accurately, and in a way that makes documentary findings directly applicable to the outside discipline(s) involved in the collaboration.

By having biologists or botanists onsite to assist with linguistic fieldwork, for example, the linguist avoids being over-reliant on field guides that might lead to erroneous classifications of organisms. Botanical field guides, Holton (2018: 5-6) argues, often do not represent all relevant plant varieties, "emphasize [certain] morphological aspects of the species [that are not the] most salient to the linguist," or contain pictures that misconstrue "relative and absolute sizes". Linguists may also lift from field guides the generalised glossed terms used for several subtypes of phenomena and so misidentify them, naming something *ginger*, for instance, when it is another type of *rhizome* (Holton 2018: 5). Others might neglect technical classification entirely and only record language-specific terms for organisms out of focus on linguistic interpretation over content (Holton 2018: 4). Extra-disciplinary collaborators on the other hand can employ their own knowledge of specialised classification systems: such as using Linnaean binomial equivalents for plants and animals (Holton 2018: 5). As a result, they guarantee that all phenomena are identified, and that said identifications are unambiguous and valid. Gaining more reliable documentation in this way benefits the linguist, as well as their collaborators. In particular, language documentation that appropriately records the biodiversity of lesser documented rural environments can be invaluable to taxonomists and conservation biologists (Ramstad et al. 2007; Si 2011; Klubnikin et al. 2000).

By creating such documentation that is varied, accurate and widely re-applicable, yet which most importantly can only be developed through continued collaboration, IDR secures its own sustainability. One instance of this can be observed in the documentation of the Eastern Indonesian Tobelo language. Cooperation of biologists and linguists in this study ensured a reliable examination of previously undocumented covert taxonomic categories of certain sexual biotic forms. In contrast to other asexual corals and algae, it emerged that black coral was classified linguistically as having separate male and female forms. This finding has enabled and encourages further investigation by future

interdisciplinary groups into "what distinguishing biological feature of black coral might underlie [this] Tobelo folk classification." As a new research concern, this could help both linguists, by informing understanding of Tobelo noun class systems, and biologists, by improving the accuracy of Western binomial categories (Holton 2018: 7).

4. Revealing language contact and honouring ethics through TEK

Traditional Ecological Knowledge (TEK) is the knowledge a community has of its environmental resources, such as crops, plants, and other living organisms, as well as a set of beliefs and practices that illustrate how they as humans relate to these resources. Recording TEK, especially that of non-urban communities, is another research concern that requires collaboration, this time with ecologists, biologists, or ethnobiologists. According to Si, this is because rural language speakers have been found to provide knowledge that is significantly specialised, "rival[ling] that of…professional naturalist[s]" (Si 2011: 175). Nevertheless, linguists will document a community's language specific TEK as they find it beneficial to tracing the groups' cultural history.

Eliciting this TEK affords practical advantages in terms of linguistic research, along with access to a domain that is prone to reflect language contact. As Si further states, TEK is a substantial source of easily elicitable data in rural speech communities because speakers from these areas must "routinely engage with their natural environment…to be a fully-functioning member of a community." They might need to identify edible foods, avoid "dangerous organisms", or know the "seasonal cycles for agricultural purposes" (Si 2011: 172). Moreover, a specific part of this ecological knowledge, the semantic domain of taxonomy, is highly perceptible to change where languages interact (Amith 2020: 101). Indigenous taxonomies based on TEK thus show layers of lexicosemantic change, which can manifest as the borrowing of loan words, or loan translations from various languages. Linguists can use these layers to diachronically track when one speech community interacted with another, or where its speakers might have migrated to new settlements (Gadgil, Berkes & Folke 1993: 155).

In the Sierra Nororiental de Puebla region of Mexico for example, Amith recorded that many basic taxonomic loan words from the Totonac language were being used within Nahuatl speech. From this documentation, he was able to postulate that there had been historical migration of Nahuatl speakers into these previously Totonac community areas (Amith 2020: 102).

However, to establish whether an organism's taxonomical term or a loan translation of the term has been shared across speech communities, linguists must be able to reliably signpost specimens of that organism to their language consultants. Linguists attempting this on their own would again encounter the issues raised in Section 3. Lack of biological knowledge, for instance, might cause the linguist to misidentify one species or even subspecies of plant as being the same as another. This might lead them to request the taxonomy of one plant from members of the first speech community but accidentally ask for the taxonomy of a completely different plant from consultants in the second. Alternatively, an unaccompanied linguist may correctly elicit an organism's taxonomy at species level but be unaware of the subspecies of that organism which could also be identified through a loan word or translation, or vice versa. Therefore, as aforementioned

by Si, comprehending and fully exploiting the specialised taxonomic data within TEK calls for biological or ethnobiological collaboration.

Past documentations on the borrowing of taxonomic lexical terms across languages have been instrumental in corroborating the delineation of certain cultural and historical regions, such as Mesoamerica. Smith-Stark recorded fifty-two cases of compound words that were shared across Mesoamerican languages in the form of loan translations (Campbell, Kaufman & Smith-Stark 1986). Loan translation here signifies the literal, referent-for-referent translation of a term from one language to another. Smith-Stark noted that the use of these loan translations was widely distributed within Mesoamerica, and tightly restricted outside its perceived borders (Campbell, Kaufman & Smith-Stark 1986: 554). Of these terms, eighteen percent referred to flora or fauna (Amith 2020: 102). In other words, they related to and required knowledge of an extra-linguistic, biological domain.

Documenting TEK could also be considered part of the linguist's greater moral imperative to combat areas of language shift or loss caused by "problematic social inequalities" (Dobrin & Schwartz 2016: 259). According to Dobrin and Schwartz (2016: 259), one of the ethical principles embedded within language documentation is that the linguist should actively address any "problematic" loss they observe. They put forward the idea that this tendency arose shortly after 1990, when the disciplinary movement towards documenting endangered languages revealed that language shift in such speech communities was more commonly driven by the far greater, and "fundamentally political, economic, and cultural" pressures they faced, rather than any one linguistic force. Documentary linguists thus believed that to prevent further language loss within a community, their work must also address the social and environmental roots of the problem. In the same vein, the part of a speech community's lexicon that contains local ecological knowledge has been observed to be more inclined to undergo loss. This is, furthermore, often as a result of similarly extra-linguistic, environmental factors including urbanization, speaker migration, or even environmental degradation (Si 2011; Burenhult 2020). Additionally, speech communities typically define this loss of their TEK as unwelcome, as they view it to contain vital information on agricultural or non-urban ways of life (Si 2011: 174–175). Si, for example, cites that Solega speakers in southern India expressed strong remorse at their community's decreased retention of their former local ecological knowledge (2011: 176).

Whilst biologists have been known to independently record and thus preserve the botanical and taxonomic knowledge held by rural speech communities, the resulting resources are usually documented and published in a dominant language, for the easier access of Western academic audiences (Si 2011: 18). This does not address the speech community's own need to access records of such knowledge in their native language, and so conserve its use in the local environment. In contrast, linguistic documentation of TEK can ensure that said knowledge is also preserved in its original lexical form. Providing practical ecological resources to a community desirous to conserve its endangered TEK, especially if that TEK is at risk due to social factors, also upholds documentary ethical standards. The UNESCO People and Plants project demonstrates how the return of ecological information to speech communities in the appropriate language can greatly assist its conservation (Martin 2004).

In summary, documentary linguists represent a group who have the disciplinary capacity to record a community's TEK in the native language, as well as having their own academic and ethical motives to do so. These motives derive from the potential TEK documentation has in terms of tracking languages' cultural histories, and addressing problematic language loss or speech community concerns, respectively. Having understood that this form of interdisciplinary documentation is both feasible within, and beneficial to the discipline of Linguistics, one must also consider that its technical accuracy can be efficiently ensured when linguists collaborate with other specialists who have the right ecological expertise. Language-specific TEK records, therefore, can be collected, they should be collected, and above all are best collected as part of an IDR-based team.

5. Documenting interdisciplinary domains of shared human experience

Contrary to common belief, the research concerns of a documentation do not need to be based on linguistic queries to draw targeted linguistic conclusions. Burenhult (2020) argues that basing investigations instead on more accessible, thematic *domains* of human experience can generate far larger corpora of data that are equally applicable to linguistic theory. These domains also tend to have broader parameters that commonly stipulate crossing disciplinary boundaries.

Burenhult claims that basing research concerns on recording the linguistic representational strategies used by a speech community to express a certain set of fundamental, "universally relevant" human experiences (Burenhult 2020: 9) is highly conducive to the in-depth exploration of that language (Burenhult 2020: 10–11). This is because due to the essentialness and relatability of these experiences, speakers from all environments are capable of representing them "in language and thought," and, above all, at complex levels. In contrast, if linguists choose to base documentation on more esoteric research concerns, such as "serial verb constructions or phrase-level prosody" (Burenhult 2020: 9), any language consultants who are non-linguists might not be able to comprehend, nor offer in any great measure the information they are looking for.

Take the domain of landscape: it is structurally fundamental to language because it is needed to reference locations where activities take place, such as "named places, [and] landforms" (Burenhult 2020: 15). It also has great "spatial and temporal constancy," making it a deeply relatable domain for all speech communities (Burenhult 2020: 13). Burenhult witnessed that the Austroasiatic Jahai speech community consultants responding to domain-based landscape prompts showed rapid comprehension of concepts and were subsequently more attentive. Large amounts of linguistic data were thus collected within relatively short timeframes. Moreover, he remarked that speakers took more creative control with their responses by independently volunteering specialist words and phrases (Burenhult 2020: 15).

As aforementioned to be common amongst domain-based documentation, this study also prompted the sharing of diverse linguistic knowledge that intersected with other disciplines. There were "hunting stories" of relevance to ecological natural resource management, place names that were useful to anthropological study since each was attached to its own creation myth, and narratives conducive to learning local geography such as "travel stories" and "life histories [which were] always tied to different locations

and movement between them" (Burenhult 2020: 15). Typically, domain-based linguistic projects involve collaboration with many such "scientific branches and fields" (Burenhult 2020: 12). Participating linguists tend to draw upon the extra-disciplinary knowledge found in initial documentation in order to further cater to interdisciplinary research concerns in their subsequent work (Burenhult 2020: 16).

Such was the case for the LACOLA project, which carried out domain-based documentation on "the relationship between language, thought and landscape in several diverse and endangered language settings" (Burenhult 2020: 17). Motivated by its findings, Hägerhäll and Sang (in progress, as cited in Burenhult 2020) then spearheaded a subproject which combined the disciplinary resources of landscape architecture and environmental psychology and held the further specified aim of investigating "human landscape preference from a cross-cultural [and cross-linguistic] perspective" (Burenhult 2020: 17).

Domains are therefore an interdisciplinary medium of expediting data collection, as well as extending data ranges and sizes to enable efficient analysis of linguistic and cross-disciplinary community practices. Nonetheless, the extent to which documenting these spheres of shared human experience will reveal comparable representational strategies across languages can be overestimated. Certain categories within the domain of landscape, like place names, may indeed be stable enough to provide the means for cross-linguistic analysis on spatial representations (Burenhult 2020: 10–11). However, there is still significant "linguistic variation in geographical ontology and conceptualisation." What might be perceived as fundamental geographical classification methods by documentary researchers, e.g., Geographic Information Systems (GIS), still operate through Western specific parameters. "Linguistically and culturally attuned" GIS must be developed before accurate landscape-based data collection in other speech communities can occur. Without such methods, there may be "inter-cultural misunderstandings" that distort the documentation of indigenous landform categories (Burenhult 2020: 16–17).

The success or failure of a domain-based documentation can thus potentially depend on whether the linguist is aware of any relevant non-corresponding linguistic representational strategies used by the respective speech community. For some linguists following this interdisciplinary method might seem an all too precarious path to tread, as could potentially come at the expense of their linguistic data's validity.

6. Non-linguist fieldworkers and their effect on consultant contributions

It is now important to turn our attention to the complex effects of being an interdisciplinary team in the field. The physical presence of extra-disciplinary specialists has the potential to either improve or impede the building of researcher-consultant rapport. Building such rapport is crucial since without it, language consultants may be less inclined to share the relevant linguistic information or may offer the researcher fewer opportunities to record it.

Whether the external researcher will improve or impede rapport building with language consultants depends on how informed they are about the language of that speech community, their cultural conventions, or even the area of extra-disciplinary knowledge under investigation.

Researchers who do not have the appropriate language knowledge, for example, may limit their team's opportunities to uncover linguistic practices unfamiliar to them. Extra-disciplinary collaborators are less likely to be familiar with a speech community's indigenous language, especially if it is endangered or minoritised, which could complicate their communication with mono-lingual community members. This difference in turn could act as a social barrier and restrict their interactions with the community at large. Linguists on the same team might then also, by association, become more "socially removed" from the speech community (Holton 2018: 10). As a consequence, chances to observe speaker behaviours at "off-duty times" could be missed. Holton identifies such experiences as being extremely valuable because it is within this setting that linguists often come across subsidiary speech community practices previously unknown to them (Holton 2018: 10).

The same extra-disciplinary experts, however, may be capable of building strong rapport with language consultants through drawing upon the type of knowledge they share with these speakers. Botanists or ecologists, for instance, will display a greater understanding of Traditional Ecological Knowledge than the linguist. Subsequently, they may be better at encouraging speakers to provide more detailed accounts of this information, which may also be linguistically relevant. Holton similarly remarked that Indonesian Abui language consultants were eager to discuss plant knowledge and its lexical terms in detail with the team botanist because they visibly comprehended the subject matter. Whereas uninformed enquiries made by the linguist, Holton noted, were more likely to receive "a one-word answer" (Holton 2018: 11).

As the above instances show, having good social relations with language speakers offers multiple documentary benefits, and these relations frequently come from greater familiarity with language community conventions. On the other hand, over-familiarity with a language community and their concerns can lead the linguist to be over-cautious, in that they may avoid broaching uncomfortable topics of conversation or questioning local knowledge that is seemingly "common sense." In contrast, extra-disciplinary team members, who are entering the local environment for the first time, will be less aware of what questions might be interpreted as controversial or mundane. This could work to the team's advantage.

In Holton's case, a botanist colleague posed questions to consultants regarding women's "eating habits and use of plants during pregnancy" (Holton 2018: 11). This was community-based knowledge that Holton had not attempted to document for several reasons. Firstly, these were habits that he, as a long-term researcher, had become accustomed to and thus not queried. Secondly, based on his earlier social interactions with the community, he feared this topic might be labelled as taboo. It instead transpired that the consultants were eager to share this traditional knowledge and so the team recorded a substantial source of formerly undocumented, culturally-specific and language-specific information (Holton 2018: 11).

From assessing Holton's experiences, one might postulate that the social dynamics of interdisciplinary documentation have greater potential to increase the amount of linguistic data collected than to decrease it. Furthermore, the supplementary linguistic knowledge obtained will be highly specialised and directly pertinent to the interdisciplinary research

concern in question. Conversely, there can be no guarantee that extended informal interaction with speakers in mono-disciplinary documentation would provide the linguist with knowledge that was suitably relevant or detailed enough to be useful to their research aims.

Apprising extra-disciplinary colleagues of language community conventions ahead of fieldwork would likely dissuade posing indelicate questions unnecessarily to speakers. Otherwise, a team could altogether deliberate on whether a certain query might yield results promising enough to risk weakening researcher-consultant rapport.

One way that IDR can adversely affect rapport between researcher and consultant, however, proves harder to resolve. Language consultants may become disillusioned with the documentation process if there are discrepancies between the linguist's and other collaborator's remuneration procedures. Whilst linguists can pay consultants for concrete instances of linguistic production like transcriptions or recordings, collaborating anthropologists, for example, will require more extended contact with consultants to draw meaningful observations, and so are likely to deem non-monetary payment more appropriate (Widlok 2005: 16). Employing these disparate procedures in the same interdisciplinary team could cause language consultants to not have a fixed notion of what their remuneration will be, or to feel that the form of compensation they receive from one researcher is less valuable than that given by the other (Akumbu 2020; Widlok 2005). A speech community could therefore become less willing to participate in future documentary sessions.

Interdisciplinary teams should, in this instance, avoid jeopardising rapport with speakers through lack of clarity. They may do so by offering more comprehensive explanations of the different remuneration methods and their motivations. Nevertheless, it is hard to see what interdisciplinary research teams could do to change the necessary varied ways in which these different disciplinary approaches must collect their data; and, when their remuneration methods must be implemented side by side, what researchers can do to discourage speech communities from comparing them.

7. The trials of interdisciplinary documentation in a mono-disciplinary world

Despite increasing interest in IDR within language documentation (Widlok 2005), this approach still does not secure any sizeable disciplinary and financial interest relative to mono-disciplinary models (Penfield 2020). This may stem from the fact interdisciplinary documentation projects have been habitually afforded lesser exposure within the academic linguistic community.

Many research journals, from both linguistic and other academic institutional bodies, only feature papers based within a single discipline. This greatly discourages linguists from engaging in IDR since academic publication is crucial to improving career prospects (Penfield 2018: 12). Linguistics journals especially are also prone to raise concerns with papers co-authored by non-linguists, as they traditionally prefer longer, contextually informed prose and extra-disciplinary writing styles might be more "concise [or]…formulaic" (Holton 2018: 17). On the other hand, interdisciplinary linguistic documentation that is published in extra-linguistic journals can equally be subject to

scrutiny, as linguists may find themselves needing to justify the work's linguistic value to internal "graduate…or tenure review committee[s]" (Holton 2018: 19).

Most academic funding bodies, moreover, are either apprehensive, or ill-adapted to support IDR-based documentations. This may firstly be due to their greater monetary demands. Interdisciplinary teams who are investigating a speech community's taxonomic lexicon, for example, will entail larger equipment expenses such as "specimen collecting vessels, plant dryers [and] photo stands" (Holton 2018: 18). They will also need to finance larger research assistant groups to help collect and process biological samples. Such botanical collaboration can also raise logistical issues or involve acquiring time-consuming field permits. The increased amount of equipment IDR requires, on top of standard documentation digital recording equipment, is likely to cause transport problems, particularly if equipment needs to be transferred to a remote fieldwork setting (Holton 2018: 18). Furthermore, before collecting any specimens, botanists must request and await approval from both local herbaria, and the CITES international ethical trade body to establish their collection process will not threaten species survival (Holton 2018: 19). For such reasons many funding review panels, including the US National Science Foundation, have been seen to view interdisciplinary proposals as "high-risk ventures" which thus disadvantages them in funding application processes (Amith 2020: 73–74).

As a language documentation methodology, IDR is also "rarely taught" by universities or other professional organizations (Penfield 2018; Holton 2018). Penfield notes, additionally, that present limited teaching of its methods fail in particular to reinforce one key principle of IDR: that the needs of all involved disciplines be integrated from the very "conception" of linguistic research (Penfield 2020: 3). This means the research concern of an interdisciplinary documentation should be designed so that its answers equally benefit all collaborating disciplines. Nonetheless, owing to lesser disciplinary mindfulness of this principle, linguists typically require their extra-disciplinary collaborators to provide a level of "technical service" within documentation that is greater than the extent to which its information benefits "their own scientific research agendas" (Amith 2020: 74).

Take Amith's example of taxonomists who are commonly recruited, as part of ethnobiological language projects, to classify specimens of a species already known to them. Even if a new species is discovered through the documentation, the classification of one species alone does not constitute sufficient data for a the taxonomist to write their own publication. Taxonomic disciplinary traditions dictate that the description of a certain species can only be published if accompanied by more extensive detail on the genus to which they belong (Amith 2020: 74). The lesser relative advantages such external collaborators receive when working with linguists, in turn, make them less likely to engage in extended or future interdisciplinary documentation (Amith 2020: 76). Collaborative documentation that shows no proof of "integration" through useful extra-disciplinary materials may also ultimately fail to qualify for interdisciplinary funding (Amith 2020: 74).

All these factors could, in fact, be seen as causally interlinked. IDR's difficulty in garnering academic recognition has led to a lack of opportunity for the method's funding,

correct teaching, and subsequent practice. Poor adherence to undertaught collaborative principles in the field then restarts the same cycle, wherein interdisciplinary documentation is viewed as "a random, unsystematic occurrence" (Penfield 2020: 3) that remains largely unable to prove its full worth.

There is, nevertheless, evidence that attitudes towards funding IDR within linguistics, as well as in wider academia, have noticeably changed. Language documentation initiatives including the Volkswagen Foundation DoBeS programme (est. 2000), and the Hans Rausing Endangered Languages Project (est. 2003) offer grants whose guidelines stipulate interdisciplinary methods as requisite to project approval (Widlok 2005). Whilst previously noted for their disinclination to invest in IDR-based projects, large funding bodies like the US National Science Foundation (NSF) have set up initiatives to finance multi-disciplinary projects, such as the Creative Research Awards for Transformative Interdisciplinary Ventures (CREATIV) and the Integrated NSF Support Promoting Interdisciplinary Research and Education (INSPIRE) (Amith 2020). This NSF INSPIRE award has been won, for example, by interdisciplinary teams with research concerns based in Computational Linguistics (University of Michigan 2013).

Penfield also argues that for certain funders interdisciplinary documentations represent a more affordable investment opportunity. This is because projects with cross-disciplinary research concerns can be subsidised by both linguistic and non-linguistic funding bodies. Internal funders may now share the financial responsibility for collaborative projects with sponsors from external disciplines. These external sponsors similarly benefit as they can invest more economically in extra-linguistic research concerns; they need only provide support equivalent to the documentary aspects relevant to them (Holton 2018: 18). Other interdisciplinary documentations may gain financing as a direct result of their broader research agendas because funding agencies perceive them to yield "more research outcomes for their money" (Penfield 2020, 2018).

Additionally, of course, interdisciplinary language documentation may gain greater external funding than other linguistic work due to the specific cross-disciplinary research concerns it covers. Recording TEK in Native American languages, for example, is a particularly high interest area for funding bodies (Penfield 2018).

Owing to its wider scope, its research parameters that improve cost-benefit ratio for investors, and most importantly the increased number of initiatives endorsing this model, IDR is now far less subject to "haphazard…funding" than it was in the past (Penfield 2018: 12). Instead, it is comparatively better promoted as a 'profitable' documentation methodology for career linguists and investors, a factor which might ultimately encourage its needed wider tutelage as a linguistic research method (Penfield 2018; 2020).

That said, in order for IDR to be able to equitably compete with mono-disciplinary models for academic approbation and financing, opportunities need to be accorded to this linguistic research method on a much larger scale. Whilst collaborative linguists could seek publication in long-standing linguistics journals specifically designed to cover IDR (e.g. Text & Talk, est. 1981), this does nothing to amend the method's comparatively restricted market. Traditionally mono-disciplinary linguistics journals must make a conscious effort, en masse, to address any biased publication regulations they might still

enforce. Linguistics funding bodies should renegotiate, if feasible, any budget ceilings typically set for mono-disciplinary documentations so as to similarly better accommodate IDR. Alternatively they could attempt to establish long-standing, shared financing links with other sponsors for IDR-based documentation, to take the unnecessary burden of "selling" their research away from the interdisciplinary linguist.

8. Conclusion

In conclusion, IDR provides linguists with the tools to build more precise and reliable documentation. Unambiguous lexicon for biological phenomena can be ensured by collaborating with botanists or biologists, linguistic practices inextricable from their cultural context can be elucidated by collaborating with ethnographers or social anthropologists, and language cultural histories by collaborating with ecologists or ethnobiologists. By assuring greater validity of research for linguists, culminating in cross-disciplinary materials re-applicable to other disciplines, and necessitating continued collaboration to further develop its interdisciplinary concerns, IDR moreover renders our model of documentation more sustainable.

Documentary linguists must nonetheless be mindful of the limits of interdisciplinary methods. Domain-based language research can overestimate the equivalency of linguistic representational strategies across speech communities and so distort linguistic documentation through the Western lens. What is more concerning, however, is that the logistical challenges faced by interdisciplinary collaboration (its lesser academic exposure, fewer opportunities for funding, and resultant poor teaching) have arguably been equally instrumental in bringing about its "haphazard" and "high-risk" practice as a language documentation methodology.

Beyond greater funding and publishing allowances being made for interdisciplinary documentation, increased disciplinary attention on fostering appropriate IDR practices could represent a solution to these problems. Such practices refer both to linguists offering a fair deal in terms of their collaborators' research concerns, as well as being sufficiently well-versed in IDR approaches to know their benefits and limitations within different linguistic contexts. This could be accomplished in part by university and other independent linguistics research programs reviewing to what extent and efficiency they teach interdisciplinary methods. Awareness of proper practices could also be raised by linguists engaged in IDR regularly publishing papers separate from their documentary results, which reflect solely on whether/how they succeeded at conducting their study in accordance with correct interdisciplinary methodology. Writers would discuss in what ways they balanced linguistic and extra-disciplinary research aims, outline any contextual obstacles for IDR related methods they encounter, detail the practicalities and offer suggestions. Above all, these papers would reinforce the idea that linguists should be actively assessing such qualities within their work throughout an IDR-based documentation. Improvement in the tutelage of interdisciplinary linguistic research could secure a yet higher level of validity within future IDR documentary results, and by this merit also plausibly heighten the method's internal academic standing. At the very least, advising linguists on how to better support other disciplines during their collaborative work could secure greater extra-disciplinary approval and funding.

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