Tomasello, M. (2006). Why Don't Apes Point? In N. J. Enfield & S. C. Levinson (eds.), *Roots of Human Sociality: Culture, Cognition and Interaction*. Oxford & New York: Berg, pp. 506-524.

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Why Don't Apes Point?

Michael Tomasello

Chimpanzees gesture to one another regularly. Although some of their gestures are relatively inflexible displays invariably elicited by particular environmental events, an important subset are learned by individuals and used flexibly—such things as "arm raise" to elicit play or "touch side" to request nursing. We know that such gestures are learned because in many cases only some individuals use them, and indeed several observers have noted the existence of idiosyncratic gestures used by only single individuals (Goodall 1986). And their flexible use has been repeatedly documented in the sense of a single gesture being used for multiple communicative ends, and the same communicative end being served by multiple gestures (Tomasello et al. 1985, 1989). Flexible use is also evident in the fact that apes only use their visually based gestures such as "arm raise" when the recipient is already visually oriented toward them—so-called audience effects (Kaminski et al. 2004; Tomasello et al. 1994, 1997).

Chimpanzees and other great apes also know quite a bit about what other individuals do and do not see. They follow the gaze direction of conspecifics to relatively distal locations (Tomasello et al. 1998), and they even follow another's gaze direction around and behind barriers to locate specific targets (Tomasello et al. 1999). This gaze following is not an inflexible response to a stimulus, as from a certain age chimpanzees look where another individual is looking and, if they find nothing interesting on that line of sight, check back a second time and try again (Call et al. 2000). Indeed if a chimpanzee follows another's line of sight and repeatedly finds nothing there, they will quit following that individual's gaze altogether (Tomasello et al. 2001). And some experiments have even demonstrated that chimpanzees know the content of what another

sees, as individuals act differently if a competitor does or does not see a potentially contestable food item (Hare et al. 2000, 2001).

And so the question arises: If chimpanzees have the ability to gesture flexibly and they also know something about what others do and do not see—and there are certainly occasions in their lives when making someone see something would be useful—why do they not sometimes attempt to direct another's attention to something it does not see by means of a pointing gesture or something equivalent? Some might object that they do do this on occasion in some experimental settings, but this only deepens the mystery. The observation is that captive chimpanzees will often "point" (whole arm with open hand) to food so that humans will give it to them (Leavens and Hopkins 1998) or also, in the case of human-raised apes, to currently inaccessible locations they want access to (Savage-Rumbaugh 1990). This means that apes can, in unnatural circumstances with members of the human species, learn to do something in some ways equivalent to pointing (in one of its functions). And yet there is not a single reliable observation, by any scientist anywhere, of one ape pointing for another.[1]

But maybe we should look at this question from the other direction, that is, from the direction of humans. The fact is that chimpanzees and the other great apes are doing the typical thing, by not pointing; it is human beings who are doing this strange thing called pointing. What are humans doing when they do this, and why are they doing it? As an advocate of the comparative method with psychological research, I believe that these two questions—why apes do not point and why humans do—are best answered together. I will attempt that here, using for comparison human infants (to avoid the dizzying complexities of language) and our nearest primate relatives, the great apes, especially chimpanzees (for whom there is the greatest amount of empirical work).

The Comprehension of Pointing

In an experiment with apes and human children, Tomasello et al. (1997) had one person, called the "hider," hide food or a toy from the subject in one of three distinctive containers. Later, a second person, called the "helper," showed the subject where it was by tilting the appropriate container toward them, so that they could see the prize, just before their attempt to find it. After this warm-up period in which he defined his role, the helper began helping not by showing the food or toy but by giving signs, one of which was pointing (with gaze alternation between

subject and bucket as an additional cue to his intentions). The apes as a group were very poor (at chance) in comprehending the meaning of the pointing gesture, even though they were attentive and motivated on virtually every trial. (Itakura et al. 1999, used a trained chimpanzee conspecific to give a similar cue but still found negative results.) Human two-year-old children, in contrast, performed very skillfully in this so-called object choice task. Subsequent studies have shown that apes are also generally unable to use other kinds of communicative cues (see Call and Tomasello in press, for a review), and that even prelinguistic human infants of fourteen months of age can comprehend the meaning of the pointing gesture in this situation (Behne et al. in press).

It is important to recall that apes are very good at following gaze direction in general (including of humans), and so their struggles in the object choice task do not emanate from an inability to follow the directionality of the pointing–gazing cue. Rather, it seems that they do not understand the meaning of this cue—they do not understand either that the human is directing their attention in this direction intentionally or why she is doing so. As evidence for this interpretation, Hare and Tomasello (2004) compared this pointing gesture with a similar but different cue. Specifically, in one condition they had the experimenter first establish a competitive relationship with the ape, and then subsequently reach unsuccessfully in the direction of the baited bucket (because the hole through which he reached would not enable her arm to go far enough). In this situation, with an extended arm that resembled in many ways a pointing gesture (but with thwarted effort and without gaze alternation), apes suddenly became successful. One interpretation is that in this situation apes understood the human's simple goal or intention to get into the bucket, and from this inferred the presence of food there (and other research has shown their strong skills for making inferences of this type; Call in press).

But understanding goals or intentions is not the same thing as understanding communicative intentions. Nor is following gaze the same thing as understanding communicative intentions. In simple behavior reading or gaze following, the individual just gathers information from another individual in whatever way it can—by observing behavior and other happenings in the immediate surroundings and making inferences from them. The object choice task, however, is a communicative situation in which the subject must understand the experimenter's communicative intentions, that is, she must understand that the looking or pointing behavior of the human is done "for me" and so is relevant in some way for the foraging task I am facing. Said another

way, to use the cue effectively, the subject should understand that the experimenter intends for her gaze or point to be taken as informative. Instead, chimpanzees seem to see the task as simply another case of problem solving in which all things in the context should be taken as potential sources of information—with the gaze direction or pointing of the interactant as just another information source. Human infants, on the other hand, understand in this situation that the adult has made this gesture for them, in an attempt to direct their attention to one of the buckets, and so this gesture should be relevant for their current goal to find the toy (see Sperber and Wilson 1986, on relevance). That is to say, they understand the adult's communicative intention—her intention to inform me of something—which is an intention toward my intentional states (an embedded intention).

An important aspect of this process is the joint attentional frame, or common communicative ground, which gives the pointing gesture its meaning in specific contexts (Clark 1996; Enfield this volume). Thus, if you encounter me on the street and I simply point to the side of a building, the appropriate response would be "Huh?" But if we both know together that you are searching for your new dentist's office, then the point is immediately meaningful. In the object choice task, human infants seem to establish with the experimenter a joint attentional frame—perhaps mutual knowledge—that "what we are doing" is playing a game in which I search for the toy (and you help me)—so the point is now taken as informing me where the toy is located. The infant asks herself, so to speak, why is the adult directing my attention to that bucket, why is it relevant to this game? It is very likely that apes do not create with one another such joint attentional frames, or common communicative ground, with either conspecifics or humans. Tomasello et al. (in press) argue and present evidence that, more generally, apes do not form with others joint intentions to do things collaboratively (an analysis that also applies to their so-called cooperative hunting; see N. 2 below), and without some kind of joint goals or intentions there are few opportunities for joint attention. In a direct cross-species comparison, Warneken et al. (in press) found that human one- and two-year-olds already engage with others collaboratively in various ways (even encouraging the other in his role when he is recalcitrant), whereas young chimpanzees engage with others in a much less collaborative fashion (with no encouraging of the other to play her role; see Povinelli and O'Neill 2000, for a similar finding). And Tomasello and Carpenter (in press), in another direct comparison and using identical operational criteria, found basically

no joint attentional engagement in young chimpanzees interacting with humans. It is also relevant that from their earliest attempts at communication, human infants engage in a kind of conversation or "negotiation of meaning" in which they adjust their communicative attempts in the light of the listener's signs of comprehension or noncomprehension (Golinkoff 1993)—a style of communication that is essentially collaborative, and that other primate species do not, as far as we know, employ (there are no observations of one ape asking another for clarification or repairing a communicative formulation in anticipation of its being misunderstood). And so my answer to the question of why apes do not seem to comprehend the pointing gesture is that: (1) they do not understand the embedded structure of informing or communicative intentions (she intends to change my intentional states, i.e., by informing me of something); and (2) they do not participate with others in the kinds of collaborative joint attentional engagements that create the common communicative ground necessary for pointing and other deictic gestures to be meaningful in particular contexts.

The Production of Pointing

Classically, human infants are thought to point for two main reasons: (1) they point imperatively when they want the adult to do something for them (e.g., give them something, "Juice!"); and (2) they point declaratively when they want the adult to share attention with them to some interesting event or object ("Look!"; Bates et al. 1975). Although some apes, especially those with extensive human contact, sometimes point imperatively for humans (see above), no apes point declaratively ever. Indeed, when Tomasello and Carpenter (in press) repeatedly used procedures that reliably illicit declarative pointing from young human infants, they were unable to induce any declarative pointing from any of three young chimpanzees. Typically developing human infants, on the other hand, spontaneously begin pointing declaratively at around the first birthday—the same age at which they first point imperatively. The difference between these two types of pointing is clearly not motoric or cognitive in any simple and straightforward sense. The main difference is motivational (with perhaps a cognitive dimension to this in the sense that infants may be motivated to do things that apes cannot even conceive). So why do human infants simply point to things when they do not want to obtain them?

In a recent study, Liszkowski et al. (2004, this volume) addressed this question by having an adult react to the declarative points of 12-month-olds systematically in one of four different ways—and then observing their reaction. In one condition, the adult reacted as "she wants me to look at the object" by simply looking at the object. In a second condition the adult reacted as "she wants me to get excited" by simply emoting positively toward the child. In a third control condition the adult showed no reaction. In all three of these cases infants reacted in ways that showed they were not satisfied with the adult's response—this was not their goal—by doing such things as pointing again. In contrast, in a fourth condition the adult responded by looking back and forth from the object to the infant and commenting positively. Infants were satisfied with this response—they pointed one long time—implying that this response was indeed what they wanted. One interpretation of this adult response is that it represents a sharing of interest and attention to some external entity, and this by itself is rewarding for infants—apparently in a way it is not for any other species on the planet. This interpretation is supported by the fact that infants at this age also regularly hold up objects to show them to others, seeming wanting nothing from the adult but a sharing of experience (and emotion), and again apes simply never hold things up to show them to others (Tomasello and Caimioni 1997).

An important clarification. In the case of imperative pointing, which some apes sometimes do for humans, it is important to recognize that an individual may point imperatively in different ways, with different kinds of underlying understanding. One might point imperatively simply as a procedure for making things happen, based on past experience in which this behavior induced others to do such things as fetch objects. But it is also possible that one might point imperatively in full knowledge that what is happening is that one is making one's desire manifest, and the other person understands this and chooses, deliberately, to help obtain it. Thus, Schwe and Markman (1997) had an adult respond to the requests of two-year-olds by, among other things, refusing them or misunderstanding them. When the child's request was refused she was not happy and displayed this in various ways. But when her request was misunderstood—even in cases in which the adult actually gave her what she wanted unintentionally ("You want this (wrong object)? You can't have it but you can have this one (right object) instead.")—the child was not fully satisfied and often repeated her request. Under this interpretation, infants from a certain age are pointing imperatively not as a blind procedure for making things happen, but as a request that

the adult know her goal and decide to help her attain it. We cannot be certain, but it may be that apes with humans are doing one kind of imperative pointing and human infants are doing another.

In addition to these two main motives for infants' pointing, Liszkowski et al. (in press; Liszkowski this volume) identified a third major motive. An adult engaged in one of several activities in front of the child. This was an adult activity, such as stapling papers, and the adult did not attempt to engage the child in it in any way. The adult was then distracted for a moment, during which time the key object, for example, the stapler, was displaced (in one of several ways). The adult then returned, picked up her papers, and looked around searchingly (palms up, quizzical expression—no language). Preverbal infants as young as 12 months of age quite often pointed to the stapler for the adult (and not to a distractor object that had been displaced at the same time). In our interpretation, the infant in this situation is simply informing the adult of something she does not know, that is to say, helping her by providing her with information she does not have. This interpretation is not far-fetched, as a similar helping motive is also evident in 18-month-old infants' behavior in noncommunicative situations, when they do such things as help adults reach out-of-reach objects, open doors for them when their hands are full, and so forth—whereas in this same paradigm human-raised apes showed few signs of such helping (Warneken and Tomasello n.d.).

As hinted at above, these motives may imply some unique understanding of others. For example, the declarative motive assumes a partner with the psychological states of interest and attention, which one can then attempt to share. But perhaps most strikingly, the informative motive implies an understanding of the distinction between knowledge and ignorance in the partner. I inform you of things because, presumably, I think that you do not know them and you would like to have the information. It is widely believed that young infants do not have an understanding of knowledge vs. ignorance, but recent research has demonstrated that they do. Tomasello and Haberl (2003) had an adult say to 12- and 18-month-old infants "Oh, wow! That's so cool! Can you give it to me?" while gesturing ambiguously in the direction of three objects. Two of these objects were "old" for the adult—he and the child had played together with them previously—and one was "new" to him (although not to the child, who had played with it also previously). Infants gave the adult the object that was new for him. Infants knew which objects the adult had experienced, and which he had not.

In a recent similar study, Moll et al. (in press) found that when an adult looked at an object she and the child had just finished playing with together and said excitedly "Oh, wow! That's so cool! Can you give it to me?" while gesturing ambiguously in the direction of three objects. Two of these objects were "old" for the adult—he and the child had played together with them previously—and one was "new" to him (although not to the child, who had played with it also previously). Infants gave the adult the object that was new for him. Infants knew which objects the adult had experienced, and which he had not. In a recent similar study, Moll et al. (in press) found that when an adult looked at an object she and the child had just finished playing with together and said excitedly "Oh, wow! That's so cool!," 14- and 18-month-old infants assumed she was not talking about the object— they knew she could not be excited about the object that they had just played with together—and so they looked for some other target of her excitement. When the object was new to the adult—they had not previously played with it together—infants simply assumed that the adult was excited about the object. There is no systematic research on apes' skills of determining what is new or old for another person. But when the Moll et al. paradigm was used with three young chimpanzees, they did not differentiate between the cases in which the object was old and new for the human (Tomasello and Carpenter in press). It is also relevant that in a systematic review of ape vocal and gestural communication, Tomasello (2003b) considers their ability to adjust for different audiences and notes that the audience effects that exist are based on whether others are present or not in the immediate context, or whether they are oriented toward them bodily. There is no evidence that primates take account of others' intentional or mental states to adjust their communicative formulations.

In general, in the current analysis, the underlying motives for infants' pointing, and responding to adult points, may be decomposed into two basic underlying motives: helping and sharing. With imperative points they are requesting help, and when they respond to these from adults they are helping. With declarative points, and in responding to these, they are sharing. With informative points they are helping others by sharing information (and as they learn language they begin to ask questions as a way of requesting that others share information with them). Apparently, other ape species do not have these same motivations to help and share with others. And so my answer to the question of why chimpanzees and other apes do not produce points—for sure not declarative and informative points, no matter how they are brought up—is that: (1) they do not have the motives to share experience with others or to help them by informing; and (2) they do not really know what is informationally new for others, and so what is worthy of their communicative efforts.

Learning to Point

No one knows how human infants come to point for others. But given cross-cultural differences in infants' gestural behavior (although these

have not been documented as specifically as one might like), it would seem clear that the major process is one of learning. There are two main candidates.

First is some form of ritualization. For example, a very young infant might reach for a distant object, at which point her mother might discern the intention and obtain the object for her—leading to a ritualized form of reaching that resembles pointing (Vygotsky 1978). We can also extend this hypothetical scenario to the case that, by most accounts, seems more likely, when infants use arm and index finger extension to orient their own attention to things. If an adult were to respond to this by attending to the same thing and then share excitement with the infant by smiling and talking to her, then this kind of pointing might also become ritualized—that is, a learned procedure for producing a desired social effect. In this scenario it would be possible for an infant to point for others while still not understanding the pointing gesture of others, and indeed a number of empirical studies find just such dissociations in many young infants (Franco and Butterworth 1996). Infants who learn to point via ritualization, therefore, may understand their gesture from the "inside" only, as a procedure for getting something done, not as an invitation to share attention using a mutually understood communicative convention.

The alternative is that the infant observes an adult point for her and comprehends that the adult is attempting to induce her to share attention to something, and then imitatively learns that when she has the same goal she can use the same means, thus creating an intersubjective symbolic act for sharing attention. It is crucial that in this learning process—one form of what Tomasello et al. (1993) called cultural learning—the infant is not just mimicking adults sticking out their fingers; she is truly understanding and attempting to reproduce the adult's intentionally communicative act, including both means and end. It is crucial because a bidirectional symbol can only be created when the child first understands the intentions behind the adult's communicative act, and then identifies with those intentions herself as she produces the "same" means for the "same" end.

Empirically we do not know whether infants learn to point via ritualization or imitative learning or whether, as I suspect, some infants learn in one way (esp. prior to their first birthdays) and some learn in the other. And it may even happen that an infant who learns to point via ritualization at some later point comes to comprehend adult pointing in a new way, and so comes to a new understanding of her own pointing and its equivalence to the adult version. Thus, Franco and Butterworth (1996)

found that when many infants first begin to point they do not seem to monitor the adult's reaction at all. Some months later they look to the adult after they have pointed to observe her reaction, and some months after that they look to the adult first, to secure her attention on themselves, before they engage in the pointing act—perhaps evidencing a new understanding of the adult's comprehension. Virtually all of chimpanzees' flexibly produced gestures are intention movements that have been ritualized in interaction with others. For example, an infant chimpanzee who wants to climb on its mother's back may first actually pull down physically on her rear end to make the back accessible, after which the mother learns to anticipate on first touch, which the infant then notices and exploits in the future. The general form of this type of learning is thus:

1. Individual A performs behavior X (noncommunicative).
2. Individual B reacts consistently with behavior Y.
3. Subsequently B anticipates A's performance of X, on the basis of its initial step, by performing Y.
4. Subsequently, A anticipates B's anticipation and produces the initial step in a ritualized form (waiting for a response) to elicit Y.

The main point is that a behavior that was not at first a communicative signal becomes one by virtue of the anticipations of the interactants over time. There is very good evidence from a series of longitudinal and experimental studies that chimpanzees do not learn their gestures by imitating one another but, rather, by ritualizing them with one another in this way (see Tomasello and Call 1997, for a review). This means that chimpanzees use and understand their gestures as one-way procedures for getting things done, not as intersubjectively shared, bidirectional coordination devices or symbols. At least some support for this hypothesis is also provided by the fact that young chimpanzees, unlike human infants, do not spontaneously reverse roles when someone acts on them and invites a reciprocal action in return; that is, they do not engage in role reversal imitation of instrumental acts (Tomasello and Carpenter in press).

In general, two decades of experimental research have demonstrated conclusively that, among primates, human beings are by far the most skilled and motivated imitators (see Tomasello 1996, for a review). More controversially, I would claim that some types of imitative learning are uniquely human, specifically those that require the learner to understand the intentions of the actor, that is, not only the actor's goal but also

his plan of action or means of execution for reaching that goal. When the intentions are actually communicative intentions— involving the embedding of one intention within another or the reversing of roles within a communicative act—apes are simply, in my view, not capable of either understanding or reproducing these. This means that their communicative devices are not in any sense shared in the manner of human communicative conventions such as pointing and language.

Shared Intentionality

So why don't apes point? I have given here more or less five fundamental reasons:

- they do not understand communicative intentions
- they do not participate in joint attentional engagement as common communicative ground within which deictic gestures are meaningful
- they do not have the motives to help and to share
- they are not motivated to inform others of things because they cannot determine what is old and new information for them (i.e., they do not really understand informing, per se)
- they cannot imitatively learn communicative conventions as inherently bidirectional coordination devices with reversible roles

And so the obvious question is: is this really five different reasons, or are these all part of one or a few more fundamental reason(s)?

My proposal here is that all of these reasons are basically reflections of the more fundamental fact that only humans engage with one another in acts of what some philosophers of action call shared intentionality, or sometimes "we" intentionality, in which participants have a shared goal and coordinated action roles for pursuing that shared goal (Bratman 1992; Clark 1996; Gilbert 1989; Searle 1995; Tuomela 1995). The activity itself may be complex (e.g., building a building, playing a symphony) or simple (e.g., taking a walk together, engaging in conversation), so long as the interactants are engaged with one another in a particular way. In all cases the goals and intentions of each interactant must include as content something of the goals and intentions of the other. When individuals in complex social groups share intentions with one another repeatedly in particular interactive contexts, the result is habitual social practices and beliefs that sometimes create what Searle (1995) calls social or institutional facts: such things as marriage, money,

and government, which only exist because of the shared practices and beliefs of a group.

In my previous approach to these problems (e.g., Tomasello 1999), I hypothesized that only human beings understand one another as intentional agents—with goals and perceptions of their own—and this is what accounts for many uniquely human social cognitive skills, including those of cultural learning and conventional communication, that would seem to involve one or another form of shared intentionality. We now have data, however, that has convinced me that at least some great apes do understand that others have goals and perceptions (not, by the way, thought and beliefs), as summarized by Tomasello et al. (2003). The details of these data do not concern us here, but the immediate theoretical problem is how we should account for uniquely human cultural cognition, as we sometimes call it, if not by humans' exclusive ability to understand others intentionally.

Tomasello et al. (in press) present a new proposal that identifies the uniquely human social cognitive skills not as involving the understanding of intentionality simpliciter, but as involving the ability to create with others in collaborative interactions joint intentions and joint attention (which in the old theory basically came for free once one understood others as intentional agents). These basic skills of shared intentionality involve both a new motivation for sharing psychological states, such as goals and experiences, with conspecifics, and perhaps as well new forms of cognitive representation (what we call dialogic cognitive representations) for doing so. Evolutionarily (see also Boyd this volume), the proposal is that individual humans who were especially skilled at collaborative interactions with others were adaptively favored, and the requisite social–cognitive skills that they possessed were such that, at some point, the collaborative interactions in which they engaged became qualitatively new—they became collaborative interactions in which individuals were able to form a shared goal to which they jointly committed themselves. Following Bratman (1992), such shared intentional activities, as he calls them, also involve understanding others' plans for pursuing those joint goals (meshing subplans), and even helping the other in his role if this is needed. There is basically no evidence from any nonhuman animal species of collaborative interactions in which different individuals play different roles that are planned and coordinated, with assistance from the other as needed.[2]

Tomasello et al. (in press) take a very close look at human infants from this point of view and find that whereas infants of nine months

of age can coordinate with adults in some interesting ways that might reflect an initial ability to form joint goals—such things as rolling a ball back and forth or putting away toys together—it is at around 12 to 14 months of age that full-fledged shared intentionality seems to emerge. It is at this age that infants for the first time seem truly motivated to share experience with others through declarative and informative pointing, that they encourage others to play their role when a collaborative interaction breaks down, that they can reverse roles in collaborative interactions, and that they start to acquire linguistic conventions.

So the specific proposal here—with regard to the question of why human infants point but other apes do not—is that only humans have the skills and motivations to engage with others collaboratively, to form with others joint intentions and joint attention in acts of shared intentionality. The constitutive motivations are mainly helping and sharing, which obviously (and as argued above) are an important part of indicating acts such as pointing. Understanding and coordinating with others' plans toward goals is in general a necessary part of human communication, understood as joint action (Clark 1996). Reversing roles is a very important part in these collaborative interactions, and is likely that the understanding of perspectives is simply the perceptual–attentional side of such role reversal (Baressi and Moore 1996). And so, although we certainly do not have at the moment all details worked out, it would seem a plausible suggestion that uniquely human forms of communication—including both nonlinguistic and linguistic conventions—rest fundamentally on a foundation of uniquely human forms of collaborative engagement involving shared intentionality.

And how about language?

I would like to conclude my discussion of pointing by making the argument—in a very cursory fashion—that many of the aspects of language that make it such a uniquely powerful form of human cognition and communication are already present in the humble act of pointing. And so in searching for the phylogenetic roots of human linguistic competence, we might profitably begin with the pointing gesture, which is at least a bit less complicated.

First of all, as stressed by Clark (1996) and as argued above, both pointing and language are collaborative communicative acts. In both cases, recipients either signal comprehension or noncomprehension, and communicators adjust accordingly, sometimes repairing their communicative acts to help the other understand. This collaborative

communicative structure derives from a human adaptation for collaborative activity more generally, involving the ability and inclination to form with others joint intentions and joint attention. As part of this collaborative structure, humans have developed various conventionalized devices for coordinating their social interactions, including both pointing and linguistic symbols. Both of these are bidirectional communicative signs, learned by imitation and enabling the reversal of roles in the communicative act; they are both therefore socially shared. Because they are "arbitrary," and not purely indexical, humans may use linguistic symbols to indicate explicitly a virtual infinity of different conceptual perspectives on things—but still the collaborative structure of pointing and linguistic symbols are fundamentally the same.

Second and relatedly, to be effective both pointing and linguistic communication must take into account the perspective of the recipient ("recipient design" a la Schegloff this volume; see also Enfield and Levinson in this volume). In many cases, pointing presupposes the joint attentional common ground as "topic" (old or shared information), and the pointing act is actually a predication, or focus, informing the recipient of something new, worthy of her attention. In other cases, pointing serves to establish a new topic, about which further things may then be communicated. Both of these are functions served by whole utterances in linguistic communication (see Lambrecht's 1994, predicate focus and argument focus constructions). When human infants first begin talking, many of their earliest utterances are combinations of gestures (mostly pointing) with words, which divide up in various ways the topic and focus functions (Tomasello 2003a). Language goes beyond deictic gestures in the ease with which linguistic symbols may be grammaticalized into constructions with complex topic-focus configurations, but again the building blocks are the same.

Third, the motivations for pointing and communicating linguistically are basically the same (with the possible exception of some performatives that can only be formulated linguistically). In both cases, the most fundamental motivations are helping and sharing, including informing as a special case. Interestingly, Dunbar (1996) has argued and presented evidence that in the evolution of human language the motive to gossip—to simply share information for no immediate reason—is the key motive. His argument is that modern languages are much more complicated than they need to be to simply coordinate human actions in the here and now; their complicated structure reveals in various ways the need to communicate about things displaced from the here and now in complicated ways. The important point for current purposes is

simply that the basic motives of such narrative discourse are sharing and informing, the same basic motives underlying the pointing gesture.

Fourth and finally, in most analyses acts of linguistic communication compose two fundamental components: proposition and propositional attitude (locution and illocution). But pointing also includes these two components. The locutionary aspect is the spatial indication of the intended referent, for example, a toy. But then it is something else again—the illocutionary aspect—that determines whether the pointing gesture is taken to be an imperative (I want you to bring me that toy) or declarative (I want you to share my interest in that toy) or informative (I want you to find the toy you are seeking). It hardly needs emphasizing how much further language takes us in formulating complex linguistic constructions embodying complex propositions and propositional attitudes. But again it is important that the roots of this complexity are already present in the much simpler communicative act of pointing.

Conclusion

To explain human cognitive uniqueness, many theorists invoke language. This contains an element of truth, because only humans use language and it is clearly important to, indeed constitutive of, uniquely human cognition in many ways. However, as I have noted before, asking why only humans use language is like asking why only humans build skyscrapers, when the fact is that only humans, among primates, build freestanding shelters at all. And so for my money, at our current level of understanding, asking why apes do not have language may not be our most productive question. A much more productive question, and one that can currently lead us to much more interesting lines of empirical research, is asking the question why apes do not even point.

Notes

1. There is actually one reported incident of a bonobo pointing for conspecifics in the wild (Veà and Sabater-Pi 1998). This has never been repeated by any other observers of bonobos or other ape species. There have also been suggestions in the past that apes point with their whole body (Menzel 1971),

or just with their eyes (de Waal 2001), but these have never been substantiated as anything more than personal impressions. 2. The most complex cooperative activity of chimpanzees is group hunting, in which two or more males seem to play different roles in corralling a monkey (Boesch and Boesch 1989). But in analyses of the sequential unfolding of participant behavior over time in these hunts, many observers have characterized this activity as essentially identical to the group hunting of other social mammals such as lions and wolves (Cheney and Seyfarth 1990; Tomasello and Call 1997). Although it is a complex social activity, as it develops over time each individual simply assesses the state of the chase at each moment and decides what is best for it to do. There is nothing that would be called collaboration in the narrow sense of joint intentions and attention based on coordinated plans. In experimental studies (e.g., Crawford 1937; Chalmeau 1994), the most complex behavior observed is something like two chimpanzees pulling a heavy object in parallel, and during this activity almost no communication among partners is observed (Povinelli and O'Neill 2000). There are no published experimental studies—and several unpublished negative results (two of them ours)—in which chimpanzees collaborate by playing different and complementary roles in an activity.

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