Gesture in New Guinea

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1. Introduction

Whenever people to talk—whether they are telling stories, giving directions, sharing gossip, teaching children, cooking food, or counting objects—they accompany their speech with meaningful body movements, or *gestures*. These gestures may be produced with the hands, arms, head, and face; they may be subtle or salient, idiosyncratic or culturally shared; they include points and shrugs, nods and winks, depictions of shapes and imitations of actions. While much is made of cultural differences in the amount of gesture, the fact is that human communication everywhere involves a steady hum of kinetic activity. New Guinea is no exception.

Scholarly interest in gesture has waxed and waned over the centuries (Kendon, 2004), but currently it is waxing. A cross-disciplinary renaissance in gesture research is well underway, spurred on by discoveries about the tight links between gesture, language, and cognition; by renewed attention to the body in cognitive science and anthropology; and by the availability of inexpensive and compact video recording technology (see, e.g., Goldin-Meadow & Brentari, 2017; McNeill, 1992; Núñez, 2004). As part of this renaissance, linguists of different orientations have begun to turn to gesture. Cognitive linguists are finding that gesture is integrated with grammar and meaning across levels of analysis (e.g., Hinnell, 2018) and that metaphorical thinking is evident in the hands even when it is not in speech (e.g., Valenzuela et al., 2020), anthropological linguists are showing how gesture offers a window into cultural models (e.g., Floyd, 2019), while interactional linguists are documenting how bodily movement contributes to the pragmatics of utterances (e.g., Shor & Marmorstein, 2022), and formal linguists, too, are approaching gesture as new frontier for semantic analysis (e.g. Schlenker,

2018). Finally, sign linguists are increasingly finding that signers and speakers make use of much of the same raw material—the same semiotic techniques (e.g., Kendon, 2004), the same cultural models (De Vos, 2014), and often the very same pairings of bodily form and meaning (e.g., Cooperrider, Slotta, et al., 2018; Mesh & Hou, 2018).

Though this gesture renaissance has emerged widely across fields and subfields, it has not been evenly distributed geographically. Most research has been confined to Standard Average European contexts, with the result that even basic questions about universals and diversity in human gestural behavior are still unanswered (Cooperrider, 2019). Gesture thus remains one of the least investigated dimensions of language use globally, and it remains all but undocumented in certain regions. The number of detailed studies on gestural phenomena in New Guinea, for instance, hovers in the single digits. And yet even from this slim set of studies, intriguing phenomena and tantalizing questions emerge. Here, we review research on gesture in the New Guinea region, focusing on five areas: pointing; conventional gestures or *emblems*; time gestures; bodily counting systems; and facial expressions of emotion. Along the way, we highlight gaps in understanding and suggest future research avenues.

2. Pointing gestures

Humans everywhere find occasion to point—that is, to try to draw attention to targets around them. These targets are diverse, and include people and objects, distant locations and imagined entities. Much research on pointing to date examines it as a universal and early emerging marker of communicative competence (e.g., Bates & Dick, 2002; Liszkowski et al., 2012). At the same time, other work has examined pointing as a site of cross-cultural variation. This variation manifests in the articulators and forms used to point, the specific practices into

which people incorporate pointing, and the taboos that govern the behavior (e.g., Enfield, 2001; Kita, 2003; Wilkins, 2003).

A particular pointing gesture of interest, perhaps endemic to New Guinea, is what we have termed *nose-pointing* (Cooperrider & Núñez, 2012). We first observed the gesture in our research with communities in the Yupno valley, which lies in the Finisterre range, along the border of Madang and Morobe provinces. This method of pointing involves looking at some target while also scrunching the face together, creating a salient wrinkling around the nose and brow (Figure 1). The gesture is distinct from—but parallel to—a much more broadly attested gesture*, lip-pointing* (Enfield, 2001; Sherzer, 1973). Both gestures involve looking at something while adding a salient facial action that marks the looking action as intended to communicate, and in both cases it is the eyes (rather than lips or nose) that really establish the target (see Enfield, 2001, p. 202-4). Nose-pointing has been noted in passing elsewhere in New Guinea—notably by Adam Kendon in his research on Enga sign language (Kendon, 2020, p. 65)—but our 2012 study was the first detailed examination of the phenomenon. In it, we analyzed examples of the gesture drawn from naturalistic interactions and ventured some tentative observations about the gesture's place in the broader Yupno pointing repertoire.

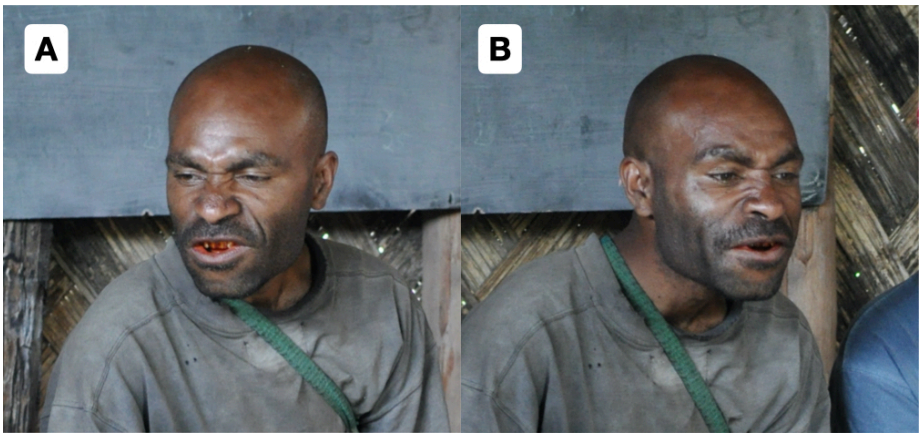

Figure 1. Examples of the nose-pointing gesture, produced by a Yupno speaker in more intense (frame A) and less intense (frame B) versions.

In a follow-up study, we sought to examine the Yupno pointing repertoire more closely, and to compare it to the pointing repertoire found in Anglo-European contexts such as the US (Cooperrider, Slotta, & Núñez, 2018). Our early impressions had been that nose-pointing—along with other forms of non-manual pointing (e.g., head-pointing without facial scrunching)—figured prominently in Yupno communication, but these impressions remained to be substantiated through systematic and controlled investigation. We developed a referential communication game called 'Stacks & Squares.' In the game, one participant (the Director) sits in front of a layout of five colored cloth squares; their task is to explain to another participant (the Builder) how to arrange a set of objects (cubes, cylinders, beanbags) on the squares to match a stimulus photograph. Gesture was not mentioned in our instructions, but participants in both groups pointed abundantly and at comparable rates. Preferences for different pointing forms differed radically, however: The American participants overwhelmingly favored index-finger pointing (accounting for 98% of all points), while the Yupno participants used a balanced repertoire of manual and non-manual points. When pointing by hand (40% of all points), Yupno participants pointed with the index finger 97% of the time; when pointing non-manually (60% of all points), they used nose-pointing 71% of the time, making nose-pointing the most commonly used form of pointing overall (42% of all points) (Cooperrider, Slotta, et al., 2018). Importantly, this prevalence of non-manual pointing emerged even though participants' hands were freely available throughout the task.

Questions remain about this distinctive form of facial pointing. What is its geographic distribution within New Guinea? Is it in "free variation" with other forms of pointing or does it carry a particular pragmatic or semantic shading? At what age do children start use the gesture

and does it emerge at the same time, or only after, index-finger pointing? Finally, what leads certain groups—including but not limited to the Yupno—to use non-manual pointing substantially more than others? We have offered several candidate explanations: first, the pattern could be due to practices (e.g., food processing) that keep the hands chronically occupied, allowing non-manual pointing to flourish (see also Li & Cao, 2019); second, the rich semantics of the Yupno demonstrative system (see Cooperrider et al., 2017) could obviate the need for effortful and directionally precise manual points; and, finally, cultural models that value discreet communication and reserved comportment could favor non-manual forms of pointing because they are less obtrusive (see Cooperrider, Slotta, et al., 2018, p. 1383-5).

Adding interest to questions about pointing repertoires in New Guinea is that fact that lip-pointing is also present within the region. It has been attested on Rossel Island (Levinson & Majid, 2013) and among the Awtuw (Feldman, 1986). More systematic work is needed on lip-pointing in New Guinea, not only to better understand how it sits within the pointing repertoire in the places where it is found, but to document the precise variant of the gesture in use—for instance whether it is carried out by funneling both lips, protruding the bottom lip, or some other configuration (see Enfield, 2001). In fact, the distribution of different forms of pointing could shed fresh light on historical patterns of cultural diffusion and contact, both within New Guinea and throughout the broader Pacific region.

Observers have also noted a few ways in which pointing in New Guinea fits observations noted in other indigenous contexts. For instance, in indigenous groups around the world people sometimes refer to times of day by pointing to positions on the sun's east-to-west arc (or to stretches of the day by sweeping the hand over part of the arc) (e.g., Floyd, 2016; Green et al., 2022). A point directly overhead, for example, may be used to mean 'midday.' The same

practice has been reported on Rossel Island (Levinson & Majid, 2013) and is evident in Enga signing (Kendon 2022, p. 99). Several groups in the region also observe a taboo on pointing to rainbows with the index finger, a prohibition with an astonishingly widespread global distribution (Blust, 2021).

3. Emblems

All human communities seem to operate with at least some gestures that are highly conventionalized in nature—an inventory of rigidly specified forms that convey readily recognizable meanings. These gestures are commonly called *emblems* (e.g., Brookes, 2004). Examples from Anglo-European contexts include the *thumbs up*, the *middle finger*, the *shhh sign*, the *eye roll*, and many others. All gestures—including pointing, as just discussed—may be conventionalized to some degree, or along certain parameters, but emblems are usually considered in a special class for being fully conventionalized and for conveying clear meanings even without speech. For instance, in using the *shhh* gesture, one must use the index finger, not any other finger, and must orient it vertically in the middle of the mouth. Because of these features (high degree of conventionalization, use without speech), emblems are frequently compared to the signs of sign languages (e.g., McNeill, 1992) and are readily adapted in signing communities (e.g., Mesh & Hou, 2018). Unfortunately, there are no examples of a published emblem inventory from the New Guinea region[1]; and, in fact, there are vanishingly few such studies from any indigenous community. Nonetheless several intriguing observations about emblems in New Guinea have been made.

[1] Research on South Fore emblems was carried out by Paul Ekman and colleagues, but the results were never published in full—see mentions in, e.g., Ekman and Friesen (1969).

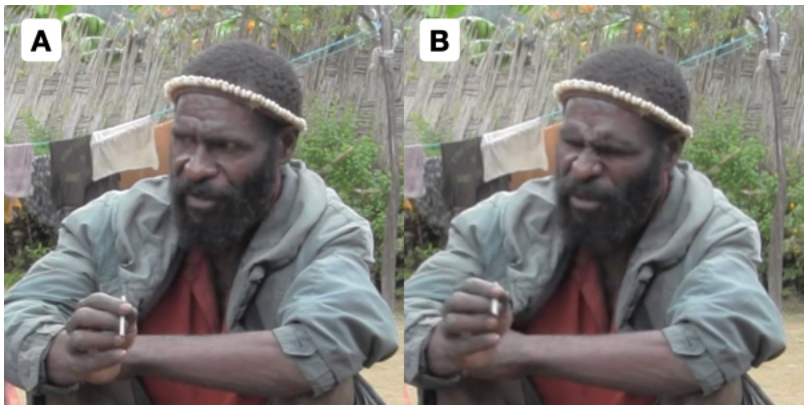

Figure 2. A Yupno speaker produces the diminutive face (B) while referring in Tok Pisin to the idea of a short period of time (*sotpela taim liklik*). The first frame (A) shows his face immediately before the scrunching action.

One highly conventional gesture we have examined in the Yupno context is what might be called the *diminutive face* (Cooperrider & Núñez, 2012). It consists of the same facial scrunching action used in nose-pointing, but whereas nose-pointing involves re-orienting one's gaze toward a target, the *diminutive face* does not involve necessarily re-orienting gaze (Figure 2). The gesture regularly accompanies the diminutive affix in Yupno, but also occurs more generally when discussing children, pets, and other small things. (Our consultants use the *diminutive face* not only when using Yupno, but also Tok Pisin and English, suggesting it is not yoked to any language-specific lexical items.) The full network of meanings that the gesture co-expresses remains to be studied, but there are hints that, in addition to the core meaning of 'small,' it occurs with markers of precision and pragmatic hedges (much like verbal diminutives; see Jurafsky, 1996). Another open question concerns the link—if one exists—between the Yupno diminutive face and the nose-pointing gesture: Why do both involve the same distinctive scrunching action, despite having different uses? One possibility is that the two are linked via the notion of preciseness. A test of this would be to see whether nose-pointing is used instead of plain head-pointing (i.e., without accompanying facial action) when a speaker wishes to add a

shading of precision to an indicative act—to say, "right there!" instead of simply "there!" To our knowledge, the diminutive face has not been attested outside of the Yupno valley but it would be surprising if it were entirely *sui generis*[2].

Yupno speakers also make use of several other conventional facial emblems, including a contrasting pair: an eye-brow flash as an affirmative response and a pout as a negative response. We have only observed these informally, but they often occur without speech as fully "on-record" responses to questions. (Before we realized these gestures operate so explicitly, we often thought our questions were being shyly evaded.) The eyebrow flash for 'yes' has been observed elsewhere in the region, including on Rossel Island (Levinson, 2010, p. 2751), in Awtuw (Feldman, 1986, p. 196), Manambu (where it is associated with half-closed eyes and a backward head tilt; Aikhenvald, 2008, p. 110), Eipo (Heeschen et al., 1980, p. 143), and Korowai (where it is associated with a raised chin and an ingressive whistle; Van Enk & De Vries, 1997, p. 132) . While this could suggest a broad areal distribution, there is also the possibility of independent invention given the widely documented association between eyebrow flashes and positive valence (Grammer et al., 1988). It also bears noting that, at least in the Yupno case, these facial signals co-exist with the familiar head nod for 'yes' and head shake for 'no,' raising intriguing questions about broader repertoires of affirmation and negation, and why certain signals are selected in certain instances. Zooming out, facial signals—which are generally less effortful and less salient than manual gestures—appear to be especially prominent around New Guinea. This may be a chance areal pattern, a trend that has simply spread through cultural contact; or it may be bound up with cultural models in New Guinea that privilege discreetness and inexplicitness (for discussion, see Cooperrider, Slotta, et al., 2018 and references therein).

[2] Kendon (1988, p. 98) describes a sign for 'small' used in Warlpiri Sign language that involves nose-wrinkling, but it would be a premature to assume any historical link between these forms.

In addition to these facial emblems, there is likely also a rich set of manual emblems present throughout New Guinea (though, again, these remain essentially undocumented). One we have informally observed involves loosely spreading and extending the fingers of the hand, and then rapidly, repeatedly rotating the wrist. This emblem is a form of negation and has attracted notice across the region. Kendon (2020, p. 128) noted its use in Enga sign; Reed and Rumsey (2020) observed its use among Ku Waru signers, describing it as a "spread hand-shake to indicate negation" (p. 147), as well as in Port Moresby (see also Reed, *this volume*). Levinson (2010) refers to what may be the same form-meaning pairing on Rossel Island as an "empty hand gesture" or "wrist flick" (p. 2751). Intriguingly, there are hints that the areal spread of this gesture is quite broad, extending into Australia. A very similar negation gesture was mentioned by one of Charles Darwin's correspondents as occurring in the Torres Strait; it reportedly consisted of "holding up the right hand" and "shak[ing] it by turning it half-round and back again two or three times" ((Darwin, 1872, p. 275). Indeed, speakers of Aboriginal languages in Northern Australia (e.g., on Mornington Island) use the gesture in emblem-like ways (N. Evans, personal communication, May 25, 2023). And Kendon (1988) describes a similar form in Warlpiri Sign Language (Central Australia) that "serves for a wide range of negating expressions" (p. 99).

We have focused here on emblems that have been attested in more than one community, but several one-off observations bear noting. Sarvasy (2014) describes a Nungon manual gesture made "as if brushing/shaking something off" (p. 59) to suggest that a statement is a lie, as well as a chin-stroking gesture used to express affection (p. 61). Finally, Van Enk & De Vries (1997, p. 71) note a Korowai gesture used to intensify the word for 'far,' produced by putting the right hand in the left armpit and bringing the head down toward the left shoulder. We have also

focused on conventional gestures that are distinctive to New Guinea, but some gestures in the region are cross-culturally robust. For instance, speakers of Savosavo in the Solomon Islands use several "pragmatic gestures"—i.e., gestures that express speakers' attitudes toward what they are talking about—in ways familiar to Europeans (Bressem, Stein, & Wegener, 2017). Several researchers working in New Guinea have also mentioned gestures in the palm-up/shrugging gesture family (e.g., Kendon, 2020; Reed & Rumsey, 2020), which is not surprising given this family's global prevalence (Cooperrider, Abner, & Goldin-Meadow, 2018). More notably, some have specifically highlighted one-shouldered versions of the shrug (Feldman, 1986; Levinson, 2010; Sarvasy, 2014). Further detail about usage is needed, but this could be a more regionally restricted elaboration of the palm-up gesture, such as has been reported in Nepal and India (Gawne, 2018).

4. Time gestures

Another topic of core interest within the gesture renaissance has been gestures that express abstract concepts. These are sometimes called *metaphoric gestures* (McNeill, 1992), and, to date, the best studied are those that express time concepts. A key finding to emerge from this work is that people everywhere talk, think, and—very often—gesture about time as though it exhibited spatial properties like size, position, and motion (Núñez & Cooperrider, 2013). A key corollary is that, much as people around the world differ in how they construe space, they differ too in how they construe time *as* space.

It is against this backdrop that we began studying time concepts and time gestures in the Yupno Valley. Our first foray built on decades of work by anthropologist Jürg Wassmann in the Yupno area (e.g., Wassmann, 1994), as well as our own earlier studies of spatial construals of

time in gesture (e.g., Núñez & Sweetser, 2006). Wassmann had previously observed that the Yupno prefer to construe space, on both macro and micro scales, in terms of uphill/downhill relationships (Wassmann, 1994). A natural further question was thus whether they construe time using this same favored, topographic framework. To investigate this, we carried out structured interviews in the village of Gua. The procedure involved first identifying a set of Yupno time-related terms and expressions and recording a native speaker saying them. We focused on deictic terms (e.g., meaning 'two days ago' or 'two days from now') and expressions ('time of the ancestors,' 'distant future')—that is, those related to the past, present, and future. During our interviews, usually conducted in pairs, we would play each recorded term and have the participant explain to us what it meant. Midway through each interview, we would have the participant rotate 180 degrees, and we would then run through the recordings a second time. This step is crucial: it is only after rotation that it would become apparent whether a speaker was construing time relative to their own body (e.g., always locating 'tomorrow' ahead of them) or relative to the landscape (e.g., always locating 'tomorrow' up the slope). Finally, combining gestures from all interviews, we extracted the mean vectors of past- and future-related gestures (present-related gestures were overwhelmingly directed toward the ground, as is common around the world) (for detailed methods, see Núñez et al., 2012). The analysis revealed that, regardless of which way they were facing, Yupno speakers tended to gesture downhill when referring to the past and uphill when referring to the future (Figure 3).

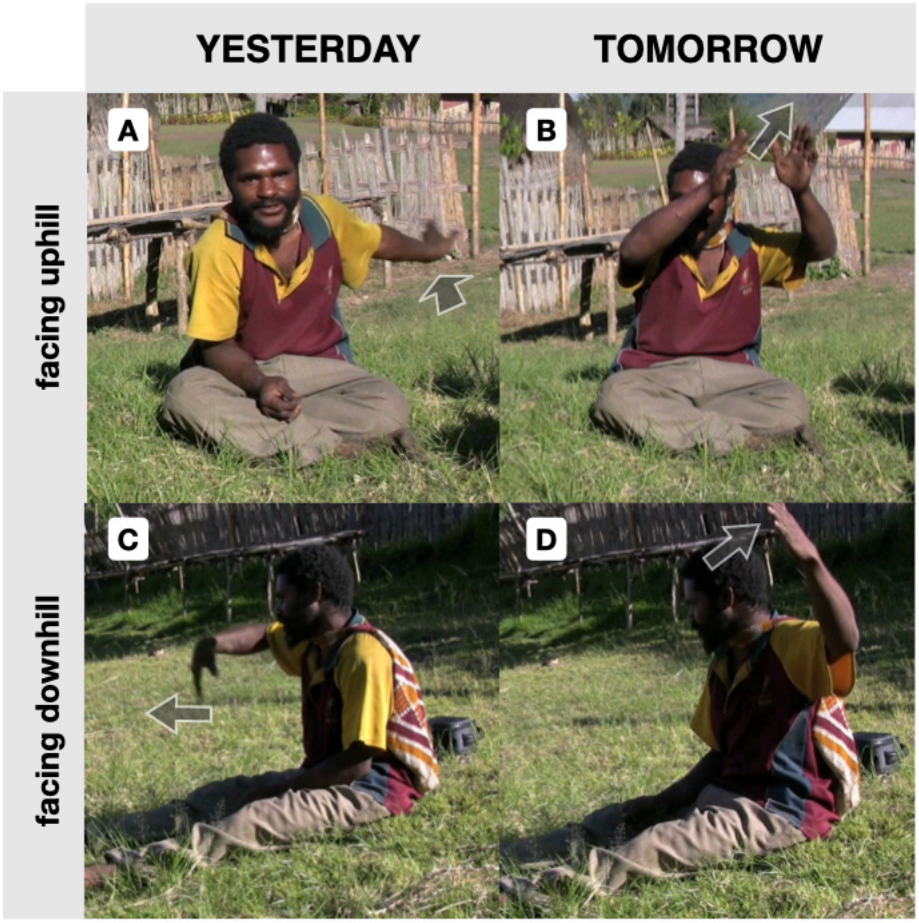

Figure 3. Examples of uphill/downhill time gestures produced by a speaker, first when facing uphill (frames A and B) and later when facing downhill (frames C and D). Figure adapted from Núñez et al. (2012).

In a follow-up study (Cooperrider et al., 2022), we investigated three lingering questions. First, what specific sense of 'uphill' and 'downhill' is at play? Do these construals involve the *macroscale* topography—that is, the general incline of the valley from the source of the Yupno river down to the sea—or the *microscale*—that is, specific local slopes? Our first study couldn't answer this because we conducted all our interviews at a site where macro- and microscale slopes were aligned. To address this, we conducted further interviews in Yupno villages where these two senses of uphill/downhill were in tension. What we found is that Yupno people seem to conceptualize time according to local slopes.

We also sought to better understand the linguistic and cultural context of this distinctive conceptual system. Through additional linguistic elicitation, we were able to build a fuller picture of how the system is (and is not) reflected in the Yupno language. Beyond the single expression we identified in our initial investigation, we found a few additional places where the topographic construal of time shows up overtly in language. For instance, as processes unfold, they are very often said to 'go up.' We also examined how the system articulates with other cultural practices in the Yupno valley—in particular, the way that Yupno speakers reconfigure the uphill/downhill system when indoors (Cooperrider, Slotta, & Núñez, 2017).

To our knowledge, these are the only in-depth studies of time-related gestures in New Guinea. Linguistic observations from other communities, however, suggest that uphill/downhill time concepts—and thus very likely uphill/downhill time gestures—are probably an areal feature (e.g., Pennington, 2016; Sarvasy, 2014). In fact, the scope of this areal feature may be quite broad, with evidence of uphill/downhill construals of time in language as far away as the Solomon Islands (Keesing, 1979).

5. Counting systems

Humans have innovated diverse systems for counting on the fingers, toes, and bodily landmarks (e.g., Bender & Beller, 2012), and these systems have long attracted interest within the fields of numerical cognition and the history of mathematics. The topic has never been a focal one within the gesture renaissance, but we include it here nonetheless. New Guinea is known for harboring some of the most distinctive of these counting systems—in particular, the "body count" systems that use landmarks on the body in addition to the fingers and toes. Pioneering survey work by Glendon Lean (summarized in Owens, 2001), as well as in-depth

studies in particular communities (e.g., Saxe, 1981; Wassmann & Dasen, 1994) and regions (Dwyer & Minigal, 2016), have established some basic contours of these practices and their variation.

The most common bodily counting systems found in New Guinea are what are sometimes called "digit tally" systems, as they involve counting on the fingers (1-10) and toes (11-20). These seem to have much in common with similar systems found throughout much of the world (Bender & Beller, 2012). Rarer and more celebrated are the "body count" systems, which make up about 15% of the systems studied by Lean and which are confined to Papuan languages (Dwyer & Minigal, 2016). Body count systems usually leave out the toes in favor of landmarks on the wrist, arm, neck, and face, and range in their maximum value from 18-74. Commonly—as in Oksapmin, for instance (Saxe, 2012)—the verbal number terms used in the body count systems are identical to the terms for the anatomical landmark that one indicates when producing the sequence.

Of particular interest to gesture researchers, perhaps, are the conventionalized movements involved in counting on the body. These systems do not merely consist of a set of abstract loci, but of a bodily routine for invoking those loci in a particular order. There are also conventional actions used at key points in the routine, such as the fists-raised gesture that Oksapmin speakers produce after completing the full 27-item cycle (Saxe, 2012, p. 47). Similarly, in our own informal counting elicitations, Yupno speakers use a stereotypical gesture for 10 that involves hitting the fists together (Figure 4). Another question of particular interest is how and when these systems combine with speech. Reports often focus on the canonical situation in which the full counting sequence is produced, but do these gestures also appear in fluent discourse and informal conversation? For example, would a speaker ever indicate a bodily landmark while casually

mentioning a certain number of entities, as an American might flash a pair of fingers when introducing “two reasons”? How commonly, if at all, are the terms used without indicating the affiliated anatomical landmarks? And how commonly are the landmarks indicated without the verbal labels?

Figure 4. Examples of the conventional Yupno gesture for 10, produced by bringing the closed fists together (with or without contact). In the top frame (A), the man on the right produces the gesture while running through the Yupno counting sequence; in the bottom frame (B), the man on the left chimes in with his own version of the gesture at the appropriate point in the sequence.

Further questions of more general interest also remain. Particularly lacking to date are rich accounts of the specific contexts in which these systems are used (though time-reckoning is repeatedly mentioned—see, e.g., Pumuye, 1978). Also needed are better explanations for the speaker-to-speaker variability that is often noted in existing reports, as well as for the variability in which members of a community use the system (e.g., men but not women; Wassmann & Dasen, 1994). Unfortunately, thorough investigation of body count practices may no longer be possible, as they have been rapidly replaced in recent decades by Tok Pisin number words and Western practices of numeration (e.g., Saxe, 2012). Even where such systems are dimly remembered, the cultural ecology that shaped and sustained them may have largely vanished.

6. Facial expressions of emotion

Another topic that has never been focal within the gesture renaissance—but which bears mention—is facial expressions of emotion[3]. In fact, facial expressions were the focus of some of the earliest systematic research on bodily communication in New Guinea. Much of this work was carried out by Paul Ekman and colleagues with the South Fore (Ekman, Sorenson, & Friesen, 1969; Ekman & Friesen, 1971; Ekman, 1980)[4]. Ekman and colleagues were interested in the Fore, not in their cultural particulars, but as an example of a group that had not been heavily influenced by Western culture. Such a group was needed to test a key universality thesis: that a small set of basic facial expressions was universally linked to a corresponding set of basic emotions, independent of any cultural exposure. In this work, participants matched a photograph

[3] Most researchers in "gesture studies" exclude facial expressions altogether, though the rationale for this exclusion is seldom spelled out.

[4] See also research on Eipo communication (Eibesfeldt et al., 1989; Heeschen et al., 1980). This work, carried out in an "ethological" framework, contains rich observations about facial actions along with frame-by-frame documentation. Only some of these actions are what Ekman and colleagues would consider "expressions of emotion."

of a facial expression to one of a handful of emotion words (Ekman et al., 1969), or were read a brief story and asked to select the facial expression that displayed the appropriate response (Ekman & Friesen, 1971). The key finding was that the judgments of South Fore participants generally converged with those of Westerners, with the strongest agreement for the link between happiness and smiling and weakest agreement for expressions associated with fear and surprise.

More recently, however, other researchers have documented apparent diversity in facial expressions within the New Guinea region. Adapting the methods of the earlier studies and working in the Trobriand Islands, Crivelli and colleagues have found much more modest support for Ekman's universality thesis (Crivelli, Jarillo, & Russell, 2016), again with the strongest evidence for the link between happiness and smiling. In other work, the same researchers have found that Trobrianders read a "gasping face" differently than do Europeans: the Trobrianders perceive this as threatening whereas Spaniards see it as fearful (Crivelli et al., 2016). Taken along with other studies using other methods, there is now converging evidence that at least some facial expressions of emotion are common to all humans, balanced by evidence that there is variability in how different emotions are expressed, suppressed, elaborated, and contextualized in different communities.

7. Conclusion and outlook

A truly comprehensive treatment of bodily communication in New Guinea would include observations beyond those discussed so far. As mentioned, gesture and sign converge in key respects and systematic work is now beginning on the sign languages of the region (Reed & Rumsey, 2020; Reed, *this volume*), following on the groundbreaking earlier work by Adam Kendon on Enga sign language (e.g., Kendon, 2020). Other research in New Guinea has

highlighted particularities of bodily comportment (Wassmann, 2016), gender performativity (Eves, 2010), ritual action (Bateson, 1958), ethological aspects of everyday interaction (Eibl-Eibsfeldt et al., 1989; Heeschen et al., 1980), and greetings (Eibl-Eibsfeldt, 1978; see also observations in Aikhenvald, 2008; Eibl-Eibsfeldt et al., 1989; Sarvasy, 2014; Van Enk & De Vries, 1997). Yet limited as our discussion has been—and limited as research in the region has been—there is no shortage of issues that cry out for further study. Perhaps of particular interest are those gestural phenomena mentioned in this chapter whose areal distribution remains unclear (Table 1).

Table 1. Gestures of unknown areal distribution in New Guinea

Phenomenon	Description	References
Nose-pointing	A scrunching of the nose/brow while looking toward a target; used to indicate	Cooperrider & Núñez (2012) Cooperrider, Slotta, et al. (2018)
Lip-pointing	A projection of the lips while looking toward a target; used to indicate	Feldman (1986)
Diminutive face	A scrunching of the nose/brow; used to characterizing small entities	Cooperrider & Núñez (2012)
Spread hand shake	A relaxed hand with all fingers extended, rapidly rotated; used for negation	Levinson (2010) Reed & Rumsey (2020)
Affirmative eyebrow flash	A quick raising (“flashing”) of the eyebrows; used for affirmation	Feldman (1986) Levinson (2010)
Uphill/downhill time gestures	A variety of spatial gestures (pointing, placing, sweeping, etc.); used to construe the past as downhill and the future as uphill	Núñez et al. (2012) Cooperrider et al. (2022)
One-shouldered shrug	A shrugging motion of one shoulder; used for lack of knowledge, inability, and related concepts	Feldman (1986) Sarvasy (2014)

It is known, after all, that gestural conventions do not always align with linguistic boundaries, and in some cases may be remarkably stable through time, even persisting across millennia (Kendon, 2004; Morris et al., 1979). We might thus ask what these gestural phenomena suggest about patterns of cultural diffusion and contact in and around New Guinea. Body-count systems call out for further documentation and investigation, particularly in any contexts where they are still used and not merely remembered. There is also no shortage of as-yet-unstudied topics that could be fruitfully taken up by linguists, anthropologists, and psychologists—preferably in collaboration with each other. Promising candidates include: spatial gestures, and how they articulate with environment-based spatial reference systems; gestural articulations of birth order terms; gestural correlates of switch reference and other aspects of discourse structure; and the gestural expression of abstract concepts other than time, such as ways of construing health, mood, and personality in terms of 'hot' and 'cold' (Keck, 2005). Finally, the construction of emblem inventories in the region would be of considerable value, given the lack of such studies from New Guinea from indigenous contexts generally. For linguists interested in investigating these or other gestural phenomena, the existing literature includes many examples to follow (Appendix 1).

Despite a recent resurgence of interest, gesture remains among the least documented and least understood aspects of language use. At the same time, despite a surge of interest in linguistic diversity, New Guinea remains among the least documented linguistic regions. It's our hope that the cross-disciplinary research community will begin to redress both these shortfalls, and that a vibrant tradition of research on gesture in New Guinea will emerge.

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Appendix 1. Studying gesture as a field linguist

If one wishes to study gesture in the field, a first step is simply to keep an eye out for notable phenomena. A second step is, whenever possible, to record video in addition to audio. If one wishes to go beyond collecting examples, there are many ways gesture can be studied or elicited more systematically (see, e.g., Müller et al., 2014, especially section V, 'Methods'). These vary from the naturalistic to the highly controlled. On the naturalistic end, an approach is to assemble and analyze (whether qualitatively or quantitatively) video corpora of informal conversation (e.g., Defina, 2016; Gawne, 2018). A more controlled approach is to conduct semi-structured interviews; these may be designed around culturally meaningful activities—such as explaining fish traps (Enfield, 2004) or giving directions (Kita & Essegbey, 2001)—or designed to elicit specific types of gesture, such as pointing (e.g., Enfield et al., 2007; Mesh, 2021) or time gestures (e.g., Núñez et al., 2012). Some researchers have also studied gesture using more controlled tasks that are designed around the particulars and constraints of their field sites (e.g., Floyd, 2016; Le Guen, 2011). For certain research questions—e.g., when wanting to compare across communities—a highly controlled, community-neutral task may be most appropriate. Examples include the 'Stacks and Squares' task, which elicits pointing and demonstratives (Cooperrider, Slotta, et al., 2018; Li & Cao, 2019), or new tasks used to study spatial frames of reference in gesture (Marghetis et al., 2020; Núñez et al., 2019). To date, the most widely used gesture elicitation task involves getting participants to watch and re-tell the 'Canary Row' cartoon (or segments thereof) (e.g., McNeill, 1992; Kita & Özyürek, 2003). (Note, however, that this task elicits primarily iconic gestures—such as those depicting movement, action, and shape—and may not be appropriate for all field settings due to the cultural knowledge required to understand it.). Finally, several studies have described systematic procedures for building

emblem inventories (Brookes, 2004; Johnson et al., 1975), and provide models for conducting in-depth studies of specific emblems (Brookes, 2002).

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