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Some reasons for studying gesture and second language acquisition (Hommage à Adam Kendon)*

MARIANNE GULLBERG

Abstract

This paper outlines some reasons for why gestures are relevant to the study of SLA. First, given cross-cultural and cross-linguistic gestural repertoires, gestures can be treated as part of what learners can acquire in a target language. Gestures can therefore be studied as a developing system in their own right both in L2 production and comprehension. Second, because of the close link between gestures, language, and speech, learners' gestures as deployed in L2 usage and interaction can offer valuable insights into the processes of acquisition, such as the handling of expressive difficulties, the influence of the first language, interlanguage phenomena, and possibly even into planning and processing difficulties. As a form of input to learners and to their interlocutors alike, finally, gestures also play a potential role for comprehension and learning.

1. Introduction

One of the most salient features of gestures is that individuals differ in their gesture use. As a result, it is commonly believed that gestures are idiosyncratic and random, and that they therefore cannot be studied in a structured way. Paradoxically, people also "know" that people in other cultures differ in their gesture use. Thus, they group individuals on the basis of a certain observed uniformity in gestures, which also allows them to distinguish one group from another. This in turn suggests that there is perceivable systematicity in gestures as well as something that may be called gestural repertoires. This observation is a useful starting point for discussing why gestures are relevant to issues in second language acquisition (SLA).

This paper will give a brief introduction to modern gesture studies, and then, echoing a well-known paper by Adam Kendon (1986), outline "some reasons for studying gesture" in a second language context. For ease of exposition, the arguments are grouped along two lines. First, gestures can be seen as part of

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what learners can acquire with a new language ("the SLA of gestures"). In this domain, issues for the learnability as well as the teachability of gestures are raised, as are issues of testing and assessment. Second, learners' gestures are interesting in and of themselves for acquisition. The ways in which learners deploy gestures and the ways in which their gestures change with development can offer insights into communicative and cognitive aspects of the process of language acquisition ("gestures in SLA"). Gestures can be examined for their compensatory functions, available both for learners and their interlocutors. The properties of gestural repertoires open up avenues for exploring the effects of cross-linguistic influences in L2. A learner's gestural repertoire may also be viewed as a developing system in an interlanguage approach to gesture studies in L2. Finally, gestures can be seen as input, raising a range of questions regarding their role in the classroom, and their effects on comprehension and learning more generally. Overall, a view of language learning that includes gestures raises both practical and theoretical questions concerning what needs to be acquired, target norms, and nativeness. This paper is not an exhaustive review of the field, but gives a brief survey of studies that illustrate these issues. The papers in this special issue provide much more detail on each topic and constitute a sample of how gesture studies are conducted within the fields of SLA. They reflect the variety of themes, theories, and methodologies found. They also illustrate how gesture studies contribute to and expand our understanding of L2 acquisition, both as a product and as a process, by bringing gesture to bear on acquisitional problems in production and comprehension.

2. A crash course in gesture studies

Gestures have generated much scholarly effort (for an excellent historical overview, see Kendon 2004a), and a wide range of behaviours is studied under this label. However, a field of gesture studies is crystallising, which more systematically distinguishes "non-verbal behaviour/communication" (cf. Poyatos 2002) from a more narrow phenomenon labelled gesture. This field defines gestures as symbolic movements related to ongoing talk and to the expressive effort or intention (what you are trying to say) (cf. Kendon 2004a; McNeill 1992, 2005). Such a definition excludes functional actions (e.g. lifting a real cup to your mouth to drink), symptomatic movements or "self-regulators" (Ekman and Friesen 1969), such as scratching or picking at specks of dust, as well as other types of non-verbal behaviour like posture (Bull 1987), proxemics (Hall 1968), blushing, pupil dilation, etc. These types of movements are not communicatively irrelevant but they are not typically part of the message the speaker intends to convey. The definition nevertheless includes a broad range of behaviours: gestures like the thumbs-up-sign; movements depicting properties of objects and events (cupping your hands when talking about a cup, or lifting the

imagined cup to your mouth by its ear to drink); pointing to real or imagined things; and simple rhythmic movements that scan speech. These behaviours are all gestures.

A number of categorisation and classification systems for gestures have been proposed, most of which are based on a combination of semiotic and functional distinctions (for an overview, see Kendon 2004a). All systems distinguish a category called emblems (Efron 1941/1972; Ekman and Friesen 1969), "autonomous" (Kendon 1983), or "quotable" gestures (Kendon 1986). These are conventionalised language- and culture-specific movements, fixed form-meaning pairs with standards of well-formedness. Examples include the "ring", performed by joining the thumb and index finger, a gesture which alternatively means 'OK', 'good', worthless', 'money', or 'body orifice' with the associated insult, depending on where you are in the world. All systems also identify representational and rhythmic gestures, which are often labelled just "gestures", "co-speech gestures", "speech-associated", or "spontaneous gestures". These movements have no standard of well-formedness but are created on the fly and are performed spontaneously and unwittingly during speech. The most influential current classification system is McNeill's system for speech-associated gestures operating with four not mutually exclusive categories, viz. iconic, metaphoric, and decitic gestures, and beats (McNeill 1985, 1992).

Gestures also have formal, structural properties whose details depend on articulators (hands, arms, eye-brows, etc.), the place of articulation (gesture space), and the movement (cf. Stokoe 1980). The internal structure of a gestural movement involves a preparation phase, during which hands are moved into place, a stroke (or the maximum muscular effort peak or the most meaningful part of the movement), and a retraction (return or recovery) phase (Birdwhistell 1970; Kendon 1972). In addition, phases can be separated by holds, i.e., instances where the hands are momentarily immobile in space before they move on to the next phase (Kendon 1972; Kita, van Gijn, and van der Hulst 1998; Seyfeddinipur 2006). Gesture phase analysis is crucial to issues of gesture-speech alignment, which in turn underpins the theorising about the relationship between gestures and speech.

The form–function relationship in gestures is quite complex. Generally speaking, it is fair to say that gestures are multi-functional and have both self- and other-directed functions, sometimes simultaneously. Interactional functions include turn regulation, feedback eliciting, agreement marking, attention direction (pointing), etc. Self-directed functions include things like organising thought for expression, enhancing some aspect of the message to be conveyed, etc. (for overviews, see Kendon 2004a; McNeill 2005).

2.1. *Gesture and language*

Speech-associated gestures are the least language-like of all movements in their lack of convention, but they are, perhaps paradoxically, the most systematically related to language and speech. The tight link is evident in many ways. Gestures are largely a speaker phenomenon – people typically gesture when they speak, not when they are silent. More interestingly, gestures have linguistic functions. Certain parts of language require gestures to be meaningful. For instance, in (1), the content of the deictic expression 'this' is provided by the gesture (marked by the square brackets), viz. the distance between the hands indicating the size of the fish. Gestures also function as parts of speech. In (2) a gesture occupies a structural slot in the utterance and fills the linguistic function of a verb, a case of "mixed syntax" (Bühler 1934; Slama-Cazacu 1976). In (3) a gesture functions as a speech act, namely an offer or a question (e.g. raising the hand holding an imaginary cup to the mouth and raising eyebrows).

(1) It was [this] big.

(2) He went [ ] and everybody laughed.

(3) [ ]? – Yes please.

The tight integration between the systems is also evident in the semantic and temporal co-ordination between the modalities. To simplify matters somewhat, gesture and speech tend to express the same (or closely related) meaning at the same time (e.g. Kendon 1972; McNeill 1992; McNeill, Levy, and Pedelty 1990). The cross-modal integration is further reflected in the parallel development of the modalities in childhood (Goldin-Meadow 2003; Mayberry and Nicoladis 2000; Volterra and Erting 1990), and the parallel breakdown in disfluency (Gullberg 1998; Seyfeddinipur 2006), stuttering (Mayberry and Jaques 2000), and in aphasia (e.g. McNeill 1985; but see Goodwin 2000; Klippi 1996; Lott 1999 for accounts of how aphasics can nevertheless use some types of gesture to achieve communicative goals).

Various theories have been proposed to account for the relationship between speech and gesture, often focusing on the role gesture plays for speakers themselves. They can be divided into speech-auxiliary theories and gesture-speech partnership theories (cf. Kendon 2004a). Speech-auxiliary theories either consider gestures to facilitate lexical retrieval (e.g., Hadar, Dar, and Teitelman 2001; Krauss, Chen, and Gottesman 2000), or to facilitate the representation of content to be verbalised (e.g., Alibali, Kita, and Young 2000; Freedman 1977). Gesture-speech partnership theories, on the other hand, consider gesture to be an integral part of speech or of an utterance. They either assume that gestures and speech share the same cognitive origin (e.g., Kita and Özyürek 2003; McNeill 1992, 2005) or that a common communicative intention drives

output in two modalities (De Ruiter 2000; Kendon 2004a). Cross-cutting these distinctions are differences in views regarding the communicative relevance of gestures for interlocutors, with a small group of researchers arguing against such a value (e.g., Krauss, Chen, and Chawla 1996; see Kendon 1994 for an overview of the debate). Although the details of the relationship between speech and gestures are not yet fully understood and the theories differ in their views on the mechanics, the actual link between gesture and speech is undisputed.

2.2. *Systematicity and cross-linguistic variation: Gestural repertoires*

Gestures are thus subject to individual variation but also to noteworthy uniformity within groups. Simplifying this paradox, it is fair to say that individuals differ with respect to how many gestures they are likely to perform, whereas speakers within a speech community and culture are remarkably consistent with regard to when and how they gesture when communicative content and situation are kept constant. The observations of similarity within and differences between groups allow us to talk about gestural repertoires whose characteristics are driven by cultural conventions and norms as well as by the very structure of the language spoken.

As regards cultural conventions and norms, attitudes to "appropriate usage" of gesture are clearly cultural (and surprisingly similar in their disparaging view of gesticulation both across time and space (cf. Schmitt 1991)). Speakers can generally formulate a norm for gesture use within their own culture, typically regarding the rate, form and range of gestures, but they persistently underestimate the actual gesture use (especially their own). Secondly, the forms gestures take are also governed by cultural norms. The most obvious reflection of this are the sets of conventionalised gestures found in many languages, emblems. Surveys have shown how these gestures change shape or meaning across cultural communities, and also how the sizes of the sets differ across cultures (Morris, Collett, Marsh, and O'Shaughnessy 1979). Sometimes their meanings and forms are set down in "dictionaries" (see Payrató 1993 for an extensive list of inventories). Culture also affects the forms of speech-associated, spontaneous gestures, although the conventions and rules are less open to conscious inspection since these gestures are so frequent and performed with great automaticity. For instance, pointing is subject to culturally determined standards for what or whom you can point at (people or things), which body part (index finger, thumb, left or right hand, lip) and what hand shape you use (extended index finger but not middle finger, thumb, elbow, etc.), which in turn can depend on what you are pointing to, etc. (for a range of studies on pointing, see Kita 2003). Similarly, the expanse of gestures and the parts of space in which they are performed are also culturally determined. There are plenty of preconceived

ideas in this domain (e.g., the Italian vs. the Japanese stereotype), but use of gesture space has been little studied under comparable circumstances allowing reliable conclusions to be drawn (for an exception, see Müller 1994).

A linguistic community may also be gesturally consistent because the language spoken affects the gestures. There is a growing body of evidence suggesting that, insofar as languages differ in how meaning is typically expressed linguistically, so the form and distribution of gestures also differ in subtle ways across languages (Duncan 1994; Gullberg submitted; Kita and Özyürek 2003; McNeill 1997; McNeill and Duncan 2000; Özyürek, Kita, Allen, Furman, and Brown 2005). For instance, gestures accompanying motion expressions in English look different from the corresponding Turkish and Japanese gestures (Kita and Özyürek 2003; Özyürek et al. 2005). As English speakers say 'the ball rolled down the street', they tend to perform one single gesture that expresses both the manner of rolling and the direction of the motion in one movement. In contrast, Turkish and Japanese speakers describing the same scene use two lexical verbs in two verbal clauses to express the downward motion and the rolling manner separately, as in 'the ball descended rolling'. Turkish and Japanese speakers are more likely to perform two gestures: one expressing the direction of the motion only, and another the rolling manner only. Kita and Özyürek (2003) have argued that the distinct gesture patterns reflect the linguistic encoding patterns in these languages.

These examples do not form an exhaustive list of the factors that determine gestural repertoires. Obviously, situation and context, level of formality, socioeconomic status of the participants, personality, mood, what is being talked about, etc., will all modulate repertoires further. But a sufficient number of aspects have been listed to suggest that gestural repertoires are shaped by *complex* interactions between cultural and linguistic factors, where conventionalised, explicit aspects interact with less conscious and more automatised ones.

3. From the SLA of gestures ...

In communicatively-oriented approaches to SLA it is generally agreed that learners have to acquire not just grammar and vocabulary, but also appropriate language use in a broader sense in order to be communicatively competent in a new language (Canale 1983). As we have seen, a number of theorists have suggested that language consists of both speech and gesture forming one "composite signal" (Clark 1996; Kendon 2004a; McNeill 1992, 2005; Raffler-Engel 1980b). Under this view, language acquisition entails the acquisition of gestures as much as of speech. Put differently, since gestural repertoires contain form-meaning relationships and rules of usage or appropriateness just like the spoken language system, they could in principle be treated as a system to be acquired both in comprehension and in production.

The importance of target-language gestures for SLA as something to acquire ("second kinesic acquisition", Raffler-Engel 1980b: 106), and as an object of study and teaching in the language class-room, has been suggested periodically (e.g., Al-shabbi 1993; Antes 1996; Beattie 1977; Brault 1963; Brunet 1985; Calbris and Montredon 1986; Green 1968; Pennycook 1985; Polo-Figuera 1987; Raffler-Engel 1980a, 1980b; Saitz 1966; Wylie 1985). However, remarkably few attempts have been made to empirically study the acquisition of gestures in L2.

Efron's classic study of immigrants in New York (Efron 1941/1972) is not an acquisition study per se, but it nevertheless demonstrates that gestural repertoires are not innate but culturally transmitted and learned. He compared the gestures of so-called Eastern European Jews and Southern Italians in first and second generation populations and found that the level of cultural integration determined whether speakers displayed the gestural repertoires of the original group (Yiddish or Italian) or of the surrounding majority culture (American English). In the small set of modern SLA studies, the focus has almost exclusively been on the acquisition of emblems and particularly the comprehension of them. Mohan and Helmer (1988) investigated to what extent children with various L1s learning English understood typical English emblems such as "yes", "I don't know", and "be quiet", compared to age-matched native children. They found that non-native children understood significantly fewer gestures than the native children, suggesting not only that emblems are cultural artefacts that need to be learned, but also that acculturation is necessary for their acquisition. Similar findings are reported for other language pairs and settings (e.g., Safadi and Valentine 1988; Schneller 1988; Wolfgang and Wolofsky 1991).

Focusing on the comprehension of emblems in the language classroom, Hauge (2000) examined how learners of British English understood emblems and gestures that had become conventionalised in the classroom (British EFL Teaching emblems). She showed that some teaching emblems – for instance, a gesture for "continue" as a circling motion with both hands to elicit progressive forms or prompts to continue – were a source of confusion to language learners for whom these gestures sometimes constituted L1 emblems with a very different meaning. Teachers did not always recognise the cultural basis of the gestures they performed while teaching. Jungheim (1991) examined whether Japanese learners of English learned the meaning of American emblems better when given explicit instruction or when merely exposed to them and left to deduce the meaning. The results showed that the group who had received traditional instruction did better on the post-test than the group who had to deduce the meaning of the emblems. This suggests that mere exposure may not be enough for accurate L2 emblem acquisition to take place.

An even smaller number of studies have considered the acquisition of speech-associated, non-conventionalised gestures in comprehension or production.

Kida (2005) investigated the gestural L2 behaviour of intermediate and advanced Japanese learners of French residing in France. He found evidence of a change towards a larger, more French-like gesture space, and of a shift from depictive to more discourse-oriented gesturing. McCafferty and Ahmed (2000) examined to what extent advanced, untutored, immersed Japanese learners of American English and advanced tutored learners had acquired target-like abstract gestures related to talk about marriage. They found that learners immersed in American culture were more target-like in their abstract gestures than were learners with only formal instruction. Although the authors are not clear on whether this shift is driven by acculturation in a general sense, or by the acquisition of underlying American English metaphors for marriage, the study provides empirical support for the notion that non-conventional gestural behaviour can change in L2 towards more target-like gesture production.

The acquisition of gestural repertoires represents a major challenge to language learners and educators alike who, by and large, have to establish on their own what to learn and teach – i.e., the forms and meanings of the relevant gestures and the appropriate rules of usage – and how to go about learning and teaching them. Emblems may seem easiest, given that inventories exist and speakers often can introspect and comment on these gestures, but, in many cases it is not known how emblems are actually used by native speakers, nor how much variation there is in form. The further you move away from the conventionalised gestural domain, the harder it presumably becomes to determine what is part of the repertoire. Another question, then, is whether different aspects of gesture repertoires are equally learnable and, indeed, teachable – a familiar issue in SLA research. Again, emblems, which have standards of well-formedness and are open to introspection, may be easier on both accounts than speech-associated gestures. We know little about whether learners can learn to understand emblems and even less about whether they actually learn to use them. If emblems are anything like idiomatic expressions, we should perhaps not expect learners to use them very often. Turning to speech-associated gestures, even less is known about whether specific aspects of the speech-associated gesture repertoire can be acquired either in a FL or an immersed setting, and if so, how. Gesture theory would suggest that shifts in these gestures follow from shifts in the underlying linguistic representations used. These may not be open to explicit learning. It is an empirical question as to whether instruction could affect this side of L2 gesturing.

A related question is how gestural repertoires are to be assessed and tested. Very few test instruments are available and they are by necessity specific to a given culture/language and type of gesture. Hardly anything is available that is suitable for a classroom setting. An exception is Jungheim (1995) who, focusing on English emblems, constructed a test for assessing their comprehension by Japanese learners, as well as scales for assessing learners' more general

non-verbal behaviour. No test materials are available for speech-associated gestures. The absence of assessment instruments for gesture is perhaps surprising given that learners' gestures do influence native addresses. I return to this issue below.

In sum, then, even if the importance of gestural repertoires has periodically been recognised, the SLA of gestural repertoires is a desperately under-researched area and questions regarding what, how, and when are wide-open to investigation.

... to gestures in SLA

Independently of the issue of target-likeness, the gestures learners do use are informative with regard to acquisition, not only to a view of acquisition as a product, but to the very processes of acquisition. Gesture analysis can contribute to a range of familiar theoretical SLA issues, ranging from how native and non-native speakers (NSs and NNSs) deal with communicative difficulties in usage, to an expanded view of transfer, a multimodal view of properties of learner varieties, input processing, and learning.

3.1. *Gesture as a compensatory mode – giving language a hand*

In many disciplines gesture has traditionally been seen as the compensation device par excellence, a crutch to production and comprehension alike, allowing speakers to compensate for difficulties with speech, for instance in aphasia (e.g., Ahlsén 1991; Anderson, Robertson, Kilborn, Beeke, and Dean 1997; Goodwin 2000; Lott 1999; Simmons-Mackie and Damico 1997), in SLI (Fex and Månsson 1998), and even in early views of how prelinguistic children communicate (e.g., Acredolo and Goodwyn 1988). Although the simplistic view of gesture as mainly motivated by expressive difficulties no longer holds much ground in L1 research, it is quite clear that L2 learners can and do use gesture to compensate for linguistic problems.

In SLA, many observers have noted that L2 speakers tend to produce more gestures in L2 than in L1 (e.g., Gullberg 1998; Hadar et al. 2001; Marcos 1979; Nobe 2001; Sainsbury and Wood 1977; Sherman and Nicoladis 2004; Yoshioka 2005; for exceptions, see Chen 1990; Kida 2005). One of the presumed reasons for this is proficiency, or more precisely, the notion that learners' gestures compensate for speech or reflect increased difficulties (cf. Goldin-Meadow 2003).[1] Despite this general assumption, very few studies have empirically investigated how L2 speakers actually use gestures to compensate for problems in L2 speech, and how they align with NSs in interaction to find joint solutions. Gullberg (1998) examined learners' use of gestures as Communication Strategies (CS), drawing on SLA theory in this domain. The study showed that L2 learners use gestures strategically to compensate for lexical problems, as expected,

but also for grammar, and to manage fluency-related problems. Learners use gestures to elicit lexical help from the NS both for concrete and abstract lexical items. Contrary to popular expectation, these gestures do not replace speech, but typically occur *with* speech, often a spoken CS such as an approximation or circumlocution (cf. Faraco and Kida 1998). Learners also use gestures to overcome grammatical problems such as those related to tense and temporality. By mapping time onto space metaphorically, learners can gesturally refer to spatial time axes to establish time quite precisely even in the absence of adequate temporal expressions in speech (Gullberg 1999). Finally, the troublesome interaction that results from accumulated difficulties and non-fluency can also be managed gesturally. The most frequent type of learner gesture is metalinguistic or metapragmatic. In speakers of Western-European languages these gestures frequently involve circling movements of the wrist or wriggling fingers. They often occur during communicative break-downs and they flag the fact of an ongoing word search, but not its content. They also serve efficiently to hold the speaker's turn (cf. Duncan 1972; Schegloff 1984; Streeck and Hartege 1992).

Gestural solutions are mostly successful and help sustain interaction and speech. McCafferty (2002) examined the interactional effect of learners' gestures, showing that a learner's use of gesture played an important role in promoting language use by facilitating positive interaction between the non-native and native participants. In this respect, learners' gestures may be critical for promoting learning in that they help promote continued output (e.g., Swain 2000) and opportunities for using the L2.

Learners are not alone in using gestures as scaffolding. A number of studies have shown that the simplified registers used by NSs and teachers, known as Foreigner Talk (Adams 1998) and Teacher Talk (Allen 2000; Barnett 1983; Henzl 1979; Lazaraton 2004), are characterised by an increased use of representational gestures (iconics and deictic gestures), but also of more rhythmic, beat-like movements (Allen 2000; Gullberg 1998). This last feature may be typical of a "didactic" mode.

In general, insofar as the compensatory nature of L2 gesture is considered, it is mostly ill- or un-defined. Issues that need to be clarified include the assumed relationship between speech and gesture, whether compensation and facilitation is assumed to be mainly for the native interlocutor, for learners themselves or indeed for both, and at what linguistic level compensation is assumed to take place – e.g., at the level of formulating words, at the conceptual level, at the interactional level, etc. All of these issues are important theoretical concerns in the field of gesture study, but are equally important – and familiar – to the field of SLA.

3.2. *Cross-linguistic influences in L2 gesture – transfer*

Learners' gestures can contribute to the study of how two (or more) languages interact and influence each other in the mind of a single speaker, a familiar domain in SLA studies. There are obvious ways in which the gestural repertoire of the first language may influence gestures in the second, such as in the use of gesture space, for instance. Going from large to small gesture space (e.g., Italian to Swedish) or from small to big (Swedish to Italian) seems to be equally problematic anecdotally. An early study on French- or English-dominant Canadian children showed how anglophone children tended to maintain their English non-verbal repertoire when speaking French (Raffler-Engel 1976).

Recently, the L1 research on cross-linguistic differences in speech and gesture reviewed above has been used to inform investigations of developmental changes in L2 gesture as a function of the linguistic systems involved. A number of studies have focused on the domain of motion events, exploiting the cross-linguistic typological distinctions between so called verb-framed and satellite-framed languages. One line of research has focused on the timing of gestures, examining whether gestures align with expressions of path or manner, with particles or verbs across languages such as Spanish, English, and Dutch (Kellerman and van Hoof 2003; Negueruela, Lantolf, Rehn Jordan, and Gelabert 2004; Stam 1998). Another strand focuses more on the shape, form and content of gestures, looking at whether L2 learners' gestures express path or manner information in a target-language-like fashion (Negueruela et al. 2004; Özyürek 2002). Overall, the results reported so far show that L2 learners' gestures continue to align with L1-like units, suggesting that learners remain under the influence of their L1 and continue to assign importance to semantic elements in accordance with their L1.

The domain of transfer in this line of research is at the level of semantic and conceptual representations and their interface rather than surface forms. Studies often also focus on preferential patterns rather than issues of grammaticality (cf. Carroll, Murcia-Serra, Watorek, and Bendiscoli 2000). This is a relatively new way of considering cross-linguistic influences where gesture helps push the analyses further. Gestures are essentially used as a tool to glean information about underlying representations in the minds of native and non-native speakers that may otherwise not be apparent. As an aside, this research is also a challenge to gesture theories concerning the relationship between gesture and speech. The question of how close the match has to be between what is expressed in speech and in gesture is critical for theories that claim a shared origin for speech and gesture. Learner data put such theories under pressure.

3.3. *L2 gestures as a developing system – interlanguage*

Just as spoken L2 production can be studied as a developing system in its own right with its own systematicities and regularities – as an interlanguage or a learner-variety (Klein and Perdue 1997; Selinker 1972) – so L2 gestures can be studied as a system with inherent structure. In an early study, Taranger and Coupier (1984) showed how Moroccan learners of French shifted with growing proficiency from the use of representational gestures complementing the content of speech towards more emphatic or rhythmic gestures related to discourse. Kida (2005) reports a similar development in the gestures of Japanese learners of French residing in France, while carefully noting the role played by the gestural properties of the source (Japanese) and target (French) cultures, of the situation and context of a particular type of interaction, as well as individual preferences. He concludes that the gestural development is not linear but rather complex and multi-layered – just as other types of language development. Critically, both studies show that there is internal systematicity in the systems at a given point in time.

Other studies have taken interlanguage phenomena in speech as the starting point and examined their gestural correlates. For instance, in the domain of discourse, L2 learners typically have problems with maintained reference. Learners tend to use full lexical NPs instead of pronouns to refer back to an entity just mentioned, leading to over-explicit, ambiguous, and non-cohesive speech. A series of studies have examined the gestural reflexes of this behaviour across different language pairs showing that over-explicitness is mirrored in gesture (Gullberg 2003; 2006; Yoshioka 2005). Learners anchor referents in space with gesture at their first mention, and then anaphorically refer back to that same location at the immediate next mention if labelled by a lexical NP in speech. This is observed in Swedish, French and Dutch learners at low levels of proficiency and seems to be a learner-specific phenomenon, something akin to an interlanguage in gesture. Moreover, the gestural behaviour changes as a function of grammatical development in speech (Gullberg 2003). Once pronouns are used for maintained reference, the number of anaphoric gestures drops significantly. A further study examined whether the properties of L2 speech depend on the presence of disambiguating anaphoric gestures (Gullberg 2006), comparing learners' behaviour when their interlocutors either could or could not see their gestures. The results showed that speech and gesture behaviour remained unchanged regardless of visibility. The properties of both modalities therefore appear to be related to development and not to be motivated by communicative concerns. For speech, this rather straightforwardly means that pronouns have not yet been acquired. However, the question arises what motivates the presence of gestures if it is not disambiguation.

An interesting suggestion is that gesture production reflects processing and

planning load. The harder the task, the more gestures. Specifically, Goldin-Meadow and colleagues have proposed that gesture production reduces cognitive load (Goldin-Meadow 2003; Goldin-Meadow, Nusbaum, Kelly, and Wagner 2001). Applied to SLA, it is possible that learners' discourse-related gestures reflect their attempts to reduce the processing load of keeping words, grammar, and the relationships between entities in mind at the same time as planning what to say next. Gestures may help them to keep talking.

3.4. *Gestures as input – effects on comprehension and (language) learning*

Thus far we have mainly considered the gestures learners produce and their effects. But gestures are interactional phenomena with rich semiotic affordances to all interlocutors involved, as noted above. Gestures therefore also constitute input – to NSs, teachers and learners alike – both in- and outside the classroom. It is known that interlocutors attend to gestures and the information they encode (e.g., Beattie and Shovelton 1999; Cassell, McNeill, and McCullough 1999). Gestures may therefore play an important role as input to learners for comprehension as well as for learning.

A number of studies have advocated the need in classroom settings to consider gestures as a means to improve listening comprehension in L2, focusing on teachers' gestures as conveyors of speech-related meaning (Allen 2000; Beattie 1977; Harris 2003; Kellerman 1992; Lazaraton 2004). Sueyoshi and Hardison (2005) tested the effect of gestures and lip movements on overall content comprehension in foreign language learners of English. They found that learners of low proficiency benefitted more from gestures than learners with higher proficiency levels. Others have suggested that gestures in input enhance learning in general. For instance, Valenzeno, Alibali, and Klatzky (2002) showed that pre-schoolers acquired the concept of asymmetry better when explanations were presented with gestures than without. Similar results have been found for the acquisition of maths (e.g., Goldin-Meadow, Kim, and Singer 1999) and science (e.g., Roth 2003). Focusing on language learning specifically, a number of studies suggest that gestures may promote the retention rate in lexical learning (e.g., Lazaraton 2004). One of the few to actually test the claim, Allen (1995) examined whether the presence of emblematic gestures during French vocabulary explanations affected recall of lexical items. She found that the treatment group performed significantly better than the control groups, and forgot significantly fewer expressions in a post-test. Various suggestions have been made as to why gestures should help, including assumptions that gestures help capture attention, provide redundancy, or engage more senses by grounding speech in the concrete, physical experience (Hostetter and Alibali 2004). Naturally, these explanations need not be mutually exclusive. Much more research needs to be done in this domain, for instance, test-

ing whether other, non-representational gestures also influence learning, and whether other domains of language acquisition, such as grammar, can be affected by the presence of gestures.

Finally, learners' gestures are also input to teachers and native interlocutors. An open empirical question is whether, and if so how, native interlocutors' perceive and are affected by learners' non-target-like gesture production. Put differently, does it matter to native interlocutors if learners are not target-like in gesture? Is "foreign gesture" as detectable – and as disturbing – as foreign accent? Anecdotally, this seems to be the case, but outside the assessment studies mentioned above, no perceptual "foreign gesture" study has been undertaken to date. However, it is clear that native interlocutors are affected by learners' gestures. McCafferty (2002) showed how learners' gestures promoted positive interaction between the non-native and native participants. Further, a number of studies have shown that assessments of oral proficiency are influenced by learners' gestures. Learners who are seen performing in the L2 are more favourably assessed than those who are only heard (Gullberg 1998; Nambiar and Goon 1993). Similarly, learners who gesture and engage their interlocutors are more positively evaluated on proficiency than learners who are gesturally passive (Jenkins and Parra 2003; Jungheim 2001; Neu 1990). Gullberg (1998) found that NSs rated learners whose formal proficiency was very low but who used gestures strategically as more proficient than learners who were formally more accurate but gesturally "taciturn".

In sum, a view of gestures as relevant input with both content-related and cognitive influence on learners has consequences for a range of domains. It raises assessment issues but also theoretical questions regarding what factors ultimately play a role in SLA with direct implications both for classroom and more general research.

4. The why and what of gestures and SLA – and this volume

The preceding sections have hopefully shown why gestures are relevant to SLA. A fair number of practical problems have also been raised along the way. So many, in fact, that you may wonder why learners, teachers, and researchers should bother with gestures. The simple answer is because gestures are everywhere and affect all human interactions. The command of the gestural repertoire of a language is important to the individual learners' communicative efficiency and "cultural fluency" (Poyatos 1983) – perhaps less in terms of misunderstandings (Schneller 1988) than in terms of the general integration in the target culture. Moreover, to SLA research the acquisition of gestures holds theoretical interest in that it suggests a different and much expanded view of what it means to be native- or target-like. The inclusion of gesture in SLA raises a host of questions for notions like "ultimate attainment" (Birdsong 2004, 2005)

in production and comprehension, issues of language-specificity in interlanguage, input processing in another modality, cross-linguistic influences at semantic and conceptual levels, code-switching, domains of vulnerability, the impact of gestures on language learning, etc. In all these theoretical domains, gestures can contribute to our understanding of processes of acquisition in social and cognitive settings both as an object of study and as an analytical tool.

As should be clear by now, this is a field of research where much empirical work remains to be done, both descriptive and experimental. The need for methodological rigour and replicability is fundamental. It is essential that studies apply a unified (meta-)terminology, and adopt precise procedures and frameworks. We must further seek to uncover the language- and culture-specific repertoires in much more detail and for many more languages. This means studying the forms of gestures and the ways in which gestures function in a wide array of settings and contexts. At the moment, any study of L2 behaviour is a triple study since it requires careful charting of native baseline patterns in almost all areas before anything can be said about learner behaviour. Moreover, we need to investigate if and how learners can acquire gestural repertoires, and to tackle pedagogical and methodological challenges like teaching and assessment methods. Finally, we are only beginning to discover ways in which gestures can function as a window into learners' minds and into processes of acquisition. We need to deepen our understanding of the relationship between gestures, speech, and thought. We also need to consider the multi-functional nature of gestures. Not all gestures are created equal, do the same job, or are motivated by the same underlying process. Sometimes they do many things simultaneously (cf. Gullberg 1998; 2006). This insight is particularly important when dealing with gestures in L2, where the relationship between speech and gesture is complicated by the presence of another language, and by lexical, conceptual, and interactional difficulties. In this sense, the study of L2 learners is a challenge for gesture studies as much as for studies of SLA.

Much, then, remains to be done in this exciting field of inquiry. The challenge is to integrate gestures into the field of SLA such that they can feed into and inform theories of L2 learning and L2 use. The papers in this special issue constitute a step towards this goal. *Jungheim's* paper makes an important contribution to the study of "the SLA of gestures". He examines whether American learners of Japanese in Japan understand a Japanese emblem linked to a specific speech act, the refusal. Importantly, he compares learners' actual understanding with their perception of how well they understand the gesture. His findings indicate that the acquisition of emblems is far from straightforward, and also that there is a considerable gap between what learners know and what they think they know.

The four subsequent papers are more concerned with "gestures in SLA". Two papers focus on cross-linguistic influences in motion events, drawing on

Talmy's typological distinction between satellite- and verb-framed languages (Talmy 1985). Both use speech and gesture data to examine whether L2 learners re-organise narrative structures in L2, drawing on Slobin's notion of *thinking for speaking* (Slobin 1996). The two studies have a complementary focus. *Stam* investigates expressions of path in the speech and gesture production of two groups of Spanish learners of English of different proficiency. The gesture analysis focuses on the timing of gesture. She first establishes a cross-linguistic difference in how path is expressed in the native baselines. In the L2 analyses, Stam illustrates how L2 gestures reveal that items in speech that look target-like may still be used in an L1-like way. *Yoshioka and Kellerman* examine the relationship between speech and gesture at the discourse level, focusing on a hitherto uninvestigated domain, namely expressions of ground in the speech and gesture of Dutch learners of Japanese. Their gesture analysis targets gestural form. The native groups display a distinct difference in attention to ground in both modalities, with Japanese speakers placing greater emphasis on ground elements than Dutch speakers. The L2 findings reveal that L1 preferences for linguistic structures and gestural forms linger in L2 Japanese.

The papers by McCafferty and Sime are concerned with the role of gestures for L2 learning. Within a socio-cultural theoretical perspective, *McCafferty* examines the effects of gestures for learners themselves, a "private function" for gestures, related to the acquisition of prosodic structure in the L2. Examining beats – an understudied gesture category – he argues that learners may be using their own gestures to parse and structure the underlying rhythmic pulse of a L2 as they attempt to master syllable structure. *Sime*, finally, investigates gestures in the language classroom, specifically the meaning learners attribute to teachers' gestures. Using a stimulated recall protocol, she demonstrates that language learners attend to and ascribe a range of functions to their teachers' gestures. She argues that their attention to teachers' gestures may influence the self-regulation of learning and can provide an explanation for learners' progress and engagement.

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Notes

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1. Kendon (2004b) notes that the quantitative difference itself is uninteresting unless the types of gestures are taken into account given that different gestures have different functions, and different types of gestures seem to be affected differently by the transition into L2 (cf. Gullberg 1998; Nobe 2001; Sherman and Nicoladis 2004).

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