

# Apes, Babies, and Collective Intentionality

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## Abstract

I argue in this paper that postulating a irreducible, prereflective stance of *collective* intentionality a la Searle (1990), rather than *individual* intentionality, can shed considerable light on the linguistic and proto-linguistic behavior of infants before they are able to model the false beliefs of others. In particular, it helps infants fulfill a subtle philosophical condition on meaning proposed by Grice (1957). A contrast with the communicative behavior of non-human primates (chimpanzees) provides a window onto the advantages of such a primitive “stance.”

## 1 Introduction

What about humans makes them unique in their ability to acquire language? Is it a result of superior general intelligence, or an opaque, encapsulated “language module”? Is it a key conceptual insight, or something as humbling as a blind instinct? In this paper I will try to illuminate a corner of this debate by contrasting child language acquisition with advanced language acquisition in nonhuman primates, chiefly in the work of primatologist Sue Savage-Rumbaugh. After reviewing the evidence, I will argue for a particular relationship between what philosophers and researchers call Theory of Mind—particularly in the guise of its laboratory gold standard, the False-Belief task—and John Searle’s (1990) notion of collective intentionality. Collective intentionality (sometimes called “we-intentionality”) is the intentionality of an irreducibly plural subject.

That the subject is “irreducible” here means simply that it is not built out of a complex configuration of simpler components—not, in particular, a configuration of the intentions of single subjects (Searle, 1990, 1). The philosophical significance of collective intentionality for the child-ape language divide has been investigated before, notably in research by Michael Tomasello and colleagues (Tomasello and Rakoczy 2003, 2007). While I do not share Tomasello and Rakoczy’s assumption that animals necessarily lack collective intentionality, I do agree with their view that collective intentionality has a very special role to play in the intellectual and linguistic development of children—a role which is *different* from the role it has been shown to play in the best and most successful ape-language studies to date.

In what follows, I will look at ape-language data—in particular, the emergence of cooperative communicative behavior. This type of cooperation only emerges after the apes in question are able to pass what I argue is a nonlinguistic equivalent of the False-Belief task. This suggests that, for chimpanzee subjects, full-blown information-state modeling is needed for proto-linguistic communicative action. Moreover, I’ll try to stress that this order of primacy is *intuitive*, both from a scientific and a philosophical point of view. I will compare the chimpanzee data to the data gathered by administering the False-Belief task to human infants, taking into account the particular way that young children fail the test and a thought-provoking developmental delay investigated by Tomasello and Rakoczy.<sup>1</sup> Here, the order is reversed: the evidence shows that, for children, communicative behavior is prior to information-state modeling. Finally, I’ll argue that this difference suggests that what sets humans apart is no great leap in reasoning, but a simple stance: the stance of collective intentionality.

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<sup>1</sup>primarily in Tomasello and Rakoczy, 2003

## 2 Background: Scientific and Philosophical Approaches to Language

### 2.1 Scientists

Michael Tomasello and Sue Savage-Rumbaugh share a “non-formal” approach to language which deemphasizes the importance of Chomsky-style syntax and generative grammar. Both believe that the essence of language can be found in the absence of syntax and grammar—a position which is congenial to the study of language in primates. No ape in any language-study has ever showed a facility for discriminating the syntax-dependent differences in meaning between, for example, *dog bites man* and *man bites dog*. (Pinker 2007, Terrace et al 1979, Savage-Rumbaugh 1994). Instead, their broad focus is on subjects’ understanding of other minds (Theory of Mind), and the development, based on this understanding, of the ability use symbols in communication. Tomasello, an evolutionary anthropologist, is a champion of usage-based theories of language acquisition.

Usage-based theories hold that the essence of language is its symbolic dimension, with grammar being derivative. The ability to communicate with conspecifics symbolically (conventionally, intersubjectively) is [the important] species-specific biological adaptation [that gives rise to language.] (Tomasello, 2003, 5)

Tomasello argues that what is important to language (and unique to humans) is ability to direct and influence the intentional states of others. This simple-sounding condition has two parts: the understanding of intentions in general, and the understanding of communicative intentions (intention-directed intentions):

The understanding of a communicative intention is...a special case of the understanding of an intention; it is the understanding of another person’s intention toward my intentional states. (Tomasello 2003, 23-24)

For the inspiration for this condition, Tomasello cites H. P. Grice, on whom more below.

Following the debunking of claims to have observed grammar-production in chimps in the early 1980s,<sup>2</sup> Savage-Rumbaugh decided to avoid other researchers' Chomsky-inspired "singular focus" on syntax production as the *sine qua non* of language.<sup>3</sup>

From the non-formal angle, Savage-Rumbaugh and Tomasello shared similar diagnoses of what went wrong in previous primate language research: the studies they did not produce communication in the sense of the production of *bi-directional signs*. The apes' sign-language gestures were, in Tomasello's terminology, "ritualizations": rote behaviors which subjects had learned to associate—on the supply-side only, so to speak—with the satisfaction of certain desires. This type of learning also occurs in infants: for example, many infants learn that they can get an adult to pick them up by raising their arms over their heads (Tomasello, 2003). The act is not bi-directional: the proof is that "if some other very small infant were to approach our signaling infant with his arms raised, our infant would not know what he wanted" (32).

Savage-Rumbaugh also saw that the chimpanzees weren't thinking of their gestures from the point of view of the recipient. She put the problem of bi-directionality to herself in terms of the need to show the chimpanzees how to be "good listeners" (1996, 70) as well as good communicators—meaning that they understood both roles and used the same conventional signs when playing each role. She set out to train two chimpanzees, Sherman and Austin, to communicate with one another, and immediately confronted a significant obstacle: most chimpanzees' primary engagement with one another's psychologies involves *deception*, rather than cooperation.

The problem had to do with social tendencies. Wild chimpanzees never share food—indeed, they eat with their backs turned towards one another (Savage-Rumbaugh 1996, 76) and avoid each other's eyes while feeding. A common source of Theory of Mind-exhibiting behavior in wild chimpanzees documents feigned ignorance about the location of a cache of food until others have left the scene (Byrne and Whiten, 1985, 1989.) Chimpanzees in the wild also routinely deceive one another in their sexual behavior: subordinate males mate with females only while the alpha

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<sup>2</sup>especially in Terrace et al. 1979; this paper marked a major turning point in ape-language research.

<sup>3</sup>Savage-Rumbaugh, 1996, 38-9.

male's not looking (de Waal, 1983). While such behavior shows that chimpanzees recognize that other chimpanzees have psychological states, they fail to evince linguistic meaning because rather than communicating, the chimps are deliberately *concealing* what they know.

## 2.2 Philosophers

Philosophical support for this non-formal approach to language comes from Searle (1965, 1983, 2006) and Grice (1957). Both philosophers focus on the logical and psychological structure of speaker meaning, rather than at the internal structure of the tokens (utterances etc.) speakers produce.

The philosophers' positive theses are slightly different. Grice's condition on speaker's meaning  $p^4$  is: an utterance token must (i) produce in the hearer the belief that  $p$ ; and (ii) this belief must come about as the result of the the hearer's recognition of the speaker's intention to produce that very belief. This is why, for example, Grice's "John the Baptist case", where Herod shows Salome the saint's severed head, is not a case of meaning: the token (here, the head!) has a freestanding, nonconventional tendency to produce in Salome the belief *that John the Baptist is dead*. She would come to believe that even if she did not realize that Herod had showed her the head intentionally, so the case meets condition (i) but not condition (ii).<sup>5</sup>

Searle (1965, 1983) separates the intended effect (in Grice's case, the production of a belief in the conversational partner) from the meaning condition of the utterance itself—its "condition of satisfaction." For him, the meaning itself arises from the imposition of the conditions of satisfaction of a mental state (such as *that John is dead*) onto a particular object, which thus becomes an utterance. Yet there is an important commonality: for both philosophers, the utterance-token is a mere *vector* for an intentional state. The vector without the intention does not bear meaning. Searle tellingly compares meaning-intentions to intentions-in-action: the imposition of conditions of satisfaction on an utterance is similar to the imposition of conditions of satisfaction

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<sup>4</sup> $p$  is a proposition, such as *it is raining*.

<sup>5</sup>see Grice 1957, 66ff.

They are what they are—*actions* and *sentences*, rather than *movements* and *noises*—because of the hidden intention that motivates them.<sup>6</sup> When an agent on the receiving end of a linguistic exchange receives an utterance, he looks *through* the utterance, so to speak, to the intention it conveys.

Something very interesting happens when we match up these philosophical criteria for linguistic meaning with the chimpanzees' tendency for deception. Instances of deception meet Grice's first criterion for meaning but *cannot* meet the second. A beta-male might, for example, deliberately refrain from eating some stashed bananas in the presence of an alpha-male. But there is no analogue in such a case to the alpha-male's coming to be ignorant of the bananas *as a result of his recognition of the beta-male's intention to produce this ignorance!* Such a situation is impossible: if the alpha male *recognized* the beta-male's intention, the intention would not succeed.

In Searle's terms, the difficulty comes in at the point where one tries to impose conditions of satisfaction on an utterance-token: there is no utterance token in this case. We cannot say that the token is the beta-male's "innocent" behavior around the food, because even if the deceptive behavior were produced without the intention to deceive, it would still keep away the competitor. So the behavior is not essentially a "vector" for an intention.

### 3 The Data

#### 3.1 Sherman and Austin (Savage-Rumbaugh, 1987)

To encourage cooperation between her chimpanzee subjects, Savage-Rumbaugh broke down Sherman and Austin's natural inclination to horde food by repeatedly rewarding them for sharing. With this hurdle cleared, the chimps were able to learn to request specific foods by pressing buttons on a keyboard. Success at establishing bi-directionality soon followed. The chimps made the leap from requesting particular foods in this way to being able to receive requests as well: when one chimp requested and received a food that the other chimp had access to, both were rewarded (Savage-Rumbaugh, 1978/1994). In a final test—to see if Sherman and Austin understood what

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<sup>6</sup>see Searle 1983, Ch. 6.

they were doing independent of their habituation to the keyboard—Savage Rumbaugh’s team unplugged the keyboard and left food packaging scattered on the floor of Austin’s side of the lab (Savage-Rumbaugh, 1994). When Austin realized that Sherman wasn’t getting the keyboard messages, he searched the packaging labels until he found the label for peanut-butter jar, and held that up to the glass separating him from Sherman. Sherman then successfully requested peanut butter (78). As with many laboratory studies in communication, the mistakes and misfires of this new procedure were informative as the successes:

Immediately after [the peanut butter], we took Sherman out to watch a container of food being baited with Welch’s grape jelly and left Austin behind, thus reversing the situation. Sherman tried...to get the keyboard to work upon his return, but then, like Austin, he began to look around, noticed the Welch’s grape jelly label, and picked it up and put it in his mouth, with the printed side down. He then proceeded to show it to Austin, not quite realizing that Austin could not see it...Austin did nothing. Sherman shrugged and then put the label down, turning it over as he did so. Austin then saw what it said and immediately went to his keyboard and asked for jelly. (Savage-Rumbaugh, 1996, 87)

Despite Sherman’s failure to grasp the finer points of bi-directionality, this episode does well by the Grice criterion: Austin recognizes that there’s jelly in the container only as a result of Sherman’s (actually unsuccessful) intention to get him to believe, as a result of his own intention, that there was jelly in the container. The case combines a recognition of thwarted effort with a recognition that the effort in question was communicative. In Searle’s terms, Sherman succeeded, in the sense that he managed to impose the criterion *that there’s jelly in the container* on the token he intended to show Austin. (He simply failed to achieve the further goal of informing Austin of this.) Savage-Rumbaugh adds that this “cannot be dismissed as the rote result of conditioned response training.”

While such anecdotal evidence inspires furious debate in the scientific literature, I will assume that is really all that is needed to convince a reasonable skeptic that Sherman and Austin have grasped something at the heart of language (at least on a non-formal approach). With training, the chimps are able to move from the understanding of other minds underlying mere deception

to something richer: to the thought that they could impress their own intentional states on one another—using any means necessary as an appropriate vector for this task.<sup>7</sup>

### 3.2 Infants and the False-Belief Task (Tomasello, 2003)

What is shaping up to be a neat philosophical and developmental story, however, hits a hitch when compared against what we know about language acquisition in human children. The studies of Tomasello et al. (reviewed in Tomasello and Rakoczy 2003) postulate two discrete stages in children’s understanding of other minds and the subsequent application of this understanding to their linguistic progress. At the root of their hypothesis is some puzzling data: a gap between early intentionality-acknowledging behaviors (stage 1) and the relatively late age at which children are able to pass the False-Belief task, or FBT (stage 2).<sup>8</sup> Stage 1 behaviors reveal that children have some understanding of agents as intentional agents: for example, they point and demonstrate objects, follow where adults are looking, and attempt to engage adults in “joint attentional interactions”—where child and adult both attend to the same stimulus (Tomasello 1999, Tomasello and Rakoczy 2003). They also engage in imitative learning, which is more sophisticated than mere mimicry because they only copying the adult behaviors they take to be intentional (in the sense of “done on purpose.”)

Yet all of this is not sufficient for children under the ages of 4-5 to perform successfully on the False-Belief task. In this task, the child is shown a situation in which an adult is induced

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<sup>7</sup>A remaining prominent possibility is that it is important to the nature of the full-blown False-Belief task that one animal attribute to the other an actually *false* belief—rather than just ignorance (lack of belief.) But Sherman and Austin seem to demonstrate this too:

on one trial Sherman mistakenly requested a key when a wrench was appropriate for the task, and he watched as Austin began to look over the toolkit in response to the request. Austin picked up the key, and Sherman looked surprised, turn[ing] to look at the keyboard, which still showed the key request...he rushed to the keyboard and corrected himself by tapping on the wrench symbol to draw Austin’s attention...Austin looked up, dropped the key, and took the wrench. (Savage-Rumbaugh, 1996, 82)

<sup>8</sup>for the original False-Belief task experiment, see Wimmer and Perner, 1983. Notable further research includes Gopnik and Astington, 1988, and, for primates, Premack and Woodruff, 1987.

to have a false belief—usually about the location of a hidden object, which was moved while the adult wasn't looking. The child is then asked two questions: (i) where is the object? and (ii) where does the adult think the object is? Children become able to give different answers to these two questions—thus attributing to the adult a belief they know to be false—at about 4-5 years of age. Prior to this age, they reliably claim that the adult thinks the object is where it really is (Wimmer and Perner 1983, Call and Tomasello 1999).

To explain children's late success with the False-Belief task, Tomasello and Rakoczy propose a distinction between a children's understanding of others' "intentional states" and their later-developing understanding of "informational states."<sup>9</sup>

<p><b>Stage 1 (9-12+ months):</b> gaze following, pointing, imitative learning, recognition of intention and thwarted effort, first words  <b>Interpretation:</b> infants comprehend others' intentional states (others are "intentional agents.")</p> <p><b>Stage 2 (4-5 years):</b> False-belief competence  <b>Interpretation:</b> infants comprehend others' informational states (others are "informational agents.")</p>
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Figure 1: child developmental stages (Tomasello and Rakoczy, 2003)

For the difference between children's conceptual schemes at Stage 1 and Stage 2, Tomasello and Rakoczy tap the more recent philosophical tradition of direct-reference and object-dependent thought:<sup>10</sup>

These psychological-state precursors [to belief]...are not as clearly quarantined from the real world as are beliefs. (Tomasello and Rakoczy 2003, 123)

According to the object-dependent ("non-quarantined") story, children begin by thinking in terms of knowledge, rather than belief. Knowledge is a connection between a person and a *fact*,

<sup>9</sup>Tomasello and Rakoczy actually call these later-developing concepts "mental states." However, because this distinction was developed specifically for dealing with belief, I use the term *informational states* for clarity.

<sup>10</sup>There is an enormous literature on this. See, for example, Campbell 2002 and Williamson 2002.

while belief is a connection between a person and a (mere) *mental representation* of a fact. The first notion is factive, while the second is not. Children pass the False-belief test when they become able to recognize the difference between the fact and its mere representation—a representation which can, after all, fail to represent accurately.

I think the facts show that this way of explaining the False-Belief gap isn't necessary. It also raises additional problems: in particular, this proposal does not fit well with the data on children's early (Stage 1) ability to discriminate accidental from intentional actions. At a very early age, they are able to separate actions that are intentional from ones that are accidental, and imitate only the former (Tomasello 1999). This is structurally very similar to understanding that someone has a false belief: one must distinguish between what she actually did (the real-world fact) and what she tried to do—where this is her non-factive *mental representation* of her goal.

My counter-proposal is this. Children's performance on the False-Belief task shows that at the earliest age, by default, children assume that others *share* their informational states. Only at stage 2, when they learn to perform the False-Belief task successfully, do children learn to erect a barrier between their own informational states and the informational states of others.

Adult collective intentionality involves a breaking-down of those erected barriers: instead of *what you know* and *what I know*, there is *what we know*. Our knowledge and our aims are fluid within this new category. For children, though, it is much simpler than that: they don't have to learn to *break down* the barriers, because they haven't learned to *erect* them yet. Their notion of informational states is *irreducibly* collective.<sup>11</sup> They have not learned to compartmentalize representations according to the agent to which they belong. On this proposal, belief is not structurally different from intention. The False-belief data is accounted for by assuming that children understand belief as a connection to a representation from the very first. The catch is that they simply assume that this representation is always *shared*.

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<sup>11</sup>see Searle 1990, 1

## 4 The Puzzle, and a Solution

While infant researchers are puzzled by the False-Belief gap, Savage-Rumbaugh faced the opposite problem. Even with their sophisticated communicative behaviors in the lab, her chimps were missing the very Stage 1 behaviors—spontaneous pointing, demonstrating, and joint-attending—that children demonstrate while they are still too young to pass the False-Belief test. Although Sherman and Austin had clearly learned to associate particular keyboard-buttons with particular foods, they did not press the associated button when they simply saw a food—the equivalent of naming or commenting on what they saw (Savage Rumbaugh, 67). This persisted even after the chimps learned to request e.g. a banana when they couldn't see it, and after they had learned both to give and receive food with the associated symbol. The chimps could request something hidden, but they couldn't, or wouldn't, name what they saw—in sharp contrast to children's spontaneous Stage I “feature placing” language use (commenting on the surroundings just for the sake of commenting).

Ape-language detractors like Steven Pinker see this as a sign of how limited and stingy chimps are with their signing, and how little they understand the many possible functions of signs.

...chimps rarely make statements that comment on interesting objects or actions; virtually all their signs are demands for something they want, usually food or tickling. I cannot help but think for a moment of my two-year-old niece Eva that captures how different are the minds of child and chimp. One night the family was driving on an expressway, and when the conversation died down, a tiny voice from the back seat said, “Pink.” I followed her gaze, and on the horizon several miles away I could make out a pink neon sign. She was commenting on its color, just for the sake of commenting on its color. (Pinker, 2007, 349-350)

Yet Savage-Rumbaugh came increasingly to believe that the problem was one of motivation, not of understanding. Her contention was that because Sherman and Austin didn't expect one another to know what they meant by spontaneous, purposeless “just for the sake of commenting”-type utterances (76). So they did not bother to engage in them.

#### 4.1 Collective Intentionality Enables the Second Condition on Meaning

This is where I think too much information-state modeling can be hurtful, which can give us a clue about the purpose behind children's late-developing ability to perform successfully on the False-Belief task. Children come into the world believing that they share informational states with others. This is equivalent to assuming that just by believing something (representing something to be a certain way), they can get others to represent it that way, too. And this is what inspires them to try to get others to recognize their communicative intentions. My point is that, even though the assumption that subjects automatically share beliefs is false, it is an excellent way to get someone on the road to learning language. When language is taken into account, this false assumption that information-states are collective becomes close to being *true*, because speakers can use language to share the information they have.

By contrast, the information-modeling that chimps come equipped with—the fact that they so readily understand that others do *not* believe what they believe—seems to hinder them on the road to language. Ultimately, chimps are pessimistic communicators: they do not expect others to recognize their intentions. They already know that their own beliefs that *p* is not enough to get someone else to believe *p*. So—unless the situation is quite unusual—they don't try to get someone else to believe what they believe.

I suggest that the assumption that hurts children's false-belief competence is the same assumption that helps them get over the hump of Grice's second condition on meaning, the condition which states that others come not only to have a relevant belief, but to have it only as a result of recognizing the intention conveyed in the utterance.

#### 4.2 Presuppositions as Necessarily “Shared” Attitudes

Searle writes in “Collective Intentions and Actions” that collective intentionality presupposes a “background sense” of others as (i) minded, and (ii) as responsive potential cooperators. (The second requirement dovetails with Grice's account: given only the first part, one can *manipulate*,

but not yet *cooperate*.)

What you must suppose is that the others are agents [who] have an awareness of you as an agent...and that these awareness[es] coalesce into a sense of *us* as possible or actual collective agents...these are not in the normal case “beliefs”...just as my stance toward the objects around me and the ground underneath me is that of their being solid, without my needing or having a special belief that they are solid. (Searle, 1990, 21)

A presumption, like the presumption *that the floor is solid*, does not seem to enter into one’s chains of reasoning as a premise<sup>12</sup> Yet we wouldn’t do what we do—try what we try and expect what we expect—without these presuppositions, and they *can* be violated.

The question here, with collective intentionality, is whether we should say that infants presume or presuppose that x is F if they are unable to entertain the contrary thought: when they don’t yet know that x can be not-F (read: that intentional states can be not-shared). I think the answer is “yes”. Infants do not *judge* that their information states are shared with others.<sup>13</sup> In fact, if we are to call it a belief or judgement, we must conclude that there is no evidence for it, and that it is *false*.

In the case of infants and the presumption of shared belief, “stance” has a huge effect on the future course of their learning. It hands them—for free, so to speak—the crucial second prerequisite for language: *the presumption that others’ intentional states can be manipulated by their own intentional states*. Infants come into the language-learning environment believing that whether they advance a communicative token *intentionally* will make a difference to their communicative partner. This is Grice’s second condition—the condition the chimpanzees find so difficult to grasp.

My contention is that collective-intentional stance is what enables human children—before they understand the barriers that exist between their minds and the minds of others—to so quickly fulfill the subtle second criterion of meaning. This, in turn, enables everything from advanced

<sup>12</sup>for reasons that are familiar in the phenomenological tradition: see, for example, the work of Dreyfus and Folesdall on Husserl’s *noesis*, and Searle’s notion of “the Background” (1983).

<sup>13</sup>It does not seem right to say that we can *judge* it, since this implies that we could have judged otherwise.

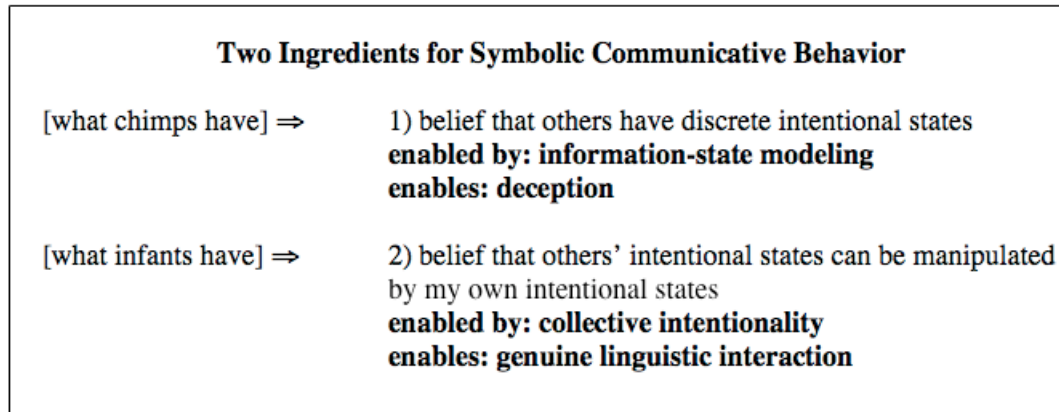


Figure 2: putting it all together.

language acquisition to participation in the incredibly complex social reality language helps to constitute.

## 5 Conclusions

My arguments in this paper can be summarized in three main points:

1) The data I have canvassed suggests that, contra Tomasello and Rakoczy, it isn't necessary to postulate that infants begin life by operating with an object-dependent or transparent account of others' intentional states. This proposal has its own problems: it conflicts with the fact of children's early ability to discriminate accidental from intentional actions. This ability indicates that they already understand the difference between representations (what was attempted) and reality (what was really done).

2) Instead, the data on children's late-blooming ability to pass the False-Belief task is equally well accounted for by my claim that children's first notion of belief is irreducibly *collective*. Infants are not ignorant of the distinction between *beliefs* and *facts*—instead, they are ignorant of the divi-

sion between their *own* beliefs and the beliefs of others. In practice, this ignorance operates like a presumption that informational states are share-able.

3) The chimpanzees studied by Sue Savage-Rumbaugh can give us a glimpse into how such a presumption is *advantageous*. It facilitates children's attempts to engage and direct the psychological states of others around them (what Tomasello and Rakoczy call "Stage 1" behaviors). It also facilitates their attempts to *bridge* the gap between their intentional states and the intentional states of others, once that gap becomes apparent. This is the intention at the root of communication—one that facilitates the explosion of language.

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