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Book review

Review of Pointing: Where Language, Culture and Cognition Meet, S. Kita (Ed.); Lawrence Erlbaum Associates, 2003; ISBN 0-8058-4014-1

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This book grew out of the 1997 Max Planck Workshop on Pointing Gestures, in Oud-Turnhout, Belgium, and includes contributions by many of the leading researchers in the development and use of pointing by humans. There are 13 chapters on pointing gestures which (despite some overlap) can be divided into several conceptual parts: an introduction and overview by the editor (Kita), Part 1 on the ontogeny and phylogeny of pointing (Butterworth, Povinelli et al., Masataka, Goldin-Meadow & Butcher), Part 2 on the ethnography of pointing (Kendon & Versante, Haviland, Wilkins), Part 3 on the semiotics of pointing (Goodwin, Clark), and Part 4 on the psycholinguistics of pointing (Engberg-Pedersen, McNeill, & Kita). On balance, this is an informative read with plenty of tension created by contrasting theoretical perspectives on the significance of pointing for understanding human cognition. Far from being the last word on pointing, this volume highlights both how little we really know about pointing and how extraordinarily

many different kinds of research programmes can profitably study it.

Butterworth opens the book with a posthumously published review of laboratory studies of the production and comprehension of pointing by human babies and by chimpanzees. This is a balanced review of both the ontogeny of pointing in humans and the comparative psychology of pointing and grasping in humans and chimpanzees. While acknowledging that apes in captivity do indicate objects for purposes of requesting delivery of those objects, he questions the suggestion by researchers such as myself that the motivational basis for the development of pointing in human infants is grounded in requestive contexts, suggesting instead that pointing with the index finger functions to establish joint attention from its inception. Butterworth elaborates here his theory that pointing with the index finger is the motoric antithesis of the precision grip (where the tips of the thumb and index finger are brought together) and that pointing with the whole hand is the motoric antithesis of the power grip (such as one would use to grasp a hammer). The precision in both pointing and grasping evinced by human infants is taken to reflect their greater conceptual resolution of their environments. For Butterworth,

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pointing with the index finger is a human universal and reflects neurobiological adaptations occurring uniquely within our lineage. Pointing, in his view, is the “royal road to language” and reflects a long, species-specific coevolutionary process integrating gestural with vocal and conceptual systems.

The next chapter by Povinelli, Bering and Giambrone continues this nativist theme. Povinelli et al. refute a claim Leavens made once to the effect that pointing constitutes *ipso facto* evidence for perspective-taking (Leavens, Hopkins, & Bard, 1996); they are certainly correct in this criticism. I am grateful for the opportunity here to state clearly that I no longer take pointing to unambiguously imply perspective-taking in any species. As to the more basic question about whether chimpanzees point, Povinelli et al. assert “for some ... the case can be settled here: Chimpanzees point. If we were behaviorists, we would be forced to agree” (p. 42). The implication here is that only a behaviourist could be hoodwinked into believing that any mere animal points because only a behaviourist would be comfortable with ignoring the higher-order representational processing that underlies human (and only human) pointing. Their central claim is that whatever apes may do with their arms and hands, because they lack an appreciation of the mentalistic significance of their own gestures, what they do cannot be called pointing, because pointing in humans implies this higher-order representational capacity. And how do we know that the 12-month-old humans who point in our laboratories have this mentalistic appreciation? Well, according to Povinelli et al., we can’t know that, but because we believe that they will grow up to become mentalistic creatures, we can safely assume that they must have this mentalistic appreciation, this ability to represent others’ mental states, before we can measure it (pp. 47–48). This is teleology, pure and simple, and is therefore (I would hope, obviously) invalid. One might as well argue that pointing by humans is different from pointing by apes because only humans have souls, as this claim is as immune to scientific inquiry as that by Povinelli et al. If we have no means of directly measuring higher-order representational processes in young human infants who apparently point (a point readily conceded by

Povinelli et al., pp. 47–48), then no amount of appeal to what older humans do will clarify the cognitive underpinnings of pointing in these young infants. After arguing that chimpanzees don’t point with their index fingers, Povinelli et al. suggest that the cage mesh may shape index finger extension in chimpanzees, offering a photograph (Figure 3.4) which depicts several chimpanzees extending their index fingers through this cage mesh, on the viewer’s right. At the left of this photograph is another chimpanzee extending all of the fingers of its right hand and several from its left hand *through the same cage mesh*. Same mesh, different hand shapes; the photograph demonstrates exactly the opposite point from that made by the authors, to wit: the presence of cage mesh alone does not dictate the number of fingers extended by captive chimpanzees. The take-home message of this chapter is that human pointing at any age is radically different from anything that apes do with their hands, because humans are humans and apes are apes—one would be hard-pressed to find any clearer example of an essentialist argument, an argument that can never be addressed through empirical inquiry.

Both Butterworth and Povinelli et al. make some incorrect assertions about pointing in our nearest living relatives, the great apes. Both chapters incorrectly claim that apes do not point for the benefit of other apes (Butterworth, p. 16; Povinelli et al., p. 45). There are several such reports, from both captive (de Waal, 1982; Savage-Rumbaugh, 1986) and feral populations (Inoue-Nakamura & Matsuzawa, 1997; Veà & Sabater-Pi, 1998), although evidence of pointing by wild apes is both exceedingly rare and, as a direct consequence of its rarity and observational nature, necessarily anecdotal. In captivity, Savage-Rumbaugh (1986) reported no fewer than 37 instances of pointing between the language-trained apes Sherman and Austin, many involving the index finger. A far more fruitful line of enquiry would attempt to answer the question: Why do apes in captivity so frequently point, when it seems to be so rare amongst their feral relatives? It cannot plausibly be attributed to a genetic difference between the populations, so the overarching question to be answered is which environmental

factors contribute to this behavioural difference. Another incorrect claim is that apes prefer to point with their flat hands; in fact, language-trained apes, for reasons not well understood, exhibit an overwhelming reliance on their index fingers when pointing (reviewed by Leavens & Hopkins, 1999). Why is this? We have no idea; it might relate to how chimpanzees are taught to use signs and symbols, or perhaps language-trained apes are so closely bonded to their human trainers that they are more motivated to imitate them. But if human pointing also exhibits variability in form (see below), then the answer to this question could have considerable relevance to understanding variability in human pointing. To be fair, however, the subtitle of this volume is *not* “where *evolution*, language, culture and cognition meet” and the only two chapters to deal substantively with the phylogenetic aspects of pointing conclude that whatever is really interesting about pointing stem from neurobiological and other adaptive events occurring uniquely within the human lineage.

This strong nativist stance is abruptly reversed as Masataka reviews his experiments on the contemporaneous expression of vocalisations and index-finger extensions by human infants. Masataka (p. 69) opens his chapter with a brief declaration of the uniqueness of human pointing, simply repeating the factually incorrect assertions of the preceding two chapters: “apes do not point in their natural state” and “[apes] practically never extend the index finger separately when making the gesture.” But Masataka’s research programme does not require the essentialist argument that apes are fundamentally different from humans. In contrast to much of the research in this area, Masataka appeals to experience (learning) in the development of pointing by human babies. He is interested in how *index-finger extension* (without apparent communicative purpose, not accompanied by arm extension, and exhibited by even very young babies) develops into *index-finger pointing* (with arm extended, not typically seen much before 10 months of age). The essential experimental findings are as follows: index-finger extensions are preferentially exhibited simultaneously with syllabic (speech-like) vocalisations in very young babies (three months), but not with vocalic (non-

speech-like) vocalisations or with silence. Other manual actions do not exhibit this preferential association with syllabic sounds. This association is held to be genetically determined. In interaction with parents, the parents respond more positively to the syllabic vocalisations, which incidentally conditions the index-finger extension.

Additional evidence suggests that parents respond more positively to babies who extend their index fingers while in interaction. Thus, in certain cultural contexts, index-finger extension and syllabic vocalisations are selected for in development. Far from an essentialist position, Masataka suggests that cross-cultural variability can be attributed, at least in part, to cross-cultural differences in the affective contingencies experienced by babies. In this sense, Masataka appeals to general laws of learning rather than positing human species-specific cognitive mechanisms. Consistent with previous experimental findings (e.g., Franco & Butterworth, 1996; Lock, Young, Service, & Chandler, 1990), Masataka presents evidence that index-finger pointing does not develop out of prehension, but has a separate ontogenetic basis, grounded in communication from its inception. Masataka presents longitudinal data from eight babies demonstrating that the incidence of index-finger pointing rapidly increases with age from 9 to 16 months, coincident with a concomitant and dramatic reduction in the display of index-finger extension. Reaching remains at a near-constant level through the age ranges studied (3–16 months). Finally, index-finger extension is associated with babies’ own interest in objects: “index-finger pointing emerges from a manual act related to exploration and self-regulation of attention [i.e., index-finger extension]” (p. 82). Thus, in contrast to earlier claims that pointing develops from failed reaching attempts, Masataka and others continue to amass evidence in favour of the interpretation that index-finger pointing develops out of an attentional, or orienting response, rather than a manipulative or prehensile motivational basis. This is not particularly new, but it does replicate one of the most robust empirical patterns seen in the last 20 years of research in this area: apparent reaching by babies does not change in frequency across a large range of infancy, whereas pointing

with the index-finger clearly does. A cautionary note, however, is that the experimental contexts in which this pattern has been repeatedly demonstrated are fairly limited in design; they typically involve presentation of objects such as toys and dolls that apparently grab the infants' attention. More naturalistic studies in which both objects and food have been presented to infants tend to elicit far more apparent reaching behaviour than do these laboratory studies (see, e.g., Blake, O'Rourke, & Borzellino, 1994). Demonstration that index-finger pointing does not apparently develop out of prehension cannot speak to why it is that infants from many cultures suddenly and dramatically start to use both their index fingers and their so-called reaching behaviours in manifestly communicative acts, around the end of the first year of life. The strength of Masataka's chapter is that it reminds us that babies who do start pointing have experienced countless episodes of interaction with their parents who have responded differentially, and apparently unconsciously, to subtle behavioural patterns over many months. This, incidentally, highlights the essential silliness of pulling a motherless juvenile chimpanzee out of a cage, observing its behaviour for a few trials, even a few tens of trials, and then making global claims about species differences in communicative competence. There is a lot we do not know about how social reinforcement interacts with babies' developing sensory, motor, perceptual, and attachment systems: It is far too early for us to assume that the ways in which preverbal human babies come to attract and manipulate the attention of their social partners necessarily stem uniquely from human species-specific cognitive adaptations.

One area in which even young human infants and apes differ, of course, is in their vocal behaviour: apes do not babble, for example, and even language-trained apes will never have to coordinate their pointing with speech. It is this coordination of pointing with speech that forms the basis for all of the remaining chapters and here we enter the realm of what is, in this reviewer's opinion, what is truly unique about human pointing. Goldin-Meadow and Butcher are interested in whether gestures are functionally integrated in the devel-

opmental transition from one-word to two-word speech, which typically occurs over the course of the second year of life. Their argument is as follows: if two-word combinations require only the cognitive ability to coordinate

“two elements within a single communicative act, then gesture-speech combinations of [different elements] ought to co-occur with, and not precede... the onset of two-word speech. Alternatively, if additional language-specific resources are required for the onset of two-word combinations, then gesture-speech combinations in which the two modalities convey different information might be expected to reliably precede the onset of two-word speech” (p. 86).

Thus, Goldin-Meadow and Butcher distinguish gesture-speech combinations that are redundant (e.g., pointing to a dog whilst uttering “dog”) from gesture-speech combinations that coordinate different referents (e.g., pointing to glasses whilst uttering “mommy”; p. 88). Six children were followed longitudinally from near the onset of one-word speech to the onset of two-word combinations. Strikingly, for five of the six children, the age of onset of gesture-speech combinations conveying the same information was tightly coincident with the age at which gestures and speech became tightly coupled in time (this transition had occurred prior to start of observations on the sixth child, who was already exhibiting high rates of synchronous gesture-speech combinations). Furthermore, in no case did the age at onset of gesture-speech combinations conveying *different* information precede the age at onset of gesture-speech combinations conveying *the same* information. Thus, the authors suggest that it is not the mechanics of coordinating two elements in a communicative act that accounts for the developmental lag between one-word and two-word speech; rather, the data suggest that there is a transition from (a) communicating the same information in two modalities to (b) communicating different information in two modalities, culminating in (c) the capacity to communicate different information in the same modality in two-word speech. The gesture-speech combinations involving different information tended to be semantically coherent, temporally synchronous, and the age at onset of gesture-speech combinations conveying

different information was highly and positively correlated with the age at onset of two-word speech, suggesting a functional relationship, whereas there was no such correlation between the age at onset of gesture-speech combinations involving the same information and the age at onset of two-word speech. Thus, Goldin-Meadow and Butcher present a compelling picture of infants in late infancy who can display complex propositional relationships bimodally (through gesture and speech combinations conveying different information) before they can display these propositional elements together in a stream of speech. Whether it is the mechanics of articulating two successive speech elements or a deeper conceptual opacity that accounts for this is unclear, although the authors favour the latter view. It is a lot to argue from six children, but it is nevertheless clear that these investigations constitute a foundation for a very fruitful line of investigation, suggesting to me, at any rate, that whatever pointing is and whatever it does for babies, it is not necessarily a simple maturational expression of human species-specific linguistic modules coming online. Like the transition from a suckling reflex to coordinated nursing behaviour in the neonatal period, these data suggest that there is a substantial amount of accommodative effort (i.e., learning) between motoric response and conceptually-based communication.

The next section of the book focuses on gestures in use by humans in kinesic and ethnographic studies. Kendon and Versante studied the deictic gestures of numerous Neapolitan speakers. It is refreshing, writing as someone who has spent the better part of a decade arguing that many so-called “reaches” by chimpanzees and human infants actually constitute pointing with the whole hand and are not some kind of poor-relation pointing (e.g., Leavens & Hopkins, 1999), to read Kendon and Versante’s detailed descriptions not only of pointing with the whole hand, but of different kinds of deictic gestures involving the whole hand and other hand configurations. As this chapter abundantly illustrates, only by looking at the range of structural configurations of the hand exhibited by adults in interaction whilst pointing can we appreciate the potential for complex subtleties

of expression in paralinguistic use of deictic gestures. As with the subsequent ethnographic chapters, this chapter is fabulously illustrated. Kendon and Versante distinguish two different configurations of pointing with the index finger, one with the forearm pronated (confusingly and inaccurately described as “supine” on p. 115), used to indicate a specific object and one with the forearm supine, used to indicate relationships between the indicated object and the topic of ongoing discourse. The thumb point is distinguished, described as a thumb extension and other fingers clenched (fully adducted and flexed; again, there is an unfortunate confusion in anatomical description in which they incorrectly describe the thumb as being “adducted” on p. 115). The thumb point is often used to indicate locations behind the speaker, particularly when its precise location is unimportant for the speaker’s purposes. No fewer than three kinds of pointing with the whole hand (they call it the “open hand”) are described: palm vertical, palm supine, and palm obliqua. Palm vertical points are used to indicate the exemplary attributes of the object indicated, rather than the object itself. Palm up points metaphorically hold up items for inspection. Palm obliqua points tend to be used to highlight relationships between a person so indicated and the speaker’s interlocutor, and may have derogatory connotations for the indicated person. Extensive supporting observations are cited in support of these interpretations, leading to the fundamental conclusion of the chapter, namely that gestural deixis serves a far more nuanced and prominent paralinguistic function than to tie together speech and referents; “the character of the pointing gesture itself might vary systematically in relation to semantic distinctions of various sorts” (p. 134).

Haviland summarises several observations of pointing by an infant girl and an old blind man from Zinacantán, a Mayan- (Tzotzil-) speaking community in Mexico. Haviland emphasises that there is no specific term for pointing with the index finger in their language; pointing acts are imbued with the same propositional force as speech acts. Again, we find that adult humans do, indeed, point with the whole hand, and like Kendon and Versante in the previous chapter, Haviland sees

propositional complexity in the differences in form and context of use of different kinds of pointing gesture: “the complex morphology of pointing gestures means that they are typically not ‘simple referring devices’ but rather complex semantic portmanteaux” (p. 162). Like his Tzotzil-speaking informants, Haviland concludes that pointing is “simply *part of language*, albeit an unspoken part” (p. 166, emphasis his).

Wilkins, also on the basis of ethnographic data, makes the bold claim that pointing with the index finger is not a human universal. Wilkins presents data on pointing from Arrernte-speakers in central Australia. Not content to observe pointing in use, Wilkins also extensively queries his informants on how they view pointing use. Like the preceding two chapters, Wilkins finds that pointing with the whole hand is a commonplace activity in this culture. Arrernte speakers also point both with the index finger and, like many non-Western cultures, with their lips. Arguing from cross-cultural research as well as his own ethnographic materials, Wilkins claims that pointing with the lips is the canonical pointing gesture in some cultures. This chapter comprises a dense, richly textured argument that I cannot adequately summarise in the space available. To make a long story short, Wilkins argues not only that pointing with the index finger is not a human universal, but that deictic gestures, in general, embody fundamental conceptual structures embedded in each culture. The most striking claim, to my thinking, is that there are cultures in which normal individuals may grow to adulthood with no idea that somebody who is pointing with their index finger to something is trying to draw their attention to it. The basis for this is a citation of a personal communication by Mike Olson, summarised by Wilkins as follows: “the Barai [of Papua New Guinea] were confounded when Olson used index-finger points with respect to objects as a means for getting names for them” (p. 176). This is an extraordinary observation with enormous consequences for our understanding of human cognition; in short, if only one normal person in the entire world grows to adulthood without understanding the referential intent of index-finger pointing, this implies that there is no nomothetic human cognitive science of

pointing; just as anthropology moved from the study of Culture to the study of cultures, so will cognitive science move from the study of the development of pointing to the study of different developmental trajectories of deixis in cultural context. I commend this chapter to the reader, its ultimate value is in how it forces the reader to confront what we so often unconsciously assume about the relationship between pointing and human cognition.

The previous chapter bridged the ethnographic with the semiotic and semiotics is the focus of Goodwin’s chapter on “Pointing as Situated Practice” (p. 217). Goodwin studies the use of pointing in two contexts, by archaeologists on an excavation site and by an aphasic man engaging in dialogue about the day’s planned activities at the breakfast table. Goodwin’s central point is that pointing is “a situated activity system in which action is built by assembling diverse semiotic resources into locally relevant multimodal packages,... elsewhere analyzed as contextual configurations” (p. 225). A shorthand way of putting this might be this: people do not simply come together and convey to each other what is in their heads; rather, people in interaction dynamically construct their own ongoing ‘stories’, these stories are in the constant process of narration, pointing is one element in this narrative, and as such pointing reflects many of the multitudinous guided and haphazard influences on the developing story. Pointing is displayed with numerous, rapidly shifting and simultaneous references; these indexical points and iconic tracing of shapes being coordinated with simultaneous speech content, body postures, and eye gaze patterns that relate the immediate environment with a host of relevant interpretative fields, including other symbolic representations, such as a map, the relationship between the interlocutors, developing interpretations of the relationships between elements in shared perceptual fields, etc. In other words, pointing is an exceedingly complex phenomenon, acting as a kind of Rosetta Stone for ongoing dialogue in numerous expressive media.

Clark distinguishes two kinds of indicative acts: pointing and placing. His essential aim is to elevate how we place ourselves and how we place objects

into a space to the same analytical status as pointing. He contrasts the “standard view” of pointing as *the* indicative act, whether pointing with fingers, lips, or eye gaze, with his view that pointing is one way of indicating (directing-to) and placing is another way of indicating (placing-for). That is, pointing and placing both serve as mechanisms of nonverbal reference. Thus, one singles out an item for purchase in a store not by pointing to it, but by placing it on the counter near the till. Clark evaluates the relative strengths and weaknesses of each kind of indicative act. For example, pointing-to is effective for establishing joint attention to large, immovable objects (which cannot be easily placed), but typically has a limited temporal duration and therefore a more limited span of mutual accessibility for interactants, whereas once placed, an object is available for the duration of interaction. The object of directing-to is usually disambiguated through accompanying speech, whereas the meaning of placing-for is heavily dependent upon mutually construed context—as when one places items for purchase on a counter in a drugstore. Placing-for can be clarified with accompanying speech, but does not typically require it. Clark argues that it is high time placing received the kind of observational and experimental scrutiny that pointing has received.

Engberg-Pedersen evaluates how pointing, eye gaze, head and body orientation interact to permit pointing to acquire grammatical roles that transcend mere indexicality in Danish Sign Language. She catalogues the uses of the index finger in both referential expressions and in predicates. She argues that non-deictic uses of the index-finger point in both pronouns (“used to refer by itself” p. 273) and determiners (used to refer with an accompanying noun) constitute examples of “pointing gestures as signs with specific syntactic functions in a language” (p. 274). An example of this is the statement glossed “Fortunately, we got a second flat” (p. 274), in which a point places the locus of the flat in shared space, but that spatial placement is arbitrary—not related to its real-world location. In terms of predication, Engberg-Pedersen describes how pointing constitutes the verbs BE-AT and GO-TO. Eye gaze is described as having five basic functions, some of which are indexical (e.g.,

in establishing referential connections between elements) and some more conventional (e.g., imitating somebody looking up as if in deep thought, where the direction of gaze carries no deictic meaning). In the kinesics of body and head postural adjustments accompanying sign, Engberg-Pedersen describes a hierarchy in which “the body is not rotated unless the head is rotated, and the head is not rotated unless the signer looks in the direction of the locus” (p. 287). These major postural adjustments are influenced by two kinds of consideration: (a) the amount of emphasis the signer is placing on a reenactment and (b) the relative clarity with which it is understood between interlocutors that a particular item being referred to is occupying a specific locus in the dialogical space. Thus, although pointing, eye gaze, and postural orientations “originate in nonverbal communication” (p. 288), they transcend indexicality and assume linguistic features (such as predication, definition of constituent boundaries in discourse, etc.) in signed discourse.

In a microanalysis of a dialogue between two postgraduate students, McNeill describes an example of “deixis at phantasma” in which, similar to placing in signed languages, two interlocutors assign different meanings to a location in space to which both refer with pointing gestures. When one participant refers to that space with speech “here” and pointing that implies the interpretation that the space represents “the University of Chicago” and the other refers to the same space, but means “the city of Chicago” then a moral dilemma is raised for the second participant. He resolves this through specification in speech that by “here” or by pointing to that locus in space, he means the city of Chicago. McNeill describes this resolution in terms of the concept of “Growth Point”; a term referring, here, to a mental process whereby particular topics are highlighted against a conversational background. In the present context, a tension (McNeill terms it an opposition) occurs between the second participant’s awareness of the contradiction between his interlocuter’s meaning when he points to the space assigned to “Chicago” (the university) and his own pointing toward that space meaning “Chicago” (the city), on the one hand, and his own moral dilemma in which an

absence of clarification on his part constitutes the promulgation of an untruth. The growth point occurs when the second participant, grudgingly, clarifies his use of the term “Chicago”. The moral dilemma, McNeill claims, existed in the fact that both parties were pointing to the same space; without the pointing, there would have been no dilemma.

In the final chapter, Kita reports his findings on the coordination of gaze, hand and torso orientation and language with pointing whilst giving directions to unseen destinations, the pathways to which are partially visible and partially invisible. His experimental approach was to stop people on a university campus and ask directions to several locations, whilst the interaction was filmed. Kita suggests that pointing facilitates the selection of the correct directional terms “left” and “right” and also purports to demonstrate that eye gaze is used to clarify directions when pointing to invisible pathways. Kita argues from his demonstrations of temporal synchrony in gesture, torso rotation, and eye gaze to claims about “close processing ties” (p. 326) between these elements. Given the small samples, application of one-tailed probabilities in some tests without adequate rationale, and occasional incorrect use of the χ^2 statistic on sums of gestures exhibited by several individuals, I find the data more provocative than convincing. Kita concludes that both cognitive and interactional aspects of pointing need to be considered in the study of pointing use, and his approach has great potential for future research in this area.

This is an important publication; researchers in diverse disciplines will find much to incite, inspire, and provoke them into further research into pointing. Whilst reading the ethnographic observations, for example, I found myself chanting “Data! Data! Data!”; there is so much we don’t know about how pointing is manifested outside the Western hemisphere. The marvelously well-illustrated and thoughtful chapters on non-Western pointing will, I hope, inspire further research into cross-cultural studies of deixis. At times, I thought that some writers were trying a little too hard to make pointing respectable as a proper subject for cognitive science. Kita, for example, discusses the “cognitive urge” to point with the left

hand in a culture in which left-handed gesturing is sanctioned against; what is the difference, I am forced to ask, between a “cognitive urge” and a plain old, garden-variety “urge?” As noted above, Povinelli et al. seem very confident that higher-order representational processes are implicated in pointing by even very young human infants, despite their clear concession that these representations are not available to public (objective, scientific) scrutiny. Not every worthwhile area of study is represented here—for example, there is nothing on the kinematics or neurobiology of pointing—but for the sheer range of empirical studies and theoretical perspectives contained within this volume, there is no other book on the topic quite like this, to my knowledge. This is a book primarily about how humans use pointing in their day-to-day lives. Few researchers concerned with how people coordinate their attention in space will fail to find something of interest in this collection. People interested in how other species do this will, however, be poorly served. The cover photograph depicts the sculpture of an arm and hand in three different postures (sculpture by Stephen Levinson), culminating in an index-finger point, which seems to beckon the reader into opening this book. I am glad I did, and, on balance, I recommend the book to anyone interested in the development and use of pointing in humans.

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