1 Introduction/Definitions

Setting aside its use in music, architecture, poetry, and visual art, the term ‘gesture’ is used in a number of interrelated ways:

(a) each muscular act, which may or may not be a component of a more complex muscular act, can be called a gesture: reaching for a glass is a gesture; the articulation of a language sound is an organized bundle of articulatory gestures (Browman & Goldstein 1990); a bounded intonation contour is a gesture. Gestures are the basic units of bodily action;
(b) a gesture is a discrete bodily act by which some social meaning is conveyed: bowing the head, winking, nodding;
(c) a gesture is any act that conveys social meanings of the kind body gestures also convey, i.e., showing deference or respect, recognition, or gratitude: giving flowers, sending a thank you note, forgiving a debt. It is a way of comporting oneself (cf. Latin gerere, to behave);
(d) a gesture is a communicative movement of the hand.

This article is only about gestures in sense (d).

Hand-gestures have recently moved center stage in the work and debates of several disciplines, including anthropology, evolutionary anthropology, linguistics, communication, psychology, philosophy, cognitive science, neuroscience, technology (human–machine interaction, robotics), design research, and research about instruction and education. A linguistic anthropologist who takes up the study of gesture at this time, however, would likely turn to the cumulative empirical research that has been conducted in the last decades about gesture as a cultural praxis. This could be found in historical work, as well as in the many studies of body motion and sense-making in embodied interaction in real-life settings, published by researchers in the ethnographic and ‘naturalistic’ (observation-based) study of social interaction. Research in this vein is informed by a view of gesture as a heterogeneous family of bodily meaning-making practices whose enactment and understanding is at each point shaped and constrained by context, firstly its place within multimodal ‘packages’ and sequences of action and utterance. That line of research will be the main focus of this overview.
2 Historical Perspectives

Gesture has usually played only a peripheral role in Western scholarship, relegated to a status far below spoken language. Gesture suffered the disadvantage of not being abstractable into letters. Plato was suspicious of all forms of mimesis, and so were the rhetoricians of Rome, concerned to separate the realm of persuasion, the speaker’s rostrum, from that of illusion, the stage. But it was also a Roman rhetorician, Quintilianus, who, to ensure proper delivery, gave us the first, improbably precise accounts of gesture forms and their coordination with speech. Indeed, during some eras, gesture became noticed and drew attention to itself because it promised to reveal something profound about human civilization (for a more detailed and comprehensive review of the history of ideas on gesture see Kendon 1984; Bremmer & Roodenburg 1992). Until the turn of the twentieth century gesture was regarded as a property of the human species and seemed to prove universalism right: the ability to gesture-communicate with anyone, even in the absence of a common language – an experience frequently and wonderingly conveyed by explorers – demonstrated the ‘psychic unity’ of humankind. But then, in Boas’ time, it turned into a marker of cultural difference.

Gesture has often been regarded as a phenomenon at the boundary of nature and culture: obviously intelligible to everyone in interactions across language boundaries, it seemed to transcend, and to have nothing to do with, what today is called ‘culture’, i.e., a people’s distinct ‘traits.’ Inspired by reports by historians (Herodotus 1949) and reporters traveling with conquering armies (Xenophon 1962) about the success of gestural communication across language borders, guided by the ubiquitous model of the deaf, writers like Quintilianus (1922) regarded gestures of the hand as the common language of humankind. Quintilianus also subjected the actio (physical delivery), especially the hand-gestures, of orators to microscopic scrutiny, at a time of intense debate about bodily comportment – posture, gait, gesture – as an indicator of social class and political allegiance (Corbeill 2004). In the Middle Ages, at the time of the Inquisition, stereotypes about ethnic body motion styles served to identify non-believers, i.e., Jews (Schmitt 1990). During the Renaissance, gesture was intensely studied by painters, who developed increasingly refined methods for depicting gestures in their social contexts, using them as commonly known signs in their efforts to show ‘legible interactions’ (Gombrich 1982). The age of the Reformation and the Early Modern period produced ideologies of moderation and ritual exuberance dividing the Protestant North from the Catholic South, the impact of which might still be visible today (Burke 1992).

During the Enlightenment, when philosophers began to consider seriously reconstructing how humans acquired their modern faculties out of an assumed original natural state, gesture was seen as the natural state of communication at the threshold of culture- (i.e., language-) making (Condillac 1746; see Aarsleff 1974, 1976). In the nineteenth century, the idea that gesture might be the original language of humankind motivated empirical investigations into sign languages, notably those of the deaf. Gesture came into view as a window into human pre-history and the history of communication. Intrigued by the success of the Abbé de l’Épée to devise a manual communication system for his pupils at the School for the Deaf, the founders of the Société des observateurs de l’homme in Paris in 1800 chose to make the collection of all sign languages of the world their first project (see Lane 1976), to uncover their common origin and traits. Tylor (1856), a founder of modern anthropology, pursued the project on a smaller scale by studying the pupils at the School for the Deaf in Berlin, in whose signs he believed to observe “survivals,” i.e., vestiges from an earlier evolutionary stage. In a similar vein but with more attention to detail, Mallery investigated Plains Sign Language (1978a,b), a “savage” communication system, for the principles governing the formation of signs. He found that processes of metonymy and metaphor are abundant in the formation of sign language, anticipating insights...
that are also central in today’s ground-breaking studies of language development and change (Heine, Claudi & Hünnemeyer, 1991; Heine & Kuteva, 2002). Similar observations had been made by the ‘ethnographer of gesture’ (Kendon 1995a), Andrea de Jorio in Naples in 1832 (De Jorio 2000). For Mallery and other nineteenth-century cultural evolutionists, metaphor betrays a primitive or infantile mode of thinking by analogy, but is also already a cultural phenomenon, as the diversity of metaphors in living languages and poetry demonstrates, a phenomenon ‘in between’, as should be expected from a ‘savage culture’ in between humanity’s ‘primitive’ and ‘civilized’ stages of development. Darwin’s (1872) theory of facial expression, that expressions originate as early parts of acts and ‘project’ an imminent action, became the point of departure for G. H. Mead’s vision of a ‘conversation of gestures’, i.e., pre-symbolic interactions in which significant gestures and, eventually language, mind, and self evolve (Mead 1934). Mead (1909) developed his ideas about significant gestures and the social evolution of mind through a critique of the individualistic-psychological theory of W. Wundt (1911), who sought to explain their meanings as derived from affect-expressions.

Otherwise, in the twentieth century, beyond the occasional mention (e.g. Sapir 1991), gesture disappeared from the scientific landscape for a long time. Where it appeared, it was in the new light of Boasian ‘relativistic’ anthropology, not as a human universal, but as an embodiment of cultural difference. In his dissertation, originally entitled “Gesture and Environment” (1941), David Efron (1972), a student of Boas, presented the first and, for decades, unsurpassed field study of conversational gestures. Using multiple research methods including field observation, film, frequency counts, drawings, and diagrams, Efron compared the conversational hand-gestures made by first- and second-generation Eastern European Jews and Southern Italians in New York City. Giving precise descriptions of the movement patterns that conspire to create the phenotype of a sinuous and large gesture style among Italians, and of an angular style of more restricted movements among Jews, he typified the two styles as ‘physiographic’ (depictive) and predominantly “ideographic” (or concrete and abstract), respectively, and attributed them as cultural group characteristics: Italians tend to depict the world; Jews trace the movement of thought. Italians and Jews of the second immigrant generation move toward local styles and make culturally hybrid gestures, so gesture style is no longer a strong predictor of ethnicity. And, being learned as it is, it cannot have any connection to a quasi-biological construct such as ‘race’: Efron thus succeeded in destroying the theory advanced by Nazi anthropologists that gesture and movement styles are innate properties of a ‘race’ (see also Boas 1932).

In the United States, after World War II, anthropologists, biologists, psychiatrists, and cyberneticists began to think about human communication as a self-regulating system; Gregory Bateson’s ideas, especially, about contexts as frames, meta-communication, schismogenesis, and character formation (1936, 1972; Bateson & Mead 1942) would exert a lasting and profound influence on the development of ‘naturalistic’, observation-based research into interaction and bodily comportment in interaction. The ‘ur-event’ for the entire ‘naturalistic’ tradition of interaction research was the collaboration of an interdisciplinary group seeking to write the Natural History of an Interview (McQuown 1971), a quasi-psychiatric interview of a young woman conducted by Gregory Bateson. Bateson (1971), in his contribution to the unpublished report, entitled ‘Communication’, conceived of interactions as self-organizing systems within which the different bodily modalities play distinct and shifting parts; the meaning of each behavior is a function of its context, of which it simultaneously is a constitutive part. The anthropologist Birdwhistell (1979), a member of the Palo Alto group, subsequently embarked on the effort of describing ‘American Movement’ as if it were a language (see also Kendon & Sigmann 1996). But Birdwhistell failed to see that body motion, from gait to gesture, does not contain ‘meaningless’ elements equivalent to phonemes, but consists exclusively of indivisible intentional acts.
3 Critical Issues and Topics in Current Research

The following summary of the development of the field is grounded in a view of gesture as an embodied, cultural sense-making praxis that draws on all of the capacities of the human hand (Streeck 2009b, 2013b). From this perspective, a significant recent development is the increasing convergence between inquiries, not least by philosophers and anthropologists, into the cognitive or living body (Streeck 2013a), on the one hand, and ongoing observation-based research into the moment-by-moment organization of action and interaction, on the other. Intended to highlight the emergence of a unified perspective on the communicating human body, the following overview is divided into five sections: the first sketches the development of gesture studies in the context of interaction research; the second sketches the ‘model of man’, the conception of the living body, that emerges within phenomenology, ‘embodied cognitive science’, and ‘neuro-phenomenology’; in the third section, I present a conception of gesture as distinctly manual cognitive and communicative activity; and in section four, I show how this conception, as well as others, account for conceptualization in gesture. The last section, which also serves as a limited account of methodology, shows how the praxeology of gesture and interaction meets with sociological inquiries in the wake of the practice turn, and describes how the analysis of gesture practices has become embedded in more-embracing studies of multimodal interaction, i.e., of activities in which gesture is not only coordinated with, and mediates between, other modalities (e.g. action, gaze, and speech), but operates within settings rich in meaningful artifacts and cognitive tools that offer and impose their own affordances and constraints upon the sense-making process (Streeck, Goodwin & LeBaron 2011). Everywhere, gesture shows the ‘mindful’ body in action, a body that, without being under the control of some ‘executive system’, can spontaneously perform abstract, yet meaningful, acts that provide sense for the situation and move it along.

Interaction Research

Research on hand-gestures in interaction is guided by the question ‘why this now’ (Schegloff & Sacks 1973: 299): what is the ‘job’ that the gesture accomplishes now, at this point in the interaction, where ‘now’ comprises such disparate concurrent behaviors as the participants’ postural arrangement, their eye movements, and units of speech. The question has been approached in two very similar and yet easily compatible ways. Context analysis in the tradition of Bateson, notably by Kendon (1990), investigated how vocal and bodily communication modalities are coordinated in the production of sequences and contexts of interaction and subsequently focused on the coordination between the modalities’ gesture and speech (Kendon 1972, 2004); conversation analysts sought to answer ‘why this gesture now’ by reference to the gesture’s placement and production over time in unfolding turns at talk and sequences of action (Schegloff 1984).

In studies of movement coordination in interaction, beginning in the 1970s, Kendon (1970, 1972, 1980a, 1983) demonstrated that hand-gestures (defined as excursionary movements of the forelimbs that observers distinguish from instrumental actions) are organized into units and phrases which combine with thematic units and predications in discourse, and that the stroke of the gesture is timed so that it coincides with the main vocal accent, which in turn marks the focal word or phrase in a clause. Within extended utterances, changes in the motion pattern or hand-shape of a repetitive gesture mark changes in the speech act performed or display features of information structure (new/old information). Kendon conceives of gestures as parts of utterance action.

In Kendon’s work (for an overview, see Streeck 2007), gesture has emerged as a cultural medium of communication that is functionally diverse, structured in describable ways, rich
in symbolic strategies, and historically contingent (Kendon 2004). In data from England and Southern Italy, he identified ‘gesture families’ (such as one involving index-finger and thumb forming a ring, or one with the open hand held palm up) and showed the specific discourse function each member achieves (e.g. indicating specificity or presenting an object as an exemplar of a kind). Kendon’s wide-ranging and extraordinarily precise studies encompass varieties of gesture such as pointing (Kendon & Versante 2003), and discourse-structuring gestures (Kendon 1995b), as well as ritual (alternate) and deaf sign languages (1980b, 1988).

Kendon’s work reverberates across a diversity of research programs currently underway, including ethnographic studies of the conventionalization of gesture in the social life of communities (Brookes 2004); incipient sign languages (Sandler 2012); gesture-related communication systems such as Aboriginal sand stories (Green in press); the acquisition of gesture by very young children (Andrén 2010); and its roles in second-language acquisition (Gullberg 1998); as well as the production and roles of gesture in music-making (Rahaim 2008; Pearson 2013). But it has also informed the work of conversation-analytic work on gesture.

For conversation analysts, the question ‘why this now’ turns onto a unit’s position or ‘placement’ in relation to emergent units of talk and sequences of action, including the turn, the turn-construction unit, and the transition place between turns at talk (for a more comprehensive overview on research on bodily action by conversation analysts, see Heath & Luff 2012). The question is how a gesture contributes to the ‘project’ of the turn, action, and sequence. A number of studies showed that hand gestures can be systematically deployed to manage turn-taking, for example, by foreshadowing the action for which a turn is requested (e.g. a telling, Streeck & Hartge 1992) or by displaying a participant’s request for a turn (Mondada 2007a). For conversation analysts, the observation, previously reported (Dittman 1968; Kendon 1980a), that gestures which are demonstrably tied to units of speech (‘lexical affiliates’, Schegloff 1984), are often performed prior to the uttering of their speech affiliates, is of particular interest. A gesture may mark the opening up of a ‘projection space’, i.e. a stretch of talk during which something is ‘in play.’ Streeck (1995) has argued that the routine pre-positioning of gestures is social intelligence in action, as it offers the recipient opportunities to pre-adjust to upcoming action (the mechanism that Mead had described; Mead 1934); ‘forward-gesturing’ (Streeck 2009a) includes gestures that display an action type at turn-beginning, gestures that project a concept before it is uttered, and gestures that claim the turn before the speaker begins to speak.

In a seminal study, C. and M. Goodwin (1986) laid out the careful orchestration of body motion during word-searches and revealed the methodical sequential patterning of speech, gaze-shifts, and gestures in the collaborative solving of speaking problems. Streeck (1993) showed how attention to depictive gestures is organized: across language communities, depictive gestures are made salient by deictic speech elements (English ‘(like) this’, German ‘so’, Japanese ‘ko’), but they also receive the gaze of their maker, and two components thus combine to give the gesture prominence as object of attention (see also Gullberg & Holmqvist 1999). Interlocutors, through their gaze behavior and other responsive behaviors, can impact the ongoing construction of a gesture in collaborative efforts to work out ‘what the gesture means. In sum, there are methodical practices by which interaction participants respectively mark differentially the significance of concurrent bodily action to concurrent talk (Goodwin 1986). Natural languages have evolved a number of ways of marking, indexing, or preparing embodied displays in the grammar of spoken utterances. In addition to deictic forms, these also include quotative verbs, i.e., verbs by which reported speech is launched. The recent American English quotative verb, ‘be like’, is an example: it prepares a bodily display (which then, literally, shows what the speaker ‘was like’ in the reported situation) and – impossible with its predecessor ‘say’ – anchors the display as a grammatical element in the talk. Today, even though more often than
not ‘be like’ simply means ‘say’, the verb continues to offer the grammatical opportunity to enlist the body as narrative resource. Incidentally, ‘like’ is descended from a proto-Germanic word meaning ‘body’; however, the lexicalization and grammaticalization of quotative forms often begin with a ‘marker of embodiment’ such as ‘she was all like_’ or ‘she goes_ and I go_’ (Streeck 2002).

In work by Christian Heath (1982, 1986, 1992, 2002), hand-gestures came into view as an interaction resource, i.e., as ‘unit acts’ with interactional affordances quite distinct from those of speech. (For example, they are rather immune to overlap.) Since the early 1980s, Heath has investigated how patients and doctors coordinate speech and body motion during medical encounters, specifically how patients manipulate physicians’ attention through the spatial placement of gestures. To direct the attention of others is of course also the function of pointing gestures, which form the focus of an increasing number of studies across disciplines (Kita 2003). Linguistic anthropologists have played a leading role in this effort. Haviland (1993, 2000, 2003) and Levinson (Levinson & Wilkins 2006) investigated pointing and referential gestures (“small” pointing gestures indexing approximate locations of narrated events without directing visual attention to them) in communities whose languages have ‘absolute’ systems of spatial reference (i.e. relative locations are expressed in terms of cardinal directions) and showed that the precision in linguistic terms is matched by the precision with which gestures point to the actual locations where narrated events happened. Pointing gestures in these communities demonstrate that, as a result of ongoing dead-reckoning, members’ bodies are continually attuned to where they are and in which precise cardinal direction they are facing.

The Living Body

Quite apart from these efforts to excavate the organization of sense-making in moment-by-moment interaction, philosophers, cognitive scientists, anthropologists, and sociologists since the 1990s have taken an interest in the body and its active role in social, cognitive, and cultural life. Although entirely independent endeavors, the two lines of inquiry nevertheless both trace their origin to phenomenology, that is, the sustained efforts by Heidegger (1962), and Merleau-Ponty (1962) to restitute the body to its proper place as an active, socialized, skilled, and cognizant participant in social and cognitive processes. Conversation analysts, through their ethnomethodological heritage, were more inclined to declare their indebtedness to A. Schütz’ (1932) ‘disembodied’ phenomenology of social understanding. In contrast, the recent ‘body turn’ in various disciplines has led to a re-engagement with Heidegger’s and Merleau-Ponty’s account of human knowledge and consciousness as being grounded in the body’s active, mindlessly mindful coping with the world. Bourdieu’s conception of the habitus (Bourdieu 1977, 1990, 2000), derived from Husserl (2012) and Mauss (1973), is a case in point. Bourdieu defines habitus as systems of durable, transposable dispositions, structured structures predisposed to function as structuring structures, that is, as principles which generate and organize practices and representations that can be objectively adapted to their outcomes without presupposing a conscious aiming at ends or an express mastery of the operations necessary in order to attain them. Objectively ‘regulated’ and ‘regular’ without being in any way the product of obedience to rules, they can be collectively orchestrated without being the product of the organizing action of a conductor

Bourdieu (1990: 53)
Among anthropologists, Ingold (2000, 2011) adopted a Heideggerian term to articulate a *dwelling perspective* on embodied culture, cognition, and communication, i.e., a perspective that analyzes them within the frame, and as products, of bodies’ active engagements with, and transformations of, the material and social world. We do not face the objective world as observer-subjects, but become enmeshed with it in our contingent, physical, collaborative attempts to ‘make do.’ Gestures, as we will see, reflect this enmeshment vividly.

From the point of view of what we may call the ‘new theory of embodiment’, body motions are the most basic cognitive acts: cognition is motion and motion is cognition (Sheets-Johnstone 2012). Cognition is as much part of an amoeba’s self-propelling away from poison (Thompson 2007) as it is of an ape’s reaching for the right branch to hang from or a human making a gesture in conversation. This view of cognition as intrinsic to life is the main axiom of *neurophenomenology*, a surprising and productive collaboration between neuroscientists philosophers, among others, in which Heidegger’s and Merleau-Ponty’s vision enters a comfortable and mutually inspiring marriage with the biological conception of life as self-organization or auto-poiesis (Maturana & Varela 1980; Varela, Thompson & Rosch 1991). One group of researchers chose the term *enaction* as a moniker for the entire research program (i.e., a view of cognition as enaction; Stewart, Gapenne & Di Paolo 2010) and emphasizes the interactional scaffolding of cognitive processes without, however, offering analyses of real-life ‘socially shared cognition.’ Not only gestures, then, but any living body motion ‘picks out a significance’ of the situation, ‘couples’ with selected parts of the environment, and by the same token, alters the situation for the actor. This should enable us to understand gesture on a continuum with other meaningful bodily actions performed by human bodies. In many children, the first steps that they take on their own come with a reaching action of the hands, as if grasping for the distant parent. Children’s first gestures pick out, show, and shape the significances that the environment presently has for them. Zlatev (2003) has called these significances *values*. Gestures are meaningful by binding and incorporating values of the unfolding situation; this is what we can call their ‘transcendence.’

### Human Bodies and Their Gestures

As products of socialized living bodies, gestures are in the first place skilled physical actions, “*techniques du corps*” in Marcel Mauss’ (1973) sense, a “manu-facture of meaning” (Streeck 2009b). To understand hand-gestures as living acts, we must understand what kind of an organ the human hand is. Four intertwined aspects of the hand are especially relevant: (a) that it has evolved as an organ of grasp (Marzke 1997; Napier 1980); (b) that it is also a complex, flexible, multi-sensory, and active cognitive organ (an organ of ‘environmental cognition’; cf. Gibson 1962), which (c) does a great deal of its work autonomously, below the threshold of awareness and without executive control (Jeannerod 2006); and (d) that humans, as they invented gesture, inhabited a world made almost entirely by human hands. Provided we accept that gesture could not have evolved independently of the hands’ world-making capacities, this has a number of implications for gesture: gesture should not only reflect the hands’ ability to act, but also to feel and to make.

Hands are about things. They transcend themselves into the world by reaching for, taking, holding, handling, setting down, as well as making things. Their ability to hold, manipulate, and fabricate physical objects forms the arc of evolution of the human hand (Gehlen 1988), the most flexible and capable of all hands and the most distinct physical feature of the species. The grasping of an object is also one of the richest and most complex contacts that the human body has with its environment and is therefore an essential cognitive act: it is out of these acts, after all – discovering and making use of properties of matter while forming and putting together...
new things – that the world as we know it has arisen. Approached in this way, gestures of the hands show the living human body in its relatedness to its Umwelt.

Gesture is a heterogeneous medium, but it is possible to discern different ecologies in which gesture practices partake, and how they differentially participate in the communicative situation (Streeck 2009b). An ecological perspective gives us at least the following distinctions. Hand-gestures:

1. can reach out into the world at hand and disclose, enhance, and embellish, by handling, tapping, or otherwise ‘marking up’ features (‘environmentally coupled gestures,’ Goodwin 2007);
2. aim at the visible world and structure, disclose, and augment what is being seen (e.g., pointing, tracing);
3. conjure and depict phenomena that are not present, but referred to and described in the talk (depictive gesture);
4. conceptualize thematic content by casting it in terms of postures and actions of the hands;
5. embody and display (features of) the communicative act (‘illocutionary’ and ‘discourse-structure marking’ gestures, e.g. gestures of rejection and gestures projecting lists; Kendon 1995b); and
6. can be made to manage the actions of others.

For each of the orientations to the situation, there are distinct gestural practices. Thus, Wilkins (2003), Enfield (2009), and Cooperrider & Núñez (2012) have described pointing practices by body parts other than the hand (chin, lips, nose, eyes) and how members choose between them; as well as how pointing practices and linguistic practices of verbal deixis coordinate with them in situated, multimodal acts of object-identification (Enfield 2009; Stukenbrock 2009). Streeck (2008) has described various practices of gestural depiction, including handling (using), drawing, ‘scaping,’ modeling, and making, and argues that they reflect fundamental modes of being of the hand, i.e. their roles in our inhabiting a material world. Each person appears to possess a distinct, individuated repertoire of gesture practices, a gestural habitus (Bourdieu 1977), which may instantiate cultural and subcultural and class-based styles, but more so the life-world (Schütz 1932) that the individual inhabits and the way he or she makes that world through embodied communication.

For Marcel Mauss (1973), the French anthropologist, habitus was an ensemble of techniques du corps. It is in this sense we can apply the term practice to gesture: gesture is an ensemble of techniques du corps. For Edmund Husserl (2012), a habitus was simply a set of I can’s, of tacitly known methods of action. A gestural practice is an “I can”: a significant physical action one knows how to make and by which some other (social) act can be accomplished, or a method to complete a certain gesture task (e.g. a depiction). The gesturing hands are products and instruments of embodied cognitive activity, not signs to publicize an otherwise internal thought process.

Investigating gestures of the hands in this perspective, then, means to investigate how multiple sensory abilities and component skills, many of them derived from real-world action, come together in single meaning-making acts; to discern the effects they have and how they are understood within context; and to take stock of practices across individuals, groups, and cultures to discern some of their origins and distribution. Given that gesture is a highly individuated mode of communication, the practice approach has the advantage that it does not posit a shared code or shared rules as a precondition for understanding (Hanks 2005). Thus, it easily accommodates gesture’s feature of being partly shared, partly idiosyncratic, and to likely include sediments from a wide range of sources and periods in history.
Gesture as Cultural Cognition

The hand’s primordial capacity to handle, know, and make things is an essential condition for the emergence of gesture and a main source of its pictorial language and conceptualization patterns. Gesture is indeed, as Condillac (1756) had decreed, a language of action: apart from the fact that gesture is by definition physical action, Calbris (2011), Haviland (2013), Kendon (2009), Müller & Tag (2010), and Streeck (1996, 2009b), among others, have argued that many of its motor schemata are abstracted from real-world physical action: for example, many depictive, conceptual, and interaction-structuring (“pragmatic”) gestures are formed by enactive schemata shared with manual actions in the world of things. In other words, gestures ‘make sense of things’ in terms of meaningful manual action patterns. As it were, whatever can be said, can be said by an act of the hand. Home-sign systems appear to be universally rooted in gestures that enact familiar actions of the hands (Haviland 2013). Calbris (2011), in her semiotic analysis of French conversational gestures, lays out the mechanism of metaphorical projection by which familiar action schemata (e.g. cutting) are transferred and structure diverse cognitive domains (e.g. the domain of discourse).

Cognitive linguists and psychologists see promise in gestures because they can be seen as bodily forms expressing body-based meanings, which otherwise appear as metonymies and metaphors in the lexicon of languages (Bressem & Müller 2014; Cientíc & Müller 2009). What Lakoff & Johnson (1999) have called “image schemata,” i.e., patterns of sensorimotor experience that also structure abstract cognitive domains, are made visible in the enacted bodily forms of gesture (Sweetser 1998). This framework is, unfortunately, occasionally stated in culture-free terms (Lakoff & Johnson 1999; Gallese & Lakoff 2005), as if ‘conceptual metaphors’ reflected universal experiential dispositions of the human body, rather than culture-specific ways of relying on bodily experience to structure and make sense of abstract experiential domains.

In contrast, Núñez & Sweetser (2006), studying the metaphorization of time, found, for example, that space can be used in radically different ways to represent time, depending upon the cognitive model (or “conceptual metaphor”) prevailing in the culture. If the past and present are all we can know (or see), then the future must be behind us and we move backwards towards the future, keeping our constantly growing past in view. Pointing gestures that refer to the past, in Western societies always made to the back, are therefore made towards the space in front of the speaker among the Aymara of the South American highlands. Gesturing time is a rich site in which to study enculturated bodies in action: Mandarin speakers are said to show time as growing from the bottom upwards, reflecting the orientation of the manual practice of writing, whereas speakers of Nheengatá in the Amazon gesture an arc with the index-finger across the sky, indicating both points in time and time’s progression on the sun’s path (see Cooperrider & Núñez 2009). While these practices reflect different cosmologies, they also show how cultural bodies position themselves in relation to the cosmos.

Goldin-Meadow (2003; see also Roth & Lawless 2000a,b), studied how gesture organizes conceptions of number and underwrites numerical operations. Whereas others have argued that gesture facilitates mathematical thinking by allowing subjects to “offload” cognitive matter to the hands (e.g. by “holding” a number in a positioning of fingers; cf. Wilson 2002) Núñez articulates the view that gestures demonstrate the bodily origin of mathematics (Núñez 2008; Lakoff & Núñez). Mathematics and science education are active sites of gesture research. Other cognitive domains in which metaphoric gestures have been studied include (the imagination of) language (in the explanations of university linguistics teachers discussing grammar); Mittelberg 2007).

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4 Methodology and Current Research Directions

The praxeological perspective on gesture broadly aligns with the broader “practice turn” in the social sciences (Schatzki, Knorr Cetina & Von Savigny 2001; Bourdieu 1990); sociologists working in this vein argue that practices are the “site of the social.” What is considered a ‘practice’ varies widely, including what others (e.g. activity theorists) would call an ‘activity’ (e.g. auctioning off paintings). More often than not, the term indexes the entire praxis that makes up a community, such as ‘writing code’ or ‘making Shaker furniture’ (Schatzki 2001). In conversation analysis, in contrast, ‘practice’ means a single method by which a particular social action, or some part of it, is performed, for example, raising pitch on the penultimate syllable of a turn-construction unit to indicate imminent completion. But the scaleability of the term ‘practice’ is an advantage for the study of gesture, because we can meaningfully apply the term ‘practice’ to a variety of units of gestural action: the formation of a single gestural act, if it is routinized, is a practice. But building a gestural image by a succession of gestures is also a practice. Enlivening a diagram by gesture (Enfield 2003; Murphy 2005) is a practice (or group of practices), as is lip-pointing (Enfield 2001). What is common to all practice theories, apart from a foundation in phenomenology and Marx’s historical materialism (see Engels 1963), is that they grant the body and its ‘tacit knowledge’ center stage as agent, repository, and reproducer of culture and social class.

But research in the wake of the practice turn does not have a discernible shared methodology to investigate embodied action. Much of the work is traditional ethnography, some of it is auto-ethnographic (Wacquant 2004), but the studies rarely capture human action at the level of detail, with the degree of precision, and supported by a growing body of empirical knowledge, as has the work of interaction researchers that follows proven methods of sequence- and context-analysis. This is why the praxeology of gesture is of wider relevance: it demonstrates the empirical scrutability of a paradigmatic domain of cultural action, a domain at the core of social life and shared practical knowledge.

Even though it has proven fruitful to focus research on only two or three communication modalities (e.g., gesture and speech, or gesture, speech, and gaze), face-to-face interaction is a multimodal event in which all (or most) sensory modalities are engaged. Researchers from Kendon onward have investigated gestures within the overall stream of interaction behavior. More recently the field has also realized that bodily interaction cannot be explicated without close attention to how it is embedded in, and alters, the material setting in which it takes place (Streeck, Goodwin & LeBaron 2011). Gestures often serve ‘interstitial’ functions, i.e. they connect diverse semiotic resources with one another, for example place-names and maps. They can also blend with the making of inscriptions such as diagrams, and with writing: the act of writing can be ritualized and thereby gesturalized; inscriptions can serve as reminders of the gestures by which they were made, and the meaning encapsulated in that act; and gestural writing motions can lend a phrase the weight of the written word (Streeck & Kallmeyer 2001). Goodwin has published a series of studies of ‘environmentally coupled gestures’ (Goodwin 2007), showing especially how indexical gestures link together visual perception, knowledge embodied in artifacts such as charts, maps, and computer screens, and the linguistic categories shared by the professional community (Goodwin 1994). He describes practices of tracing and highlighting by which archeologists, oceanographers, and expert witnesses structure participants’ perception of a ‘domain of scrutiny’ (Goodwin 1995a; Goodwin & Goodwin 1996). The complexities of communication with exclusively indexical means become particularly visible in Goodwin’s studies of the family interactions of an aphasic man (Goodwin 1995b, 2004), who, despite an active vocabulary of only two words, is able to continue to be a ‘competent speaker’ by relying on gesture, especially pointing gestures, and his family’s incessant scaffolding and interpreting of his
actions: making sense at every moment hinges on members’ use of the entire array of semiotic resources that setting and sequence provide.

Some work-places and many instructional settings are particularly rich in environmentally coupled gestures, and various professional communities, of course, have their own ‘movement vocabularies’ or gesture practices. Thus, choreographers and dancers routinely rehearse pieces in the mode of ‘marking’, in which many energy-depleting motions are only indicated, i.e., gesturalized (Kirsh 2011). Sauer (2003) distinguishes two modes of gesturing in the communication of miners when they describe accidents or dangerous situations: a ‘first person’ mode, gestures made from the narrator’s and/or character’s viewpoint, and deployed in reports of the subjective, affect-laden experience of the life-threatening event; and a ‘third person’ mode, made at a distance from the speaker’s body and implicated in the ‘objective’ analysis of the situation. Koschmann et al. (2007) and Mondada (2007b) have shown how collaborative work during surgery is mediated by ‘minimized’ gestures, with surgical instruments inside of, and referring to, the patient’s organs. Music-making is another professional domain of great interest for research on gesture and multimodal communication: gestures, made with or without an instrument in hand, serve to manage the participation of ensemble members (Haviland 2011). Music-making is also the site of a particularly vivid manifestation of the transmodal capacities of gesture (Murphy 2012): the gestures of conductors synthesize desired dynamic features of sound (melody, changes in amplitude) and movement (rhythm) in motion-patterns that also direct and coordinate the action of multiple orchestra members (Sunakawa in prep); sound is construed by visible body motion, occasionally to spectacular effect (Rahaim 2008; Pearson 2013). During auctions, gestures serve to coordinate the actions of multiple participants, and they constitute ‘illocutionary acts’: the fall of the hammer signifies the completion of the transaction, and thus the instituting of the obligations that are implied by it (Heath 2013; Heath & Luff 2007). Few studies have been devoted to institutional uses of gesture, an indicator perhaps of the diminishing role of gesture in legal and other institutional contexts, where they were once, before the advent of print, indispensable (Hibbitts 1992; see also Allert’s sociological analysis of the transaction incorporated in the Hitler salute, Allert 2008).

In the context of professional activity and instruction, gesture typically is an ‘interstitial’ practice that elaborates, and makes connections between, other modalities and semiotic resources. Its affordances for communication in the context of work are also grounded in their flexible temporality: a gesture can not only be slowed down or sped up to synchronize with speech and action, but also frozen and held, and thereby ‘maintain’ the situated sense enclosed in the gesture as long as it is required for the activity at hand. This can be of service during diagnostic, problem-solving, and instructional activities, for example, when a diagnostic category, a partial solution, or an intermediate concept is ‘held’ in a gesture and can ‘remain active’ for an extended period of time. Hand gestures thus become ‘material anchors’ of distributed cognitive processes, for example, by anchoring (and making accessible) ‘conceptual blends’ between cognitive domains (Hutchins 2005). By separating themselves from object-specific action, gestures become reusable. As Hutchins & Johnson (2009: 243) write, “putting signals into the world of action . . . creates the opportunity for the reuse of emergent structures as communicative forms. The appropriation of emergent structure is a valuable source of increased complexity in evolving systems.” In other words, a situated enactive experience, once gesturalized, becomes available to be instantiated beyond the current situation, giving an emergent network of communicators another iterable sense-making device. The task for researchers is to understand how gestures do this work from moment to moment. Whatever the practices are in a given case, they are made possible by the unique materiality of the human hand, which, in interaction with the eye, can freely and easily alternate between, and synthesize, digital (the hand as index-finger), tactile,
haptic, and visual modes of experience and representation (Deleuze 2003). The unsurpassed value of this ancient mode of communication is visible not least in such high-technology environments as airplane cockpits (Hutchins & Klausen 1996, Hutchins & Palen 1997) and fMRI-scanners (Alacˇ 2011), all of which could not operate without living, spontaneous gesture.

Finally, gesture’s capacities have been found to be at play wherever two or more people jointly imagine. Imagination has traditionally been conceived as a faculty of the individual mind. But many professions, as much as many lay conversations, center around joint imagining, for example, cosmetic surgeons, architects and product designers, who commonly imagine in teams and have to agree on imaginings with clients. Cosmetic surgeons manipulate the bodies of clients and mark them up by gestures in anticipation of their future shape (Mirivel 2011). Sketches rarely speak for themselves in the work of architects; the interstitial force of gesture is needed, for example, to add the third and fourth dimension to architectural blueprints by showing height and the movements of people through the structure. Arguably, part of the architectural design process takes place by sculpting volumes, suggesting walls, drawing, and landscaping ‘in the air’; gesture is needed to incorporate space and to pre-experience and represent the subjective experience of a built structure (Murphy 2011). Nemirovsky, Kelton & Rhodehamel (2012: 130) define collective imagination broadly as “the embodied process of bringing objects and events into quasi-presence in social interaction” and emphasize the transformative dimension of gestures: rather than just representing or simulating (Hostetter & Alibali 2007) remembered actions, they often restructure and elaborate them, thus enabling collaborative imagining as “embodied narration of what might come to pass” (Murphy 2011).

References


Jürgen Streeck... and the emergence of language as an embodied collective cognitive activity. Topics in Cognitive Science, 1, 523–546.


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Further Reading