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## Transcription and translation of unwritten languages in American linguistics (1950s to 2000s)

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### Introduction

Starting in the 1940s American linguists made use of the work of Nida (1946) and Pike (1947) to guide them in their description of unwritten Amerindian languages. Voegelin (1954), however, was the first to establish a formal methodology for the collection, transcription and translation of data, which he called *Multiple stage translation* and which rendered systematic the relationship between transcription and translation. The transcription method, based on articulatory phonetics, established by the Voegelins (Voegelin & Voegelin 1959) is cited to this day in field manuals (Samarin 1967, Vaux & Cooper 2003).

Voegelin's intermediary language, a combination of morphemic glosses and mathematical operations, also designed for computational use, did not however become a standard among linguists. It is only in 1982 that the glossing tier (also known as literal translation or morpheme by morpheme translation) was reworked, with Lehmann proposing a system for the alignment of transcription and glossing tiers, with standardized practices and grammatical gloss abbreviations. The result of Lehmann's proposal, which evolved into the Leipzig Glossing Rules (Bickel et al 2004) and other variations, is still the current standard among field linguists as well as typologists presenting linguistic data. It must be noted, however, that, while the transcription and morphemic levels can be considered to be governed by standards, such systematized practices do not cover the translation level nor the relationship it bears to the glossing tier, resulting in grammatical analysis being interwoven, in many cases, into the translation tier.

In this article, we explore various phases of the relationship between transcription and translation in linguistics and typology. In the first part of the article, we describe the processes set up by American structuralists, most notably Voegelin and his students, for the transcription and translation of data on the Amerindian languages they were describing; in the second part, we attempt to trace the Voegelin legacy to the present day, in looking at how a few field manuals present transcription, glossing and translation, and what efforts there are at systematizing data annotation across these three tiers.

The questions that arise from the work of descriptive linguists involved in transcription and translation from the 1950s until the present include the following:

-Should the transcription tier be independent of theoretical frameworks? Does transcription represent a phase preceding linguistic analysis, the sole purpose of which is to make unanalyzed linguistic data available to linguists? Must articulatory phonetics be the unique basis for this transcription tier?

-Can the morpheme, which is the basis of the morphemic/glossing tier, and still present to this day in descriptions, be considered a universal of data analysis? Does the morpheme tier represent the result of analysis? Is the morpheme tier sufficient to understanding the data (as suggested by the intermediary language of Voegelin), or is it merely a step in the process of translating the data?

-Does interlinearized data (made up of the combination of transcription, glossing and translation tiers) play the same role and obey the same constraints, regardless of the approach, be it descriptive or typological? Can the goals of description and typological research, which are quite

different in their objectives and methods, be served equally well using the same presentation format for the data?

-What is the relationship between the three tiers, and to what extent are the practices that govern generating each tier standardized? Does this presentation scheme in three tiers make it possible for researchers who were not involved in its production to make use of the data? Is the data equally exploitable by descriptivists and typologists? Are changes necessary in the three-tiered system in order to take into account the specificities of practices of different types of users of the data?

## 1. Transcription and translation in American structuralist works in the 1950s

In the 1950s, the American structuralists, as members of the dominant school in linguistics at the time, were highly concerned with the issue of translation, and especially with its role in the description of Native American languages. The *International Journal of American Linguistics (IJAL)*, one of the major linguistic journals at the time, dedicated several articles to translation between 1951 and 1954. A special issue on translation was published in 1954 (IJAL 20), by Charles Voegelin, in the wake of a Linguistic Institute (of the Linguistic Society of America) in 1952 at Indiana University. Many linguists were present at the summer school, among them Zellig S. Harris, Dell Hymes and Yuen Ren Chao.

Native American languages were still spoken in the 1950s, even though the number of speakers was decreasing. The linguists' main objective was to provide a morphophonemic description of the exclusively oral Native American languages. It is possible that the priority given to morphophonemics originated from the typological properties of some agglutinative Amerindian languages nonexistent in Indo-European languages, as claimed by Paul Garvin (1967), one of Voegelin's pupils, but it could also be that a focus on morphophonemics is unavoidable when describing an oral language.

The main issues raised in work during the 1950's concerned the development of a common method of translation, a reflection of the status of free translation in linguistic description and of the problems caused by the erratic insertion of information by linguists in the morpheme by morpheme level of translation. The necessity for a rational approach to translation also emerged from the expectations raised after the first experiments with machine translation, starting in 1949.

### Hidatsa texts: Lowie, Harris and Voegelin (1939)

One of the first descriptions of an American language was by Robert Lowie in 1911: it was made up of Hidatsa mythological narratives<sup>1</sup> and comprised of the transcription of the text followed by its translation. It was taken up by Harris and Voegelin in 1939 who added, for each unit of text, a morphemic analysis and grammatical commentaries appearing in footnotes. The free translation is intended for both linguists who do not know the language and ethnologists interested in the mythological narratives, as seen in the following segment of transcription, grammatical analysis and free translation (Lowie, Harris and Voegelin, 1975 [1939], p. 187-200):

#### TRANSCRIPTION OF A TEXT UNIT [TEXT UNIT 1]

1. *i.'cibkawa.biris asarumi'ware.c he?esa.'k wiri?e.'raka to.s.a ata'?ak.u.?i.to.k irt'acak re.'ware.c 2.ra.'ruma...*

Footnote: grammatical analysis

[note 1]-1. *i.'cibkawa.biris* 'First Worker' [*i.'cibka* 'first'; *-wa-* 'something'; *-hiri-* 'to make, do'; *-s* noun final; with *-hiri-*, as with a number of other stems, *wa-* forms a unit with specialized meaning; cp. *bi'ric* 'he makes it', *wa.bi'ric* 'he works'; *.c* is verb final] 2....

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<sup>1</sup> Hidatsa belongs to the Siouan language family.

Free translation of text unit 1

1. First Worker traveled around (they say) and then, thinking "How does that Sun coming up over [the horizon] always come here I wonder," he went on (they say).

Note that the transcription is phonetic and based on strict articulatory criteria, using alphabetic letters and diacritics.<sup>2</sup>

This type of three-level analytical transcription was carried out and systematized later by Harris and Voegelin's pupils, one example being found in Bender and Harris's morphophonemic analysis of Cherokee (Bender & Harris 1946; Bender 1949). The analysis comprised five steps: (i) phonemic analysis; (ii) morpheme by morpheme translation – named "linguistic translation" by Voegelin; (iii) free translation; (iv) word list; (v) morpheme list – the generation of which was the ultimate aim of the analysis.

In some cases, the analysis was delivered in several steps, such as Wonderly's work on the South Mexican language Zoque, which was published in six articles in IJAL (Wonderly 1951a, 1951b, 1951c, 1952a, 1952b). In the sixth and last article, entitled "Text", the section called "analytical translation", which was distinct from the "free translation", referred to all the analyses published in the previous articles on morphophonemics, morphology, syntax etc. The information encoded in the analytical translation is utterly unreadable by linguists, but could nevertheless have been exploited computationally.

#### 15.1. Text with analytical translation.

1. ?ihtu te?riko. [Vb<sub>i</sub> *existed-he* (= V<sup>1</sup> ?iht- *to-exist* + 561) \* Dm *the* (= D te?)—Nn *rich-man* (= N<sup>1</sup> riko).] 2. ?i nu?mbawate?. [Pcl *and* (= Pc ?i) \* Ppl *robber* (= Pp nu?mbawΛ {= Vb<sub>i</sub> nu?mba *steals-he* [= V<sup>1</sup> nu?m- + 562] + 411})—Dm *the-fact* (predication marker).] 3. ñahapya te?kyom-

#### 15.2. Free translation of text.

1. There was a rich man. 2. And he was a robber. 3. He said to his compadre, 4. "You

### Voegelin (1951) and Voegelin & Harris (1951): interpreter translation

Confronted with descriptions in which the translation does not reflect a theoretical framework, Harris and Voegelin, in two 1951 articles frequently cited by descriptive linguists, present a rationalization for analyzing and discussing the status of translation. They provide definitions of various concepts, such as texts, word and also introduced the method of elicitation used by anthropological linguists.

Field work data in anthropological linguistics are obtained in either or both of two ways: (1) from texts and (2) by eliciting. If "texts" are defined as records of what native speakers say in their own language in words of their own choice, then "eliciting" is, by comparison a technique for obtaining native words or short utterances from native speaker (Harris & Voegelin 1951, p. 322).

Voegelin (1951) distinguished two kinds of translations: (i) "linguistic translation", the combination of "literal translation" (or morpheme by morpheme translation) and "free translation"; and (ii) "interpreter translation".

Interpreter translation is central to distinguishing dialects within a language family and determining language boundaries. For Harris and Voegelin, this issue is less a matter of comparative linguistics used to establish language filiations than of sociolinguistics, used to define *speech communities*, a term they owe to Bloomfield who dedicated a whole chapter to them in

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<sup>2</sup> See Voegelin & Voegelin's guide for transcribing unwritten languages (1959) who systematized that kind of transcription.

*Language* (Bloomfield, 1933, chap. 3). In this respect, they can be considered Bloomfieldians, and not merely distributionalists interested in morphophonemic descriptions disconnected from sociolinguistics.

Determining language boundaries using this system is based on mutual intelligibility across speakers of various communities. Translation is a key element of the method they named the “test the informant method”.<sup>3</sup>

Harris and Voegelin (1951) describe the method (see p. 327-328) in the following way:

(i) Speaker A1 from the first speech community tells a myth in his language (e.g. Shawnee). The myth is recorded and the fieldworker makes speaker A1 listen to his own recording chunk by chunk in order to translate it into English. This translation is the interpreter translation.

(ii) The fieldworker does the same with Speaker B1 from speech community B. He additionally asks Speaker B1 to provide interpreter translations of myths recorded by Speaker A1 in language A.

(iii) The fieldworker repeats the process for communities C, D etc.

One can then determine whether Speaker A’s speech is intelligible by B etc.

The authors underlined that interpreter translation emphasizes, better than the speakers’ technical competence for translation, mutual understanding, namely which part of a given text is understood by a given informant.<sup>4</sup>

In method 4, our interest is not in the translations themselves but in the difference between them. The translations are only a medium whereby we can see the differences between A's understanding of A's tale and B's understanding of the same A's tale. (Harris & Voegelin 1951, p. 328)

Here is an example of the method applied to several Algonquian languages (Kickapoo, Sauk-and-Fox, Ojibwa, Shawnee) by Pierce (1952).<sup>5</sup> In the following segments, the initial information was a Kickapoo speaker; Mrs X is an elderly Shawnee speaker; Tom McLelland, a speaker of Sauk-and-Fox; and Mr Elk, an Ojibwa:

Kickapoo -> English

*There was three of us went hunting in the Mountains.—We came over there, where we going.—We sleep over there.—We spend*

Kickapoo -> Shawnee

*Mrs. X: That's Sauk-and-Fox language.—No.—No.—I don't know what he said.—No.—They eated enough breakfast.—No.—*

Kickapoo -> Sauk-and-Fox

*Tom McClellan: Everybody was walking around in the mountains.—We went somewhere.—We slept there.—We were passing*

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<sup>3</sup> Researching language families had been tackled before through four different methods:

- (1) the ask “the informant” method used by ethnographs;
- (2) the “count samenesses” method used by field linguists, namely by Swadesh, which they considered limited because it is based on merely counting words;
- (3) the “structural status” method used by distributionalists;
- (4) the “test the informant” method promoted by Harris and Voegelin.

<sup>5</sup> Voegelin’s pupils, Hickerson et al. 1952, Pierce 1952 and Biggs 1957, tested the method on respectively Iroquois, Algonquian and Yuman languages.

Kickapoo -> Ojibwa

Mr. Elk: The informant responded to every phrase in this test with either, *Can't understand it,—Don't understand it, or Don't understand.*

Pierce concludes from these interpreter translations that Kickapoo and Sauk-and-Fox are close languages, whereas Shawnee and Ojibwa are more distant.

### Free translation: a problem for linguists

For Voegelin (1951, p. 360) free translations can be very awkward because “the linguist tries to force into his English version all the information which he finds in his native language texts, including what is paradigmatically marked”. The problem is non-existent when the source and target languages belong to the same family: as they share the same obligatory features, no extra and useless information needs to be inserted during the translation process:

Whether including as much information as possible in his free translation, or deliberately excluding some part of the obtainable information, the linguist - in both cases - cannot help but introduce pseudo-information into his English translation because English grammar commits him to certain obligatory oppositions which are optional in Kickapoo. If the linguist were to translate from Kickapoo to Shawnee, however, it would be unnecessary (or scarcely necessary) for him to introduce such pseudo-information into his translation: the grammars of both of these languages tend to make the same obligatory commitments and tend to enjoy the same systematic choices. (Voegelin, 1951, p. 360)

These difficulties led Voegelin to develop an intermediary language in order to take into account all the properties of both languages (the Algonquian language and English) in the translation process. The method was worked out during a Linguistic Institute organized by Voegelin in 1952, and led to two issues of *IJAL* in 1953 and 1954 dedicated to translation.

Voegelin (1953) defined units (prosodic contours) and operations (such as addition and subtraction) to work out an intermediary language for translation, which he called *parenthetical and bracketed English*. The final version in English is called *punctuated English*.

Within the contour units, morphemes are delimited by different types of junctures (+, #). Subtraction operations determine what is subtracted from Shawnee in order to translate the segment into English (in italics in *bracketed English*); addition (small caps) adds obligatory elements in English which do not exist in Shawnee; word order rearrangement is marked by commas, semicolons and periods. *Bracketed English* represents word order in Shawnee while *parenthetical English* represents word order in English. Elements moved from one unit to another are marked in boldface with wedges on the left or right side showing the direction of movement.

In the following example from Shawnee (Voegelin 1953, p. 6), ‘I’ belonging to the Shawnee unit [Oklahoma I >] was moved to the right in the English unit (< I live there); [July *month*] = (July), ‘month’ in Shawnee was deleted in English; (16 miles **east** >) [ <**east** + **and**>], [one-mile + plus-half] = (<**and** one and a half miles SOUTH) SOUTH which does not exist in Shawnee was added in English; **and** a was moved from left to right from the Shawnee unit [east + and] to the English unit (<**and** one and a half miles SOUTH) ; **east** was moved from right to left from English to Shawnee.

Phonemic transcription of the Shawnee text. Contours are delimited by brackets. Junctures are marked by +, space and #:

[Oklabooma niila] [hočilenawe] [ninyeewaapitaki kiten ?θvi] [n + ... binoki] [(hi)noki yaama kiiša ?θva] [meta ?  
+ ... meta ? θvimaali kite nekotwa ?θvi] [beta ?koθaki no ?ki] [nekotimaali kitepa ?θi] [naamin ooči]

[nitaʔmaačłooθiya] [laapelaanikiišaθwa] [kiišaʔθwa niišvi lakimooθo] [teepee(we) kite čaakatθvi + kite čaakatθvi ... tθvi] [tθwatikitaʔθoowenipi (hi)ne] [nimaačłooθi #]

Bracketed and parenthetic English:

[Oklahoma I >] = (Oklahoma), [there-live] = (< I live there) [I-be-forty and-three] = (I'm 43), [now >], [now-this-month] = (<now this month), [te... ten-miles + plus +six] = (16 miles east >) [ <east + and>], [one-mile + plus-half] = (<and one and a half miles SOUTH), [Norman from] = (from Norman), [I-was-born-there] = (I was born there), [July month] = (July), [second thus-he-is-counted] = (second) [hundred - operator = plus-ninety-operator = zero-nine ... ain] = (1909), [one-figures out] = (one figures out), [I-was-born #] = (I was born)

Punctuated English:

Oklahoma, I live there. I'm 43, now, this month. I was born there, sixteen miles east, and one and a half miles south, from Norman. I was born, one figures out, July 2 1909.

The resulting intermediary language is very difficult to read, and this method was hardly ever used by linguists. Voegelin designed it as an algorithm which should be processed, Voegelin (1951, p. 361-362) already dedicated more than one page to the codification of the linguistic analysis necessary to automatize morpheme by morpheme translation. In his 1954 article (p. 271), he proposed a translation process named *Multiple Stage Translation* and made up of eight stages:

1. First stage: informant's identification and translation of whole words
2. Second stage: the translator (i.e. the fieldworker) identifies morphemes
3. Third stage: translation spans enclosed in brackets, with equivalences given for ambiguous sequences, idioms and metaphors which are then put in braces within the brackets
4. Fourth stage: spurious and genuine redundancies are italicized to show that they are not to be carried beyond the bracket stage of translation
5. Fifth stage: translation spans are enclosed in parentheses; they differ from the corresponding brackets by following TL word-order and TL fullness of phrase, with all addenda shown in small caps
6. Sixth stage: occasional words are transferred from one translation span to a neighboring span and are then written in boldface to show they have been removed from their original translation span
7. Seventh stage: awkwardness smoothed by movement of whole segments
8. Eighth stage: punctuation of TL derived in part from FL by various substitutions for juncture-bounded translation spans and in part from morphological considerations.

Voegelin said that this procedure “was first undertaken as a marginal interest in programming electronic computers”, and that it constitutes the rationalization of the translation carried out by anthropologists traditionally in two steps: (i) interlinear (word by word) translation (ii) free translation.

Let us conclude this section by saying that transcription was made up of three tiers: two “simple” tiers and one complex tier. The phonetic transcription tier, based on articulatory phonetics, used alphabetic and diacritic characters; the transcription system used needed to be flexible and allow for new characters based on the linguist's needs. The free translation tier was meant to contain a fluid translation, without any addition of grammatical information, as it should be readable by both linguists and anthropologists. The morphophonemic tier, also known as analytical translation, was the locus of the linguistic analysis in accordance to descriptive linguistics' aims. The data in this tier was rather complex, and was actually barely readable even by the linguist. When relevant, it changed to reflect emerging areas within the field: machine translation--and more generally the automatization of language--and sociolinguistics.

## 2. The role of translation in language description: field manuals since the 1950s

In this section, we look at the legacy of the Voegelin school with respect to the twin topics of transcription and translation as it is seen in guides and manuals for linguistic fieldwork. We shall examine what advice is given about these two processes, both of which are fundamental to language description, and also look at how data in examples is physically presented on the page. It should be noted at this juncture that the presentation of data in a three-tiered system has become the standard in linguistics publications. These tiers are typically, from top to bottom, the transcription tier, the glossing tier, and the translation tier, and taken together they are known as interlinear text (Bow et al 2003).

There are relatively few manuals devoted to the methods of field linguistics (Mosel 2006). In the context of this paper, we take into account guides written by American (or American-trained) linguists, the assumption being that these are the most likely to have been influenced by the teachings of Voegelin et al. This means that we omit to discuss major field manuals such as Bouquiaux & Thomas (1976/1992), because they are from a specific school of French linguistics, and Kibrik (1977), which was originally written in Russian, despite the fact that they are heavily referenced in the literature on field guides.

Field guides and manuals can be defined as handbooks transmitting best practices concerning fieldwork, namely the collection, in the field, of linguistic data for the study of a language. In almost all cases, linguists carrying out fieldwork do so on endangered languages, with small speaker populations, and the majority of these are unwritten. The object of data collection is thus of a similar nature as were early works attempting to describe American languages, as described in the first section of this article.

The three guides examined here are all of different types: Samarin (1967) is a compilation of advice about carrying out fieldwork; Vaux & Cooper (2003) is structured to mimic the organization of a grammar: phonology, nominal morphology, verbal morphology, syntax, pragmatics, text collection, and as such could be used to produce a grammar according to a given template. Payne (1997) sets out to demonstrate the diversity of linguistic structures that a fieldworker might encounter. It should be noted that there is nothing inherently theoretical about these manuals: they concern data collection, and do not pretend to train linguists in data analysis. Although a certain amount of analysis is inherent in the process of transcription/translation (see Ochs 1979, Margetts 2009), linguistic analysis of a significantly theoretical bent—should the linguist engage in it—will come at a later stage, working from the collected data.

Samarin (1967)'s *Field Linguistics: a guide to linguistic field work* is one of the first guides to fieldwork in linguistics. The guide lays out, in great detail, how to go about selecting an informant, describes a variety of methods for eliciting data, and gives practical advice about recording data; it is conceived

[...] to serve a practical purpose, to prepare investigators of language for their confrontation with the source of their data—the living speakers of languages. [...] the principal audience is made up of those who propose to collect specimens of language for analysis, either as a goal in itself or for some other purpose. (1967, p. vi)

In this light, we are not surprised to find section on what training is needed before fieldwork: “training in articulatory phonetics and methods in linguistic analysis—phonological, grammatical and to some extent lexicographical (or semantic)” (1967, p. 8).

A chapter entitled Phonology (p.178-194) details the specifics of phonological transcription and analysis, complete with tables of phonemes (consonants, vowels), various diacritics, even providing information about making palatograms. Readers are referred in a footnote (fn 2 p. 178) to further their knowledge of phonemic analysis by reading essays in the journal *IJAL*.

As concerns morphology and syntax, pp. 194-204 are devoted to their description. Two sources of data are identified: a) material elicited via “reverse translation”, for which “the meaning will



already be in the notes” (1967, p. 195)<sup>6</sup> --this technique refers to asking the informant to translate material from the contact language/language of communication into the language being described; and b) recorded texts, which “must be carefully gone over with the informant. The researcher can test his understanding of the text by the extent to which he can render it in a readable and intelligible form in his own language” (1967, p. 195). The statement is accompanied by a footnote referring readers to the 1954 *IJAL* volumes dealing with translation (footnote 11, p. 195).

In describing the type of corpus a fieldworker should aim to collect, there is a description of a “tapered corpus” (term borrowed from Twaddell 1954), made up of a core corpus (“completely analyzed for descriptive purposes”), indexed texts (“transcribed, translated, and provided with a lexicon”), translated texts (“which are not transcribed but are translated by sentences or groups of sentences” and raw recordings (1967, p. 70). It is interesting to see types of texts graded according to the amount of analysis that has gone into their preparation, and to note the distinction between indexed texts, which are transcribed and translated but which are not accompanied by morphological analysis in the form of glossing, and “completely analyzed” texts, which include a glossing tier as well.

There is curiously little textual data reproduced in the book, and only in one case is it presented as interlinearized text, although the presentation is unusual in that the translation is given ahead of the transcription and glossing tiers. The passage is reproduced below:

It is freely translated as follows: “While he (the young man) is doing the bride-work, he cannot sleep with the girl for whom he is doing the bride-work.” In literal translation:

te	˘	wesé	-	kəfə	nā	ā	dēi,	ne	gan	ā	rēm
body	day	in-law	and	he	do	and	not	he	can		
ə	in	kóoi	nā	ā	dē	kəftai	ná.				
sleep	with	the girl	and	he	do	the in-law	not				

(Samarin 1967, p. 118)

Terminologically, “literal translation” refers here to the glossing tier (in other words, the second and fourth lines of the image above), and “freely translated” refers to what would constitute the translation tier, except that in this case, it is presented separately and therefore not aligned with the interlinearized material. It should be noted that the glossing tier bears little resemblance to the intermediary language “translations” the Voegelin school produced, which included various diacritics and brackets and parentheses: the glossing tier in Samarin is made up of lexical glosses the purpose of which appears to be to explicit word order.

For issues of both transcription and translation, readers are referred to *IJAL* issues, making clear the extent to which this guide was influenced by the Voegelin school. Yet despite these references, there is no mention of Voegelin 1951 which refers to issues involved in preparing translations of data.

Payne (1997)'s *Describing Morphosyntax: a guide for field linguists*, a very popular guide with linguists carrying out fieldwork, is of a rather different nature.<sup>7</sup> It does not attempt to guide students in practical aspects of fieldwork, but provides a framework of diversity of linguistic structures intended to guide them as they discover unfamiliar phenomena. The book does, however, contain sections on demographic and ethnographic information, assisting readers in collecting

<sup>6</sup> In footnote 3 p. 114, Samarin mentions that this technique can also be called “translation eliciting” or “shared morpheme eliciting” (Voegelin & Voegelin, 1957, p. 2-3)

<sup>7</sup> The description of the book which Payne himself gives in the introduction is the following: "Experiencing a new language might be likened to arriving in an unfamiliar city with no guide or map to help you find your way around. Writing a grammatical description is like trying to draw your own map, based on your experiences hiking up and down the main roads and back alleys of the city. This book is intended to be a kind of "Michelin guide go cities" for the traveler who finds herself in this kind of situation." (1997, p. 2)

essential sociolinguistic information related to their fieldwork, and each section ends with a series of questions guiding readers through data collection on the linguistic topic under discussion. Appendix 1 goes into the issue of how to balance text collection and elicitation, with suggestions about managing the data. These elements all combine to form quite specific guidance for a student encountering a language in the field. While the manual does not address the issue of how to translate linguistic data, the author does provide a large corpus of examples from many languages, all in well-assembled interlinear form. By the time of publication of the book, Lehmann's glossing directions<sup>8</sup> had resulted in fairly consistent glossing standards, which perhaps explains why Payne did not feel the need to reiterate the rules behind producing interlinearized text.

A list of abbreviations of grammatical glosses found in the examples is provided (1997, p. xiv). Readers are exposed, throughout the book, to well-formed interlinear text, with a transcription, glossing and translation tier. The translation tier sometimes includes parenthetical information, as in the following example (1997, p. 250). It is fairly obvious that additional material signals information which is conveyed by the L1 data but cannot be conveyed idiomatically in English, but this issue is not addressed explicitly.

ku-luma-a-ko-sse,        na?  
1SG-go-FUT-1SG:VER-PL OK  
“I'm really going to go, OK?” (plural addressee)

In other cases, the typological distance between the L1 and L2 is such that not only is parenthetical information necessary but also a literal translation tier, as in the following (1997, p. 208):

Taro-ga    tomodachi-ni    ki-rare-ta  
Taro-NOM friend-OBL    come-PASS-PAST  
“Taro was arrived by his friend (to Taro's disadvantage).”

Linguists turning to Payne for the general practices of IGT production will see the application of rules to ensure consistency in both transcription and glossing tiers, but may remain unclear as to how to make use of the translation tier in terms of where to place their translations on a spectrum going from literal to free.

The bibliographical references are very wide-ranging, and a large number of them are reference grammars as well as books by typologists. References to the earlier Americanist tradition are few: the Voegelins' article about the classification of the world's languages, and articles by Pike and Hockett are included, but the bulk of the references throughout the book are to specific languages and linguistic structures.

Vaux & Cooper's (2003) *Introduction to Linguistic Field Methods* is a very practical guide detailing the processes of linguistic field methods, with the table of contents set out as a generic model for the layout of a descriptive grammar.

An entire chapter is devoted to issues of transcription: it begins by describing the difficulties of parsing an unknown language (with advice about how to remedy this, namely via word elicitation). The chapter then discusses various transcription systems available, with a strong recommendation to use the International Phonetic Alphabet, followed by discussion of the difference between broad and narrow transcription.<sup>9</sup> The chapter concludes with advice about

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<sup>8</sup> The rules seek consistency in the presentation of glosses, in the basic form of alignment across tiers, a system of abbreviations for grammatical glosses, of matching numbers of morphemes and glosses across tiers.

<sup>9</sup> These are well-known terms in phonetics/phonology, and refer to the continuum that can be thought of as going from phonetic (narrow) to phonemic (broad).

transcription and a description of common traps for English-speaking linguists.<sup>10</sup> Transcription here refers to the process of putting an oral language into written form, and exclusively concerns the transcription tier.

Examples of transcribed data in the text take many different forms, depending on the context which the data illustrates. The text includes examples of a same segment transcribed in different phonetic and orthographic systems; in many cases, as the intent is pedagogical, the transcription is of part of an elicitation session, with the conversation between linguist and consultant reproduced, and including the elicited data. But we also find a number of examples of three-tiered interlinear text, such as the following (2003, p. 57):

*bada manoso badi ifokri-o-ne ifumban kare tʃe*  
all men all women-pl.-dat. kiss do is  
'All the men kiss all the women'

In such examples, readers are exposed to well-formed interlinear text: morpheme and word boundaries are consistent across the top two tiers, and words are left-aligned between transcription and glossing tiers, with the standard three tiers present.

The process of transferring audio recordings into written form is described in the following passage, and gives an example of the use of the terms *translation* and *transcription*:

After the informant has finished speaking, it is often useful to play the tape over right away to check for any acoustic problems or to ask the informant for explanations of words or phrases that might cause problems later on. In fact, if you are collecting a folk tale or a personal narrative, you may wish to collect a translation of the passage at this point while it is still fresh in the informant's mind. In this case, it may be necessary to do a quick transcription of the text while working through it, just so that you know how to match up the words with their English glosses. (Vaux & Cooper 2003, p. 183)

The transcription serves to get the data onto paper (but as it is “quick”, presumably it needs to be verified at a later time, carefully checked against the recording), so that each word can be glossed in order to understand the structure of the material; the fact that the translation should be collected “while it is fresh in the informant's mind” suggests that it is a free translation, a paraphrase of the original material, as opposed to a more literal rendition of each individual sentence (as individual sentence translations can just as easily be worked out at a distance in time from the recounting of the narrative, whereas the overall gist of the story is best conveyed at the same time as the original material). The description of the process here is interesting: it shows to what extent field conditions result in transcription, glossing and translation being done quickly, while the consultant is present and still has the patience to go over the material; the actual interlinearized data we find in grammars or text archives is the same data, but considerably polished and processed. It is not reasonable to expect publication-ready interlinearized data as one is working through the collected materials for the first time, and the application of the various codifications (consistent transcription, well-presented and consistent glossing, a translation tier corresponding to each individual sentence) is something that comes at a later stage of processing the data.

Vaux and Cooper's references have a strong Americanist component: the references throughout the text almost all come under sections, at the end of each chapter, which list suggested readings. We find works by Nida (1946, 1948), Harris 1942, Hockett (1942) Swadesh (1934), Voegelin & Voegelin (1959). It is interesting to find that these authors are not just referred to as historically important, but that students are referred to the texts in order to better learn the methods of field linguistics; this says quite a lot about the influence they have had on the authors.

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<sup>10</sup> The traps refer specifically to problems commonly faced by English speakers, as a result of their default phonological system.

This survey of three rather different field guides leads us to the following conclusions: in the two guides where advice is given about transcription,<sup>11</sup> there is a clear recommendation to linguists to produce text transcribed phonetically. Glossing, in Payne (again through examples) and Vaux & Cooper, follows generally accepted practices, with transcription and glossing tiers left-aligned by word, and consistent morpheme breaks and glosses. In Samarin, we see glossing (called “literal” translation) which, while aligned across transcription and glossing tiers, does not use abbreviations for grammatical glosses and does not have a consistent system for morpheme break consistency across transcription and glossing tiers. As far as translation is concerned, for Samarin, the term “free translation” is used to refer to the translation tier, and it is clear that it is to convey the general semantic content of the material. In Payne and Vaux & Cooper, the status of the translation tier is less clear: in Payne, some examples have parenthetical material in this tier, blurring the lines between a more literal- and a more free-leaning translation; in Vaux & Cooper, it seems that translation is meant to be free, but this is not mentioned explicitly. As will be discussed in a later section, the issue of translation is only addressed once typologists begin using translation-based corpora for their work, at which point the influence of the translation tier on the interpretation of linguistic data becomes a more significant area of concern.

### **Standardization efforts for glossing and translation tiers**

Lehmann (1982) appears to be the first attempt to standardize morphemic glossing, which he calls Interlinear Morpheme Glossing (IMG). In Lehmann's words, “I am aware of no treatment of the present topic. [...] It is something that ought to be standardized because there is a great deal of variation in the literature which may lead to a certain amount of misunderstanding” (1982, p. 199). The highlights of the proposed system are a list of suggested abbreviations for grammatical glosses, rules about consistent word and morpheme boundaries across transcription and glossing tiers, and proposals for dealing with unusual situations, such as non-sequential morphemes.

The articulation between the two “translation” tiers (glossing and translation) is addressed by Lehmann, because despite standardized gloss abbreviations and practices, the glossing tier remains an intermediary level which is challenging to interpret:

An IMT [interlinear morpheme translation] will not usually make good sense in L2. This is why it is normally followed by a translation in normal L2 speech; and, moreover, whenever there is an IMT, there is usually no further need to give a narrow translation, so that the non-morphemic translation may then be quite idiomatic. (Lehmann 1982, p. 201)

Despite this statement, which offers a clear position on what kind of translation he feels is needed in the translation tier (namely free), Lehmann acknowledges that the three tiered presentation of data cannot provide all the information a user might need:

A word must be said about syntax in IMTs. The primary aim of an IMT is to show the morphemes and their sequence. It cannot make explicit the syntactic construction. (Lehmann 1982, p. 217)

This may be part of the explanation of the occurrence of what are in fact literal translation tiers in the presentation of linguistic data: linguists realize that well-produced interlinearized data may not convey enough information to allow readers to identify the constructions that are present in the data.

One solution could be to add tiers to the interlinearized text format, in order to ensure that syntactic (and other, for example phonetic as well as phonemic) data is conveyed. This is what has been proposed by Drude & Lieb (2000) and Drude (2002), whose “Advanced Glossing” scheme involves thirteen different tiers. In this scheme, the line which corresponds to the

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<sup>11</sup>In the third guide, Payne, the examples make clear that the recommendation is the same.

trilinear translation tier is line XIII, and it is meant to provide “sentence meaning paraphrases”. The term “paraphrase” is a straightforward way to break out of the ambiguity that comes from labeling a tier “translation”, as it positions the tier clearly in the domain of semantics, leaving the syntactic (and other) work to be done by other tiers. But the main problem with the 13-tiered scheme is that it is an inefficient solution for large corpora: as is quickly apparent when interlinearizing data with even a three-tiered scheme, interlinearization is very time-consuming to produce.

### **The role of typologists in shaping the translation tier**

Interestingly, one of the few sources for discussions of how translation shapes language description comes from typologists working with parallel corpora. Parallel corpora are collections of translations of a same text, originally used to train computer-assisted translation software in text alignment. They have been coopted by typologists as a powerful tool for language comparison. In a special issue of the journal *STUF* (2007) on the use of such corpora for typology, we are provided with a number of insights about translation, and particularly about how translation affects the use that can be made of descriptive data.

Regarding the spectrum of free to literal translation, Wälchli (2007, p. 133) points out that there are problems associated with either end of the continuum: “While free translations are a problem inasmuch as it is more difficult to identify domains, literal translations are a problem inasmuch as they reflect at least partly the structure of the source language rather than the target language.” On the same issue, Dahl is in agreement with Wälchli that there is no correct answer:

From the present perspective, it can be noted that there is a trade-off between 'alignability' and empirical relevance, in that a more literal translation is easier to align with the original but may tell us less about the target language, whereas a translation that aims at transmitting the message in a natural way rather than rendering the original literally will potentially tell us more about the language as it is spoken but will be more difficult to align and parse. Apparently, one cannot have it both ways (and sometimes one gets neither). (Dahl 2007, p. 177)

Regarding the difficulty of making a decision about how to translate a particular segment of data, DeVries states the following:

[A] single translation can never show all aspects of a source text. Translators have to decide on one specific wording, and in that process inevitably some aspects of the source are lost (selectivity)... Furthermore, although some translations are excluded as wrong by the source text, there remains much choice, since any text always can be translated in more than one way, with the source text legitimating these various ways of rendering the text. (DeVries 2007, p. 149)

Echoing what Lehmann said about the relative opacity of interlinearized texts and their use in identifying constructions, Dahl (2007, p. 174) confirms that “[w]ithout personal knowledge of a language, a typologist can only make limited use of texts and even if glossed texts are available, the low text frequency of many interesting phenomena makes it difficult to find more than a few examples, and those are often hard to interpret.”

We thus have evidence of increased awareness, thanks in part to typologists using the data, of the fact that the production of a translation tier is not simply a matter of “translating”, as earlier manuals led us to believe. Typologists using interlinearized data and, to a lesser extent linguists producing that data, are aware of the challenges of producing a translation tier, and that, while linguists have very widely adopted standards concerning the transcription and glossing tiers, it will be very difficult to come up with similar standards for translation. The only concrete solution might be to use more tiers, such as in Drude & Lieb's *Advanced Glossing Scheme*, but linguists might hesitate to take such a step, for practical reasons such as time and space.

## Conclusion

The American distributionalists in the 1950's had a systematized way of producing interlinear data, covering the generation of a transcription tier (using articulatory phonetic principles laid out in a guide (Voegelin & Voegelin 1959), a highly specific system for producing glosses for the data (Voegelin 1954), and clear principles about the role of translation in the presentation of data (Voegelin 1951).

Later field manuals by American-trained linguists suggest familiarity with the work of the distributionalists, but only as concerns the transcription and glossing tiers. There are no references to the 1951 article dealing with the translation tier and the importance of not blurring literal and free translation.

Despite the comment by Voegelin & Voegelin (1959, p. 2) that in the late 1950s “phonetics itself has shifted away from the job of field work transcribing to componential analysis of acoustic features, with the help of spectrograms”, referring to Jakobson and Halle’s work which would become generative phonology, articulatory phonetics remains the basis for the transcription tier to this day. Furthermore, morphemic analysis, which could potentially have been present in early work in order to account for the typological features of Amerindian languages, has become a standard tier in interlinear data in current fieldwork guides and typology books.

While the top two tiers of interlinear text are now consistently standardized (using International Phonetic Alphabet and the Leipzig Glossing Rules (Bickel et al, 2004) which came out of Lehmann 1982), the problem of how to best use the translation tier remains unclear from field manuals, which do not address the issue. Work by typologists using parallel corpora has brought the issue into the open for the community of field linguists, and shown that there are consequences for interpretation of data wherever one places a translation along the free to literal spectrum.

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