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Making Use of Bilingual Interview Data: Some Experiences from the Field

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This paper describes the challenges faced, and rules devised, while dealing with bilingual interview data as part of a life history study of a female science teacher’s conceptions of the nature of science while teaching in a school in Karachi. The interview data generated was both in Urdu and English, which underwent a number of processes (transcription, translation, and transliteration) to evolve into “interim texts,” to finally become a part of the data analysis process. I have called these translated materials “transmuted texts,” as they reflect the original, but have been recreated. This paper is significant because as globalization connects diverse societies, more research studies have to deal with research data in more than one language. Key Words: Qualitative Research Methods, Interview Data Analysis, Bilingual Data, Transcription, Transliteration, and Translation

Introduction

This article is based on the process of data generation during a single-case, life history study of a young female science teacher in Pakistan. The purpose of the study was to understand the science teacher’s ideas about teaching science, and her conceptions of the nature of science through in-depth interviews and observations of her teaching in the classroom. The data collection spanned a period of seventeen months when more than thirteen life history interviews were conducted with this science teacher. Thirty science lessons in grades seven and eight were observed over a period of six months in a secondary school in Karachi, Pakistan (Halai, 2002).

In this paper I describe the challenges faced while handling bilingual interview data in Urdu (the national language of Pakistan) and English. This includes the process of converting the data into English text, and some rules that were devised as I continued with the conversion process. My research study is rooted in science education, but the theoretical lens that I have used to view the use of bilingual interview data, among other things, involves cultural decoding (Torop, 2002) I have borrowed key ideas from translation studies for this process (Crystal, 1991; Lambert, 1997; Nida, 1982). It is important to note that the implications of this paper and the issues highlighted, as related to bilingual interview data, are just as valid for other kinds of qualitative data as it is for life history interviews or data generated through biographical genres of research. Due to globalization and pluralization of societies, research in education has to increasingly face issues of bilingualism in education and the use of bilingual data in research studies. Yet, very little has been written about the process of generation, conversion, and utilisation of this data into text. This article will illustrate some of the processes that a researcher went
through to arrive at the research texts. Although, in this paper, I discuss methodological issues that arise from the conversion of data in Urdu and English, into research texts, the issues that arise are common to any bilingual interview data. Hence, the lessons learnt can be applied to bilingual data in any two languages.

Urdu is the national language of Pakistan. It occupies a unique space in the linguistic landscape of Pakistan. Less than 9% of the population speaks Urdu as their mother tongue, but it is used as the lingua franca to communicate with different ethnic communities such as the Punjabis, Sindhis, Balochis, and Pushtuns that live in the four provinces of Pakistan. Urdu as a language has its origin in the Indian subcontinent during the time of the Mughals (1526 - 1858) when the language of the court was Persian, but the language of the masses became Urdu. Urdu is written in Arabic script and has freely borrowed from Arabic, Persian, and Turkish languages. It has a great ability to absorb other languages and has also contributed a number of words to the English language.

In qualitative studies, interviews and conversation are data; and this data in the form of audio-taped recordings are further transformed to transcribed text. This transformation of verbal conversation into textual form, which is accessible for multiple reading by multiple readers, is a multi-layered process, which transforms data both in form and function (Lambert, 1997; Nida, 1982). This conversion of field texts to research texts is a theory laden process, and the decisions and choices the researcher makes along the way enacts the theories influencing the analysis and interpretation (Lapadat & Lindsay, 1999). The complexity of the process is further enhanced if the data is bilingual or multilingual. It is the thesis of this paper that the use of bilingual or multilingual interview data involves methodological and theoretical issues that have not received sufficient attention.

I came to this conclusion while undertaking a research study using life history interviews. As the data collected was both in Urdu and English, I read research reports based on bilingual data with added interest to see if these issues were discussed. In most cases this aspect of data collection was mentioned in passing. Preparing bilingual data for analysis is a part of methodology and hence should be discussed in more detail than it is currently done. It is also a cultural issue, because translation involves converting ideas expressed in one language for one social group to another language for another social group, which entails a process of cultural decoding (Torop, 2002). Since interviews are not just words spoken at a certain time in response to a social situation, they are embedded in the culture of the place, hence, when translating one must keep the target social group/reader in mind. In this case, I had the advantage as I belonged to the same culture as my research participant. Hence, I did not have to translate for the culture too. However, I did think of my target reader the entire time, who could be from any part of the world, and hence tried to make my translations understandable for the general reader.

Thus, translation is essentially a boundary crossing between two cultures. Though both of us were from the same culture, the cultural factor did come into play, as I was writing for a general audience. My dilemma was that if I pandered too much to the target culture I would lose credibility with the source culture; to achieve a balance was very difficult and challenging.

In my view, data is generated by the collaboration between the researcher and the researched: It is not "out there" to be collected; rather data in part has to be constructed. I used a number of devices to generate data required for the study (e.g., interviews,
observation, fieldnotes, my reflective journal, and documents obtained from the school). However, as mentioned before, for this paper, I will focus on the interview data.

**Bilingual Data**

The heart of the life history method is the special kind of interview process that is needed to co-construct the life of the research participant. Collaboration, introspection, and reflection are prerequisites for a successful interview (Halai, 2002). At the root of the in-depth interview is an interest in understanding the experience of other people and the meaning they make of that experience (Seidman, 1991). I conducted the interviews in Urdu, making this decision consciously because I knew from personal experience that teachers are much more comfortable talking in Urdu rather than in English. However, there was a lot of English spoken during the course of the interview. The teacher and I both switched from Urdu to English, and then back again into Urdu. One reason for the code switching might be that the teacher and I were both fairly fluent in English. However the data showed that there were at least three reasons for this code-switching.

1. **Special Science Vocabulary**: Many ordinary science concepts are conveyed using English words. For example English words “atom,” “molecule,” and “conduction” are used to convey these ideas rather than their Urdu counterparts. Often alternate Urdu words are not available, but sometimes even if they are they are so difficult and uncommon that both teachers and students prefer to use English words. Velocity is a common example; its Urdu translation “isra” is very rarely used. Hence, some of my interview questions and comments, and some of Munazza’s interview responses that involved science were full of science vocabulary in English.

2. **English Words Used as Urdu Words**: Some English words such as “school”, “teacher,” “desk,” and “pencil” have been absorbed in the Urdu language and are used commonly in everyday conversations. Hence, it was common for Munazza's and my conversation to be full of such words.

3. **Minglish**: This is the name given to English spoken mixed with other local languages such as Urdu, Punjabi, Malay, etc... (Ling, 2003). The trend of using English phrases and words mixed with Hindi and Urdu is increasingly seen in ordinary conversations (Kachru, 1992), even in radio and television broadcasts (Karachian, 2003). This mixing takes place irrespective of whether suitable words are available in Urdu or not. Blackboard is a good example of a word commonly used in the school environment where “takht-e-siyah,” an Urdu word is available. This trend is seen in all spheres and all strata of society, not only in the field of education or in the socially advantaged strata of society. If I scan my interview transcripts they are full of words such as “higher,” “lower,” “book,” “colleagues,” “award,” “encourage,” “hesitate,” and “priority” used either by Munazza or by myself during the course of our conversations. All of these words have perfectly acceptable Urdu equivalents, yet we had not used them.

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1 Pseudonym has been used to protect the teacher’s privacy.
Thus, for various reasons bilingual data was generated and it was my job to make sense of it.

**Conversion of Bilingual Data into Text – The Interim Texts**

I converted the tape recorded interviews into text. Clandinin and Connelly (2000) have referred to this process as conversion of field texts into research texts. In this particular case the situation was more complex, as the study generated a great deal of bilingual data; that is Urdu interspersed with English words and phrases. Dealing with taped interview materials that were in two languages was not a simple matter of converting spoken language to text, (if it ever is a simple straightforward transaction). It involved making decisions at every step of this conversion process. Literature on how to deal with bilingual data is generally sparse and almost nonexistent when it comes to English mixed with Urdu. I had to improvise and develop rules based on common sense. In fact, transcribing involves a lot of ad-hoc decision making as pointed out by ten Have (1999), and Jefferson (1972) took years to refine her transcription practice.

To help me in this conversion process, I used a number of steps to generate what Clandinin and Connelly (2000) call *interim texts*, “texts situated in the spaces between field texts and final published research texts” (p. 133). The data evolved through a number of phases into intermediate forms that were different from the previous form, but was also a reflection of it. The purpose was always to reach the stage where I could use the texts for my interpretative analysis or directly as quotes and examples in my research report. I have called the final form of these texts *transmuted texts*, because the final text had undergone a process that had transformed it and even altered it in some ways. At every stage, I strived to keep the essence of the data intact by using reliable tools for translation and sharing the translated material with the teacher. The gradual process that let me reach the final stage is as follows.

**Transcription - Handwritten**

According to Duranti (1997), converting spoken word into text is much more than simple writing down what is said. He has defined transcription as a technique for the fixing (e.g., on paper, on a computer screen) of fleeting events (e.g., utterances, gestures) for the purpose of detailed analysis. Analysis of the written or spoken word is used extensively in qualitative research and the general principles are borrowed from disciplines of conversation and discourse analysis (see Johnstone, 2002, Sacks, 1992, or Sacks, Schegloff, & Jefferson, 1974). The use of transcribed data and some of the attending methodological difficulties faced are also documented in the literature (Lapadat & Lindsay, 1999; Tilley, 2003), however the difficulties faced in transcribing bilingual data obviously are even more challenging. Greer (2003) has listed some of the challenges inherent in transcribing multilingual data: (a) translation, (b) selecting script for representing translated data, (c) whether to include the translated text in the script, and (d) the positioning of such script and the use of font. I also grappled with similar issues along with others, which I will discuss in this paper.
Jakobson (1971) differentiates between three kinds of translation activities: The first type is intra-lingual translation, which is translation or interpretation within the same system of signs (such as paraphrasing). The second type of translation is inter-lingual translation that means interpreting verbal sign with the verbal signs of another language (and is akin to translation in the ordinary sense). The third type of translation is intersemiotic translation or transmutation that means interpretation of the signs of a sign system with the signs of another sign system. In this way, translating verbal language into written language becomes included in translation studies. This taxonomy has engendered a realization of the complex process that transcription entails.

At the beginning of the study, I had decided to transcribe the full interviews because, as Vygotsky (1987, p. 236) remarks, "Every word that people use in telling their stories is a microcosm of their consciousness." I used help available at my university in the form of a designated person to do the transcription. The person had no prior experience in this work and followed the instructions that I gave him. He transcribed the interview by writing in longhand in a notebook. At the very outset of this transcription process a number of questions arose.

A common method of handling Urdu words in English text is to write it in Roman Urdu (Khan & Khan, 2002; Sulemani, 2003). However, for me, the process was reversed, as there were English words in Urdu text. I did not want to use Roman Urdu because a larger part of the data was in Urdu and a lesser component was in English. I chose to use two kinds of scripts for the two languages in my data simultaneously. All Urdu components of the conversation were written in Arabic script and all English parts were written in the standard Latin/English script, in essence producing a bilingual text for a bilingual conversation.

My instructions to the transcriber included, “to transcribe everything verbatim, writing the Urdu words in Urdu using Arabic Script and the English words in English.” This instruction appeared simple and straightforward, but immediately begged the question, “What is an English word and what is an Urdu word?” The transcriber requested clarification on how should words like “teacher,” “blackboard,” and “computer” be treated? Are they English words or Urdu words? They are technically English words, but commonly used in Urdu. I changed my instructions to say, "type as Urdu all those English words that have become a part of the Urdu language." Immediately a second question arose, how does one know that a certain English word has “become a part” of Urdu language? I decided to use the standard Urdu dictionary Ferozul Lughat by Ferozuddin (n.d.) to help me make such decisions. If an English word was found in this dictionary then that English word would be considered a part of the Urdu language and could be used as such. From among the three words for which the transcriber had sought clarification, the word “teacher” was found in the above mentioned dictionary, and, hence, was transcribed as an Urdu word. The word “blackboard” though very commonly used in colloquial Urdu, was not a part of the Urdu language as I had defined it. Hence, it was transcribed as an English word. The word “computer” posed a different challenge. Though it is an English word and has not “become a part of the Urdu language” yet, it is not only commonly used in Urdu, but there is no other word for it in the language. This word I chose to treat as English. Hence, the rules that I devised for myself were:
Rule # 1: All English words which are now a part of the Urdu language, as seen from the *Ferozul Lughat*, would be considered Urdu words and written in Urdu, for example, “teacher,” “class,” and “science.”

Rule # 2: All English words which are commonly used in Urdu, but have not become a part of the Urdu lexicon, and do not have a comparable word in Urdu, would be treated as an English word. Some examples are: “blackboard,” “period,” and “computer.”

As I proceeded with the transcription, I continued to formulate such rules for myself to help me remain consistent in this process. From this example it is clear that some methodological issues were raised, and rules devised, to deal with all similar issues in a consistent manner. However, underpinning these methodological issues are theoretical concepts such as, “What constitutes words in a language? When are words in one language accepted as part of another language?”

Once the tape was transcribed, I read the transcribed text along with the tape so that I could check for errors and inaccuracies. The most common transcription errors were gaps, omissions, misspelt words, misunderstood words, and missing paralinguistic communication that included all variation in volume, pitch, and quality of voice, as well as the pacing of speech and length of silences (Gorden, 1980). As I read the transcribed interviews, I found that I could make little sense of the text partly due to the omissions, gaps, etc…, but more due to the absence of all the nonverbal cues. I could hear a tape over and over again, but I had difficulty reading the transcripts even once. It is at this point I understood that speech and writing are two separate media, and transcribing is not just converting speech into text, but involves a transformation process.

To help my understanding of the transcribed data I decided not only to help in the editing process and to make corrections, insertions, and deletions to the transcribed text, but to also add the nonverbal cues wherever I found them to be essential for better understanding of the text. Even here I chose not to take into consideration processes such as the length of the silences within conversations and overlapping sentences, pitch and quality of voice, etc… This was again a methodological decision, as I was not engaged in conversation analysis, but trying to understand the ideas expressed by the teacher. However, it had two important advantages; (a) I came into close contact with my data and got to know it thoroughly and (b) learnt to use the software *Inpage 1.1*. So in the end, despite the support of a transcriber, I had to do a great deal of transcription work myself. This task was time consuming and difficult, as the Urdu/English word-processing software *Inpage 1.1* that I used is not as user friendly as other commercial software.

By doing parts of the transcription, I realized that transcription is a theory-laden process. Little attention has been paid to the methodological and theoretical issues pertaining to transcription. Lapadat and Lindsay (1999) examined the transcripts based on the same interview data prepared by five pairs of male graduate students. They found all transcripts differed in layout, quantity, and type of elements of interactions they transcribed. They conclude “the choices researchers make about transcription enact the theories they hold and constrain the interpretations they draw from their educational practice…” (p. 15).
It might have been better if I had transcribed the first two or three interviews myself and worked with the transcriber to show him the kind of transcription I needed. At this point, I also recognized that "completeness" was an illusion (Silverman, 2000). I asked myself, "How 'perfect' can a transcript be?" "How complete can I make my field notes?" "Should I spend time and energy to put my interview transcripts and field notes just right?" My response was to do as much as was needed. I tried to convert my data into text in a way that it was easy to write, easy to read, easy to learn, and easy to search, which Flick (1998) has called the criteria of manageability, readability, learnability, and interpretability.

**Transcription – Typed**

The data was transcribed in longhand in notebooks. Very soon I had a stack of notebooks. I wanted this data to be available to me in the form of computer files for a number of reasons. I was commuting between my research site in Karachi and a university in Toronto and could not carry these materials with me all the time. I needed to be able to share data across continents, carry it safely, and have it in an easily retrievable and searchable form. This would have been possible only if I had my data in the form of easily transferable computer files. Hence, I wanted to get my transcribed data typed using appropriate computer software.

The process of getting my data typed involved two stages. The reason that the two stages could not be merged into one was the need to use a special software package to type the bilingual data in Urdu and English. This software can type both in Urdu and English at the same time and was extremely helpful in typing the bilingual conversation that my research participant and I engaged in. Using this software required special expertise and, again, had to be done by a trained person different from the transcriber. The transcription process and typing which is normally a single process had to be divided into two processes: (a) transcribing data by writing in longhand and (b) typing the text using the computer software. This required an additional and a very tedious process of proof reading. This process was so time consuming, as was the turn-around time from proof reading to typed document, that I decided to do most of the proof reading directly on the text using the above mentioned software, which I learnt for this purpose.

**Translation**

Most of the interview data was in Urdu and the research report was to be written in English. This meant that any part of the interview data that found its way into the research report had to be translated from Urdu to English. At the start of the research process I had decided to translate into English only the sections of the interviews I needed. That proved impractical for a number of reasons. As I got into the writing stage, my needs changed from day to day, as I experimented with different ways of representing the data. The nature of the story I was writing needed holistic rather than piecemeal data. I also found it very inconvenient to work with data in two different languages using an ingenious, but nevertheless cumbersome, computer software. Reading hundreds of pages of data in two languages, English written from left to right and Urdu from right to left,
was in itself a great challenge. Hence, I made the difficult decision of translating the first six full interviews into English, as these constituted the bulk of the life history data. I continued to use the bilingual transcripts for the analysis of the rest of the seven interviews.

I took translation to mean “all tasks where the meaning of expression in one language (the ‘source’ language) is turned with the meaning of another (the ‘target’ language) whether the medium is spoken, written or signed” (Crystal, 1991, p. 346). I did not face any difficulties in linguistic, syntax, or grammatical aspects as I was not aiming for “exact equivalence” (which is impossible), but for “inexact equivalence,” which satisfied my need to convey the essential meaning of the teacher’s words spoken in Urdu into English. Nida has summed it up as, “whoever, takes upon himself (sic) to translate contracts a debt; to discharge it, he (sic) must pay not with the same money, but the same sum” (1964, p. 156). I tried to translate the interview text in such a way that the basic requirements of (a) making sense, (b) conveying the spirit and manner of the original, and (c) have a natural and easy form of expression were all met adequately.

Translation required knowledge of subject-specific terminology, awareness of style and grammar, nuances, and idiomatic expressions. Most of the time, my own knowledge of Urdu was sufficient to obtain acceptable translations, but I often referred to Urdu-English and English-Urdu dictionaries. Translating interview transcripts and using it as data raises a number of questions. Does translating mean rewriting the data? Does it mean recreating it or does it mean that essentially the meaning remains the same? Literature on translation pertaining to research data is extremely sparse. It is instructive to note that the Handbook of Qualitative Research (Denzin & Lincoln, 2000) index list does not contain any entries on translation. McDermott and Palchanes (1994) have discussed the issues involved in translating for equivalence of quantitative measuring tools, but there is no discussion about the translation of interview data. The comments of Rossman and Rallis (1998) are sympathetic towards the researcher: They note that the workload of the researcher doubles if he or she chooses to translate the full interviews. They have raised a number of questions such as,

If you have translated from another language into English, what constitutes direct quotes? Can you use translated words as a direct quote? How do you signal that a translation is accurate and captures the subtle meanings of the original language? (p. 162)

I do not have the answers to the many questions that have been raised, but I tried to deal with the issues as they came along. For instance, I have used translated words as direct quotes. However, the crux of the matter is the accuracy of the translation. Strauss and Corbin (1998) acknowledge the difficulty of translating interviews, but other than advising that minimal translations be undertaken, they do not (and cannot) offer suggestions on how to achieve accuracy, as each language is different. I felt uneasy when I translated the teacher’s words into English and sometimes did not find just the right words to convey the meaning of her expressions. For instance, she said, "Other teachers ask me if I don't feel uncomfortable 'when Mrs. Halai is in your class'" I have translated “ooljhan” as "uncomfortable" though it does not convey the right nuance of meaning. Hence, some meaning is lost in translation. Language is context based; some words carry a world of meaning within them and cannot be
easily conveyed in another language and to another culture. Sometimes the cultural barrier seemed so huge as to be almost insurmountable. I wondered to myself in my reflective journal, "How much can I explain, elaborate, footnote, and interpret for my readers?" The final translated materials I have called transmuted texts as they have been converted from one language to another, and though the essence might be the same, they have changed in the process.

Hence the rules for translation that I made up were

Rule # 3: Do not translate all interview data, but select and translate a number of key interviews.

Rule # 4: Use translated words as direct quotes.

Transliteration

By transliteration I mean replacing the words of one language with the words of another because an exact translation is not possible. For example, the Urdu word “mohajir” does not have an equivalent word in English hence the word itself is inserted in the English text with a footnote explaining the meaning of the word. Nida and Taber (1969) point out that that the issue of untranslatability occurs when absolute equivalence rather than relative equivalence is required. “If one is to insist that translation must involve no loss of information whatsoever, then obviously not only translating but all communication is impossible” (p. 13).

Indeed some times the words in Urdu did defy translation, and I resorted to transliteration. That is, I wrote the Urdu word used in italics in the text giving its closest meaning either in brackets in the text or as a foot note, providing not only the closest meaning, but some explanation too. I used my own judgment to decide which words to translate and which ones to transliterate. For example, during a very poignant discussion of her future career in teaching, Munazza said in Urdu, “agar chorni pari tu chhor doongi,” which at best can be translated as “if I have to leave teaching I will leave it,” but does not transmit the pathos of the statement. Hence, I used the Urdu phrase in the text and gave the closest meaning in the footnote. In the same way she describes herself as a “mohajir”. The word literally means immigrant, but in Pakistan it specifically refers to people who migrated from India in or after 1947, the year of independence. Even beyond this, the word carries political overtones, which would be missed if she was described as an “immigrant.” However, I tried to keep the number of Urdu words/phrases used in the research report to as few as possible, so as not to hamper the flow and readability of the text.

Rule # 5: Those words or phrases that defy translation are used intact in the text with the closest meaning given in brackets or in a footnote.

Use of English Words with Local Meaning

During translation I also came across English words that have a very specific meaning in the local context, which is different from the actual meaning of the word. For example, the science teacher used the work “free” in at least two ways.
1. In my *free* (not scheduled) periods I correct students’ notebooks.
2. I have observed that principals in other schools are not *free* (friendly) with their teachers.

Here, in example 2, the word free is used in a special way. The word was kept intact, but its contextual meaning was given in brackets. Another example is the use of the word “mind”.

1. I do not *mind* (object) it when I am asked to substitute about once a week.
2. The monitor helps to *mind* (supervise) the class.

I chose to retain all the English words that the teacher used in her conversations. If the words were used in a special sense, different from what is commonly seen in English, her intended meaning was put in brackets.

*Rule # 6*: All the English words in the data were kept intact.

*Rule # 7*: Where the English word used carried a special local meaning it was put in brackets.

**Conclusion**

Most of this discussion has been focused on procedural details, but working with bilingual data also created research and methodological challenges for me. First of all, this conversion of text was a very time consuming process. It required special effort to switch from one language to another. In my effort to convert and transform data into text, inevitably, a part of the richness, meaning, and cultural flavor was lost in translation. There is no doubt that this is an issue that is particularly pertinent for a life history study. The stories told have greater meaning within the context and the constraints of present-day Pakistan when expressed in Urdu. I had to work much harder to help readers outside Pakistan make sense of the science teacher. However, these are issues that any researcher who is working with interview data can face. With increasing globalization, it is very common to find research participants whose first language is not English and will more often than not use words from their own language to illustrate their viewpoint.

Hence, researchers need to understand that if they are working with bilingual data they will face unforeseen hurdles in their path. By articulating some of the rules I devised, and illustrating the problems I faced, I am adding to the small amount of literature available in this area.

**References**


Lapadat, J., & Lindsay, A. (1999). Transcription in research and practice: From standardization of technique to interpretive positionings. *Qualitative Inquiry, 5*, 64-73.


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