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Simultaneous Interpreting across Modalities

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In this paper I examine simultaneous *sign language* interpreting with a focus on two dimensions: interpreting between languages of different modalities, and interpreting between two different languages. As I discuss, there is interplay between the two: At times, the task at hand is modality-driven, and at other times, structure-driven. When sign language interpreters are at work, the two dimensions come together in interesting ways, and as I will argue, offer ways to understand the task of simultaneous interpreting between spoken languages. I discuss sign language phonology and how it interacts with the constraints of simultaneous interpreting; I also discuss the possibilities of visual and spatial representation in sign languages, and how these present interesting dilemmas for interpreters working under time constraints.

Introduction

Sign language interpreting is one of the more visible examples of simultaneous interpreting in public. Both major party candidates for the U.S. presidency in the last election appeared in public with sign language interpreters, and a popular prime-time television drama about the US presidency, *West Wing*, features a deaf character who is accompanied by a sign language interpreter. In most cases of live sign language interpreting, the interpreter appears visibly and openly, next to or close to the speaker. When the two presidential candidates spoke in public, sign language interpreters were to one side, often sharing the same stage. Spoken language simultaneous interpreting on the other hand can be more cloaked, as interpreters sit behind the speakers, or are relegated to booths above the stage, as in large trade conferences. Voices can be managed and redirected with microphones and earphones, but sign language interpreting requires that both the speaker and the interpreter remain close and visible to the

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deaf audience. Despite these differences, of body or voice, the task of spoken and sign language interpreters is the same: They endeavor to translate between languages at the same time, maintaining speed and accuracy so that the event has the semblance of progressing normally.

Interpreting between any two languages places demands on the interpreter, but simultaneous interpreting is unusual in that it requires skilled management of speed and timing. Constraints on memory, language retrieval, attention and competent articulation are discussed elsewhere in this volume. In this paper I examine simultaneous *sign language* interpreting with a focus on two dimensions: interpreting between languages of different modalities, and interpreting between two different languages. As I discuss, there is interplay between the two: At times, the task at hand is modality-driven, and at other times, structure-driven. When sign language interpreters are at work, the two dimensions come together in interesting ways, and as I will argue, offer ways to understand the task of simultaneous interpreting between spoken languages.

In a very short time, sign language interpreting has literally burst upon the public scene in prominence and visibility; not only are there more interpreters with a high level of training and skill in simultaneous interpreting, but there are also more situations where interpreters work. Following accessibility laws of 1973,[1] and in 1990,[2] when first public agencies, and then private businesses were required to provide interpreting on request, sign language interpreting has risen sharply in volume and demand. Though there are no available figures of annual interpreting revenue in the US, one large sign language interpreter-referral agency serving the west coast of the US reported that their volume of interpreting doubled each year between 1990 and 1992, then growth has been about 30% each year.[3] Based on a composite of local interpreting agencies' activities in one year, a conservative estimate is about 234,000 hours of sign language interpreting was provided last year in the county of San Diego alone. Cities like New York, Los Angeles, San Francisco and Washington DC with larger populations of deaf people presumably have double or more the volume of San Diego.

Sign language interpreters can find themselves working in widely varying situations and must determine in a short time, what types of interpretation will succeed. They do so while working with audiences of very different backgrounds — often sophisticated language users, but also users in very dire and difficult circumstances such as in a courtroom, a hospital room or a benefits office. They must determine the correct register for the event, and satisfy the audience for whom they are interpreting that they are indeed participating in

the event. Often they find themselves interpreting in situations where power and information are imbalanced, where their deaf clients are culturally or linguistically at a disadvantage, and they struggle with their mediator status. Baker-Shenk (1992) counsels sign language interpreters not to assume their stance is a neutral one, instead they should acknowledge the power they have. Because sign language interpreters can enter so many different situations in deaf people's lives, from job-related to medical and legal, Baker-Shenk argues they need to be especially aware of the choices they make, both linguistic and cultural, while interpreting.

The history of the profession of sign language interpreting has traced much the same path as spoken language interpreting; until about thirty or forty years ago, sign language interpreting was informally organized, arranged more by family and friendships than by professional organizations. Today there is a national organization of sign language interpreters in the US, the Registry of Interpreters of the Deaf which plans national conferences as well as supports smaller conferences and workshops organized by local chapters of the national organization. The RID also organizes a rigorous evaluation program, offering certificates for different levels of skill, the highest of which recognizes the ability to interpret in the most crucial situations, including in legal and medical settings. These certificates are recognized by local interpreter referral agencies and used to place interpreters in jobs that match their skills. Sign language interpreters are not typically called "translators," even though that is effectively what they are. More commonly they are seen as providing "access," but their tasks are the same as spoken language interpreters. Honed from many hours of employment in a wide variety of situations, they are skilled mediators of language and culture at all levels of society.

A brief history and geography of sign languages

The expansion of scientific inquiry into sign languages over the last thirty years has made it easier to compare sign languages with spoken languages. American Sign Language (ASL) is one of the world's most populous sign languages, with the number of primary users is conservatively estimated at between 200,000 and 300,000, and second-language users, such as interpreters or teachers of deaf children, are many times higher. [4]ASL users are often experienced consumers of interpreting services, using interpreters regularly for a variety of professional as well as personal situations. ASL users live in the US and English-speaking parts of Canada (in French Canada there is French Canadian Sign Language), but

there are also related dialects outside the continent including in parts of Africa because of several schools founded for deaf children in west Africa by a deaf African-American missionary, Andrew Foster.[5]

Sign and spoken language geographies do not match entirely; a good example is the case of ASL. Though ASL is used in the US and Canada, there are different sign languages in other English-speaking parts of the world. Sign language geography follows schooling, and which language was used in the schools where deaf children were educated. In the case of the US, the first school for deaf children, founded in 1817 in Hartford, Connecticut, saw the introduction of Langue des Signes Françaises (LSF), the language of one of its first teachers, a deaf man from Paris, France. After nearly 200 years and little sustained contact between signers, LSF and ASL have become different, though there remain some shared vocabulary and structures. British Sign Language migrated within the British commonwealth, to Ireland, Scotland, New Zealand and Australia but not to America. As a consequence, ASL and BSL are unrelated and sign interpreters are needed to translate between the two sign languages.

ASL is emerging as the international sign language of exchange between deaf people because opportunities to acquire ASL are generally greater than for other sign languages. Deaf college-age students outside the US can enroll at Gallaudet University in Washington DC, and return to their countries with second-language skill in ASL. ASL signers traveling to international conferences often are in a position to fund their own sign language interpreters, so ASL's visibility is high. There is some interpreting between sign languages at international conferences, but international associations of deaf people including the World Federation of the Deaf, a non-governmental organization (NGO) that represents national associations of deaf people worldwide, typically use "international sign language," a type of gestural pidgin. Gestural pidgins draw heavily from iconic or emblematic gestures and use a basic SVO sentence structure. They are not as ideal as interpreting between sign languages, but are surprisingly functional (Supalla & Webb, 1995). When interpreters are needed to interpret for speaking presenters, they interpret to and from the gestural pidgin. Aside from the fact that it is rare to find interpreters who can interpret between any two different sign languages, say between Uganda Sign Language and Chinese Sign Language or even between these languages and ASL, the cost of providing interpreting across so many sign languages is prohibitive for these organizations. Thus the experience of interpreting which deaf people share is largely cross-modal, between sign and spoken languages more than between sign languages because of the availability of the sign pidgin to skilled signers.

A brief view of sign language structure

Structural similarities as well as differences between spoken and sign languages have been argued for all levels of language structure, but for purposes of this paper on simultaneous interpreting, I will focus on two levels which are relevant for the discussion — phonology and morphology. At these levels, the special demands of interpreting *within* compared to *across* modalities can be seen.

The body of work on sign language phonology has demonstrated that there is evidence of phonological structure in sign languages; however, sign and spoken languages differ in the organization of units within the sign/word (Brentari, 1998; Liddell, 1984; Sandler, 1989; Wilbur, 1990; Wilcox, 1992). Spoken languages can have more than two syllables per morpheme, indeed Finnish, for example, has long strings of syllables but sign languages studied thus far seem to have no more than two syllables per morpheme (Brentari, 1998). Brentari argues that analysis of sign languages need "a unit smaller than a word but larger than a segment" (p. 72) and that the concept of the syllable captures distinctions between different kinds of phonological movements in signs. Some signs have a single movement, e.g. THROW which has a single outward path movement. Other signs have a sequence of movements, for example the circle+ straight movement in the sign WHEN. Multi-morphemic signs can have longer strings of syllables in combination, with one or two syllables per morpheme. In a single syllable monomorphemic sign, the phonological units of handshape, location, movement and orientation of the hand appear nearly at once, rather than sequentially over multiple units.

At the morphemic level, sign morphemes are made up of complex arrangements of meaning, arranged sequentially and simultaneously. The sign BURST-INTO-FLAMES has three morphemes: FIRE, INCEPTIVE-ASPECT, and INTENSIVE-ASPECT, but is executed in two syllables, a hold followed by a path movement. The sign CAR-PARKED-HERE is a complex form, with several morphemes (VEHICLE, UPRIGHT, LOCATION:HERE) but is a single syllable sign. Signs are characterized by short syllable structures, but highly complex combinations of morphemes.

Additionally, sign languages manage the coordination of signs with facial expression which is grammatical as well as emotive, along with body movement. Expressions of intensity, carelessness, attentiveness or ease appear on the mouth, face and eyebrows and are analyzed as adverbials which appear simultaneously with signs that are adjectives and verbs. These features of grammatical structure show that when compared to spoken languages, individual units of

grammar in sign languages are more "packed," which suggests the strong influence of modality on language structure. "Packed" structures have implications for simultaneous interpreting, as I will discuss later. Briefly, sign language interpreters need to manage timing during translation: A sign might require many words to translate it, and conversely, a word might not need very many signs to translate it. Sign language interpreters often find themselves speeding up or slowing down, trying to pace themselves as they interpret.

However, the influence of modality on sign languages is not simple. Though many signs in ASL have an iconic or gestural basis, the fact is that not all signs do. Sign language morphology can be generally divided into two groups based on origin: native vocabulary, which derive from gestural imperatives, and foreign vocabulary, which uses fingerspelling or other manual means of borrowing from a spoken language, often via the written orthography (Brentari & Padden, 2001). The basis for the division is not only morphological but phonological as well: Foreign vocabulary violates phonological rules that apply to native vocabulary; in the process of borrowing, they retain some of the structure of their foreign origins.

In ASL, foreign vocabulary is largely derived from fingerspelling, a manual system for representing letters of the alphabet. Each letter of the alphabet has a corresponding handshape; some handshapes appear similar to the drawn shape of the written letter, but many are arbitrary. When fingerspelling a word, each handshape is executed in sequence, until the word is entirely spelled. There is some borrowing from other sign languages, but fingerspelling introduces the largest share of new vocabulary into ASL, contributing vocabulary derived from the written orthography. In addition to wholly fingerspelled words, "initialized signs" are also considered foreign vocabulary as well, in which handshapes draw from the inventory of handshapes from the fingerspelled system, e.g. the handshape in the sign ROOM uses the R handshape from the fingerspelled system. (Brentari & Padden, 2001). While native vocabulary is constrained with respect to number of syllables, and morphemic structure, fingerspelled words are not. They are linearly organized, one handshape in sequence with another, with comparatively little layered structure. As such, they resemble speech, in which each unit is an arbitrary representative unit arranged in sequence over time. Taken together, the two categories of vocabulary show how two different expressions of modality, one more simultaneous and the other more linear can co-exist in a sign language, belying any simple claim about the influence of modality on a sign language.[6]

Skilled sign language interpreters decide which type of vocabulary to select during interpreting: whether to select a translation or opt for a foreign borrowing. Though some native and foreign vocabulary can be matched for similar meaning, there are many pairs with slight variations in meaning which interpreters can exploit for a given situation. The sign SUSPICIOUS has a foreign counterpart which is more technical: PARANOID. The foreign sign has a fingerspelled handshape, P, blended together with the sign, conveying a scientific contrast to the more general sign SUSPICIOUS. Other pairs include DESPONDENT/CLINICALLY-DEPRESSED; WORD/MORPHOLOGY. New technical vocabulary can be fingerspelled, but over-use of fingerspelling is fatiguing to both the interpreter and the viewer (the movements are smaller and more rapidly executed), so interpreters will often endeavor to translate, even as they use borrowed vocabulary. Switching between different categories of vocabulary, and knowing the slight differences of meaning between them, is the mark of a skilled sign language interpreter. Their task is not so different from those of spoken language interpreters who must also evaluate how much translation or borrowing to carry out during interpreting.

Finally, the impact of modality on structure is addressed in recent work comparing sign languages in different parts of the world. It appears that established sign languages, at least those thus far discovered, have directional verb morphology in which signs move between agent and patient, or subject and object (Aronoff, Meir, Padden, & Sandler, 2002; Kegl, Senghas, & Coppola, 1999). In ASL, the sign GIVE can be inflected for person and number of the subject and object: SHE-GIVE-HIM, moves from one location to the other, first the subject and then the object. Though common, not all verbs fall in this category; some are what is called "plain," and inflect only for aspect. Another commonality among sign languages is a third category of verbs which move between spatial locations organized in front of the body, and by varying movement of the sign, depict quality of motion, hence they are called "verbs of motion and location." This tripartite division of verbs (Padden, 1988) appears to have been found in nearly every sign language that has been described thus far, though there are some language-specific variations. Japanese Sign Language, for example, has gender marking on verbs unlike ASL and other European sign languages (Y. Osugi, p.c.). Taiwan Sign Language has auxiliary verbs but ASL does not (Smith, 1990).

Some have argued that the presence of such obvious similarities across sign languages is evidence of the power of the gestural modality to exact strong structural limitations (Liddell, 2000). Others argue that the fact that all sign

languages are young may account for their similarities. ASL is estimated to be at least 200 years old. Some European sign languages are older at around 250 or 300 years, but there are others that are much younger: Israeli Sign Language is estimated at about 60 years old (Sandler & Meir, in press), and Nicaraguan Sign Language is less than ten years old (Senghas, 1995). It may be that as sign languages age, they take on more sequentiality and retain more irregular forms which are not explainable by gestural or iconic means. As the debate over gesture and modality continues in the field, at least one implication for interpreting is that modality considerations figure prominently in both structure and process.

Simultaneous interpreting across modalities

There is not a great deal of research about the process of simultaneous interpreting between spoken and sign languages, but of the work that has been done, it is largely focused on two issues: comparing interpreting within and across modalities and the special requirements of simultaneous interpreting in sign languages (Isham, 1995).

The first difference between simultaneous interpreting between spoken and sign languages and between two spoken languages is that it appears to be easier to do across modalities. Isham (1994) has demonstrated in several tasks comparing spoken language and sign language interpreters that sign language interpreters make fewer errors of translation and comprehension compared to spoken language interpreters. He argues that the separation of modalities permits auditory working memory to operate without interference. When sign language interpreters are listening to a spoken language, they do not have to hear themselves speak as well, and when watching a sign language, they do not have to listen to competing speech while they translate into spoken language. But translation within modalities appears to be harder; translating between sign languages and between spoken languages requires more filtering, and is more arduous.

Several have tried to determine whether signs take less or more time to produce compared to spoken words. Klima & Bellugi (1979) argue that while the hands move slower in larger space when compared to speech, the fact that individual signs are more densely packed with grammatical information evens out the speech advantage. They propose that what human languages have in common is a similar processing of information over a span of time, even if

languages of different modalities time the units differently. Sign languages could conceivably "pack" a great deal more information, but don't because the information processing constraints are the same as in spoken languages. Wilbur & Petersen (1998) find that when signers speak and sign at the same time (called "simultaneous communication" and structurally not comparable to ASL), their speech takes on prosodic changes and sign structure is altered to follow the sequence of spoken English words, showing that management of two modalities in one person exacts a greater toll, compared to speaking or signing alone. Taken together this work shows that languages of different modalities organize timing, prosody and syllable structure differently even if linguistic content is similar. However, over a span of time, the amount of information in any language, signed or spoken, is roughly equivalent.

The problem of equivalence across modalities

A number of other linguistic and modality issues reveal themselves in simultaneous interpreting. In addition to phonological issues, as I have discussed earlier, there are lexical issues. Signers extensively use a complex of descriptive signs combined sequentially and simultaneously to depict size and shape as well as movement and orientation of objects. At present sign linguists are debating whether such forms compare to "classifiers" in Native American languages like Navajo and Digueño (Emmorey, 2002). Sign languages are more similar to those languages which have "verbal classifiers," where categorical information is attached to verbs and predicates.

Classifier complexes in ASL are numerous and can require very long translations. For example, the two signs TWO-FENCES-IN-PARALLEL-STRETCH-FROM-HERE-TO-THE-HORIZON and TWO-FENCES-IN-PARALLEL-STRETCH-FROM-THE-HORIZON-TO-HERE are phonologically simple forms and quickly executed. They involve only a slight difference in orientation of the hands and direction of movement (from near the body and outward in the first case, and away from the body and inward in the second case) but the English translations of the two forms are elaborate: 'the two fences stretched from here out to the horizon,' or 'the two fences stretched from beyond to here.' Or to use a macabre example, the sign BODY-RATTLING-INSIDE-A-COFFIN-ON-A-MOVING-SURFACE (as in a coffin being carried on the back of a pickup truck) is a two-handed sign with a simple repeating up-and-down movement, but to translate it would require many words to capture

the grisly scene. (Examples are from Hawk (2001).) A possible translation might be: "The coffin rattled on the back of a pick-up truck as it was driving down the highway," but it leaves out the detail of a human body inside the coffin, something that is inferred but not directly stated in English. In ASL, the coffin, the body and their location on the back of a pickup truck are all specifically stated. On the other hand, the pick-up truck's journey "down" the highway is not specifically referred to in the ASL sentence, though it is directly stated in English. A translation which combines details from both languages would likely disrupt the interpreting not only because of how long it would take to say it, but because the translation would seem odd.

Issues of how to translate across languages are taken up by Dan Slobin and his colleagues (Berman & Slobin, 1994; Slobin, 1996a, 1996b, 1997) who compare how languages organize spatial information. They argue that languages fall into two general typologies, verb-framed and satellite-framed languages. Verb-framed languages include the Romance languages, such as Spanish and Italian as well as others outside this family of languages, e.g. Hebrew and Turkish. These languages use different verbs to show direction of movement and manner is encoded optionally in a separate clause, e.g. Spanish: *La botella salió flotando,* 'The bottle exited, floating.' While Spanish can have different verbs to show direction, the verbs do not encode manner, which is often inferred from combinations of verbs and other contextual information in the sentence. Satellite-framed languages, like English and German, use verbs to show manner, and then add "satellites," or verb particles and other directionals to depict the direction of movement and any changes in the path of movement. Compared to verb-framed languages, satellite-framed languages represent path and ground more extensively: e.g. 'The bottle floated out of the cave,' 'The bottle floated through the cave,' or 'The bottle floated into the cave.' Thus the basic distinction between the two typologies is in their lexical patterning: verb-framed languages use different verbs to depict movement, and satellite-framed languages depend instead on a common movement verb such as 'go,' followed by directionals such as 'in,' 'out,' 'down,' etc.

Using examples from written translation between verb-framed and satellite-framed languages, Slobin shows that "each type of lexicalization pattern engenders a type of style" (Slobin, 1997:443). Although it is possible for verb-framed languages to represent movement through use of directionals, stylistically the text seems odd. Such forms, while grammatical, are less favored because they lend a "translational flavor" to the text. When translating from English to Spanish (satellite-framed and verb-framed, respectively) the Spanish

text will often have a reduced amount of detail about the "path-ground depiction," in order to make it more authentic for the Spanish reader. In the other direction, from Spanish to English, translators often embellish the original Spanish text, to allow greater detail about movement as well as the ground on which it takes place (Slobin, 1996b). Adjustments are also found when languages go beyond translating, and borrow forms from a language of a different typological category. Hoiting & Slobin (2001) find that in the Sign Language of the Netherlands (SLN), borrowed prepositions from spoken Dutch are restructured as semi-auxiliaries, and become more verb-like in SLN to make the new forms more compatible with SLN as a verb-framed language.

Though they describe sign languages as verb-framed languages, Slobin and his colleagues have found that they "leak" typologically, that is, do not fit the typology exactly. (Some spoken languages also "leak.") ASL verbs contain both movement and directional information, thus would seem more like verb-framed languages. On the other hand, they resemble satellite-framed languages in that they have indexics and other depictive means of adding detail about space and movement (Hoiting & Slobin, 1993).

Returning to the earlier example in ASL about a coffin on a pickup truck, as detail about the coffin is described, the direction of the truck's path, "down the highway," is not included. Instead the description is broken down into a sequence of clustered description: first, the coffin on the truck, then the body rattling inside the coffin, then the truck driving down the highway. Each cluster of description involves a different set of handshapes combined with movement. In each cluster, signers have the option of adding even more more descriptive detail about the ground, the truck on which the coffin is placed ("a pick-up truck"), and then the coffin itself and its size relative to the back of the truck ("the coffin took up the entire space of the truck"), and the location of the body in the coffin ("the body rattled inside the coffin"). Such details are easily represented in ASL, indeed, signers routinely include detail about the relative size and shape of objects, and their relative position with respect to one another, but their translation into English is long and laborious, so it is often summarized or dropped altogether: "The coffin rattled on the back of the pickup truck as it drove down the highway," rather than "The large man rattled inside the oversize coffin as it bounced around on the back of a pick-up truck driving down the bumpy highway." Even in ordinary conversation, the latter sentence would seem out of place. Sign language interpreters routinely have to evaluate style as well as time constraints in their choices of translation of these very complex forms.

Translating in the other direction, take a very ordinary request from a dean to a group of faculty to "take a look at the top sheet in your packet." A highly skilled sign interpreter translated it as PICK-UP-TOP-SHEET-PAPER, HOLD-FRONT-OF-FACE, or "pick up the sheet at the top of your packet and hold it in front of your face to read." The translation is not only to pick it up in order to read it, but to hold it in front of your eyes. It seems odd to explain to chairs of a high-ranked research university that they should hold up a piece of paper in front of their eyes, but in fact, it is how signers give directions — to explain the fact of holding it is also to explain *how* it is held (by hand, or by fingers), and *where* it is held. The small detail about where to arrange the sheet of paper relative to your eyes is an important detail in ASL. The ASL verb HOLD has several variants, depending on whether a sheet, a cup, or a large barrel is being held. In addition, where the object is held relative to the body is often specified in the verb HOLD ("hold a cup to one side," "hold a cup high"). A skilled interpreter adds spatial dimensions to spoken language content because it is more meaningful to signers, and because there is opportunity to use more densely packed signs during the translation. Each variant of the sign HOLD is different only by handshape: one handshape for a cup, a different one for a sheet of paper and yet another for a box. Sign language interpreters can add more detail at little risk of falling behind in the translation.

The management of space and indexing during simultaneous sign interpreting is absolutely essential. During a department colloquium, the speaker was showing a video of news coverage in a South American country. The speaker subsequently described, but did not show, a video that had been used to document an exchange of a bribe between two elected officials of that country. A listener in the audience asked the speaker, "How did they get their hands on *that* video?" A skilled sign interpreter added an indexic to the referential, signing THAT in the direction of the speaker (to indicate the video used to capture the bribery taking place), but not in the direction of the video monitor displaying the speaker's video of news coverage in that country. Interpreters across modalities need to spatialize, not because they have to — both of these examples could be signed in neutral space, or without the additional form of where one would look at a sheet of paper — but because such translations are richer, meaningful and contextual in sign language. Isham & Lane (1993) have demonstrated using test sentences given to deaf signing subjects that surface verbatim translations, that is, signed translations that do not spatialize, but merely translate vocabulary, are harder for sign viewers to recall. Some of these examples may seem to be related to typology, as in selecting the correct verb

variant of HOLD when interpreting a request to view a piece of paper, but there is an additional dimension in sign language interpreting, of adding spatialized representations at many levels. Because such forms are highly complex, less skilled interpreters use them less, preferring to use more literal translations simply because they are more manageable for them. The divide between less skilled and more skilled interpreters is at this level: More skilled interpreters can use complex lexical choices and patterns, and are favored by signers because their interpreting is easier to view and easier to understand.

Finally, all translations require judgment of whether the detail of spatial placement and context can be managed within the timing constraints that simultaneous interpreting demands. To translate into English the two examples of classifier constructions above, one could say, "take the top sheet, hold it up and take a look at it," or "as the pickup truck drove the unpaved road toward the village, the body bumped around inside the coffin." An interpreter could endeavor to translate the signed sentences, but would it be needed, or costly time-wise? Often, the pressure of time during translation will dictate reducing these forms to simpler translations, dispatching with the need for linguistic judgment. But sign interpreters have begun to agree among themselves that certain kinds of spatialized information are just too difficult or too time-demanding to translate completely into voice. Furthermore, they sound odd in their disproportionate detail in spoken English. It would certainly be an interesting project to study how interpreters handle typological considerations while also maintaining the timing constraints of simultaneous interpreting.

A final point about structural mismatches of complexity across languages of different modalities is that newer sign language interpreters find "voicing" much more difficult to do though it is conventionally believed in spoken language interpreting that interpreting to one's L1 is easier than one's L2. The opposite is true in sign languages: Interpreting into a spoken L1 is harder than into a signed L2. New interpreters often find themselves overwhelmed with descriptive sign detail in very short amounts of time and need to make quick decisions about how much translation to do. They must also train themselves to attend to the stream of signing as they try to keep up with the rapid inflow of information. A mis-timed glance away from the signer to check the stage, or a colleague in the next chair, may well mean losing a crucial sign and the ability to finish the translation. Very fluent and native signers who grow up bilingual in spoken and sign languages, tend to be better skilled voice interpreters, honed from years of training and exposure to the high content of movement and hand configurations in sign languages. Some argue that new interpreters' difficulty

with voicing compared to signing is because techniques for training interpreters have yet to focus sufficiently on teaching grammar and movement in sign languages, rather than training to recognize vocabulary.

Conclusion

What makes simultaneous interpreting interesting as a research issue is the fact that the task calls upon a number of processes which must operate simultaneously: memory, attention, language retrieval, and articulation. Using examples from simultaneous sign language interpreting, I have argued here that the persistently visual and spatial aspect of signed language offers a special challenge to interpreters. They need to choose from among a variety of language choices to make the interpretation not so trivial, or "odd," and conversely, how to represent in sign the vague and ambiguous references to space and movement in spoken languages. Because sign languages have modality constraints as well as stylistic frameworks, simultaneous interpreters are always aware of the tradeoffs between detail and pacing. Too much detail is not possible under rapid interpreting contexts; nor is it even desirable or "natural." Giving too much detail, or attempting to use styles outside of a language typology, could disrupt the naturalness that is expected in competent interpreting.

More generally, I argue that that the task of language retrieval in any situation of simultaneous interpreting, that is, making language choices while interpreting, is not simply a matter of choosing matched vocabulary. It involves evaluating style considerations across languages, and measuring which choices are possible given the timing constraints. Because sign languages seem starkly more visual and have apparently different phonological structures, interpreters' work can be used for purposes of illustration, but the same consideration applies to interpreting between spoken languages of different typologies. Interpreting from English to Spanish or from Turkish to German is specially challenging in terms of evaluating detail about space, movement, figure and ground. Interpreting research should find ways to describe how interpreters manage in very short order to organize timing and articulation processes with linguistic and cultural knowledge, all with a very high level of sophistication, indeed, while also convincing their clients that communication is taking place.

Notes

1. Section 504 of the Rehabilitation Act of 1973 prohibits any discrimination based on disability in federal assistance and programs.

2. Americans with Disabilities Act of 1990 extends protection against discrimination on basis of disability to businesses, public transportation and telecommunications.

3. Figures from Network Interpreting Service, Inc.

4. For a discussion on estimating the number of ASL users, see Gallaudet Research Institute: http://gri.gallaudet.edu/Demographics/qxreasl.html

5. Altogether Andrew Foster founded 31 schools throughout Africa including in Ghana, Kenya, Zaire, and Burkina Faso.

6. Sign languages vary in how extensively they borrow from the written orthography using a system like fingerspelling. Japanese has two fingerspelling systems, one for kana and the other for kanji. Some sign languages use little or no fingerspelling, instead foreign words are introduced through mouthing or translation.

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