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#### Recommended Citation

Kruger, A.C. (2011). Imitation, communion and culture. In S. R. Garrels (Ed.), *Mimesis and science: Empirical research on imitation and the mimetic theory of culture and religion* (pp. 111-128). East Lansing, MI: Michigan State University Press.

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# Imitation, Communion, and Culture

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Ann Cale Kruger

Despite some physical similarities to our great ape cousins, humans are distinguished by big brains. Brain volume in humans is roughly three times greater than it is in apes.<sup>1</sup> Humans are also distinguished by their ability to create culture—tools, languages, art, institutions, societies, and governments—culture that accumulates modifications over time. Humans transmit their cultural knowledge to subsequent generations, who adopt it and use it as a foundation for cultural innovations that they then pass on. Although nonhuman animal cultures (or proto-cultures) exist, such as seen in chimpanzee termite fishing in the Gombe Stream area,<sup>2</sup> their cultural practices are usually limited by geography and do not progress over the generations. There is no evidence of the “ratchet” effect in nonhuman animal cultures as opposed to human cultures—the accumulation, transmission, and progress of cultural traditions over time.<sup>3</sup> And there are reasons to assert that the differences in generativity between nonhuman and human cultures rest on species differences in teacher and learner transactions.<sup>4</sup>

Is the difference in brain size between apes and humans enough to account for the remarkable difference in the cultures they produce? Can we account for culture by an increase in general intelligence (better memories, faster processing) or by an adapted intelligence (cognitive accommodations to particular environmental pressures)? And which pressures might be the key

ones—those pushing for a better understanding of the physical world and thus more impressive amassing of resources, or those that push for cooperative social functioning in complex groups?

In *Things Hidden since the Foundation of the World*, René Girard provides an evolutionary model of how this quantitative physical difference in brain size produced qualitatively different cultural products, describing the “motor for this strange machine.”<sup>5</sup> For Girard, brain size increases allowed for complementary increases in the powers of imitation or *mimesis*. Inter-individual rivalry for objects, acquisitive mimesis, was present in ape ancestors, and a source of dangerous conflict as apes reproduced each other’s aggressive behavior in competition for something mutually desired. Mimetic powers grew along with brain size in early humans, and the threat mimesis then posed (e.g., reciprocal violence no longer constrained by dominance patterns) initiated the process of hominization, that is, the process of successive adaptations (collective violence, scapegoating, ritual sacrifice) allowing species survival in the context of deadly mimetic violence. Hominization in turn stimulated more complex mimetic systems (rituals, prohibitions, myth) that leveraged symbol use to mediate and control rivalry. In Girard’s view, a complete theory of human culture begins with the single principle of mimesis; the complexity of human cultural practices emerged to control its growing and highly destructive potential.<sup>6</sup>

In the years following the development of Girard’s expansive and forceful theory, developmental psychologists began to describe with greater precision the mechanisms of imitation in human children. Foundational discoveries, such as the demonstration by Meltzoff and Moore that human infants can imitate facial expressions during the second and third week of life (instead of between the 8th and 12th month as proposed by Piaget),<sup>7</sup> stimulated the growth of theory and research on human social cognition more generally, and especially on those capacities that are available at the time of birth or develop shortly thereafter.<sup>8</sup> These questions about prenatal preparations for human social life and early postnatal development of social cognitive capacities address how human nature reflects and supports cultural evolution. They led to a flourishing of research activity in comparative developmental psychology, producing descriptions of the similarities and differences in how great apes and humans relate to, think about, and learn from others. Through ingenious experimental investigations of ape and human capacities for processes such as joint attention, language, tool use, theory of mind, mirror self-recognition, cooperation, and empathy, Michael Tomasello, Malinda Carpenter, Josep Call, and colleagues have enlarged our understanding and appreciation of the

subtle and extensive social cognition of apes, but also have carefully isolated their differences from humans.<sup>9</sup> Their work has led to the identification of a small but powerfully generative difference between ape and human social cognition, a capacity that appears early in human ontogeny and that may explain the emergence, transmission, and refinement of human cultural traditions. Thus, they have produced support for the Cultural Intelligence Hypothesis, the theory that human intellect adapted to function in complex social contexts.<sup>10</sup>

Tomasello, Carpenter, Call, and Moll describe a distinctly human propensity to share psychological states (or intentions) with others.<sup>11</sup> This motivation is present from the earliest weeks of human life and unfolds over the course of the first year to support increasingly sophisticated engagements with others in a “we-centric” space.<sup>12</sup> Sharing psychological states with others is more than, but may include, empathy (a matching of moods), perspective-taking (a shared reference), embodied synchrony (a mirroring of behaviors), theory of mind (an imputation of mental states), or common ground (shared background knowledge).<sup>13</sup> It is having joint thoughts and feelings with another person about some aspect of reality when each is aware of the other’s role in the commonality. It is a capacity that I will refer to here as *communion*.

For Tomasello and colleagues, human social cognition follows a developmental pathway that is driven by the infant’s emerging concept of person.<sup>14</sup> It arises from our shared primate abilities to understand others’ intentions, but is transformed by the human desire to share intimate thoughts and feelings (which is the first definition of “communion” listed in the *Compact Oxford English Dictionary*). It begins with the youngest infants’ understanding of other persons as animate actors, and is seen in their dyadic engagement with others for the purpose of sharing.

## DYADIC ENGAGEMENT

Human life begins in vulnerability. Altricial, and dependent on the care of at least one willing provider, humans enter the world comparatively unprepared to meet their survival needs. Other primates, and certainly other mammals as infants, are faster to find their own food, make their own way, and stay safe. However, in comparison to other species, the human is born with especially advanced abilities to attend to others and to secure their attention. Babies are born with a suite of preparations for social life that are uniquely advanced, and use them, beginning while yet unborn, to join other humans, to become

part of the companionship that is such a vibrant and, in fact, defining characteristic of the species.<sup>15</sup>

Newborns are remarkably organized to see, hear, smell, taste, and learn about others, especially the mother, from the beginning. They prefer the sounds of human language to any other sounds; attend to mother's voice (familiar from uterine experience) and soon thereafter her face, more than to any other; favor the smell and taste of her body and her milk; and coordinate their movements and attention to learn about her as much as they can. From the first minutes of life, their actions and their affect become synchronized with hers. The tuneful, rhythmical interactions between an infant and (usually) her mother start early, develop quickly, and are the foundation for future development.<sup>16</sup>

The contingent and congruent transactions between the infant and caregiver in the earliest days of life are variously referred to as primary intersubjectivity, proto-conversations, interactive synchrony, or affective attunement. They may rely on a basic identification with conspecifics or the understanding of others as "like me."<sup>17</sup> But the focus is on sharing feelings, and the baby's exquisite preparation to engage with others in this way (along with the adult's spontaneous responses to it) secures a place for the baby in the protection and affection of the caregiver. These communications between baby and parent illustrate the early human capacity for dyadic transactions. The shared emotions are facilitated in a number of modalities (through rhythmic movements or cooing and laughing, for example), but a striking feature of these interactions is the mutuality of facial expressiveness, and especially the use of mutual eye gaze, to reach interactive attunement.

Infants look at eyes preferentially over other facial features, and coordinate their eye contact with mothers via their mutual vocalizations.<sup>18</sup> Eye contact serves to initiate or terminate *en face* encounters, and mutual gaze is considered a central component in the formation of attachment. More specifically, young infants are sensitive to the exact direction of another's gaze toward them. As early as five months of age, babies are shown to smile less and attend less when their partner's gaze deviates by as little as 5 degrees.<sup>19</sup> Interestingly, children with autism seem to pay less attention to the eyes of others, and are challenged to detect when others are attempting mutual gaze with them.<sup>20</sup> In situations of complex social-emotional information, high-functioning individuals with autism dramatically differ from typically developing children in their frequent and longer focus on the mouth rather than the eyes, even when no salient information can be found there.<sup>21</sup> Children with autism have significant problems with communication and cooperation,

but in more typical development from the earliest ages, the eyes are used to communicate with others a special, mutually understood connection, and this may be foundational for more advanced social and communicative relations.

In chimpanzees (*Pan troglodytes*), infants and mothers also establish communicative repertoires that support the baby's emerging competencies. Their mode of communication is primarily tactile, but Bard, Myowa-Yamakoshi, Tomonaga, Tanaka, Costall, and Matsuzawa show that in some captive settings chimpanzee mother-infant dyads use mutual gaze, and use it more flexibly than in other settings.<sup>22</sup> Bard and colleagues suggest that visual and tactile modalities may be used interchangeably in support of mutual engagement in that species. Although chimpanzees may use eye gaze as one of many means of infant-caregiver co-regulation, the sensitivity to eye gaze and its direction may be particularly human. For example, comparing adult chimpanzees to human infants, Tomasello, Hare, Lehmann, and Call have shown that infants are more sensitive to another's eye gaze direction, while chimpanzees find head direction more salient.<sup>23</sup>

### TRIADIC ENGAGEMENT

Around 9 months of age, babies begin to understand other persons as intentional agents who engage in actions to accomplish a goal.<sup>24</sup> When an adult's goal is hard to discern, infants this age often look to the adult's eyes for cues, and check the adult's gaze direction to help sort out what the adult intends.<sup>25</sup> They understand the purposeful nature of adult goal-directed action, and they can discriminate between accidents and persistent trying along the path to success. Infants enter into triadic engagements with adults, sharing goals and perspectives regarding a third item in the world, as when a parent and child play the simple game of rolling a ball back and forth. The child and the adult each know that his or her own and the other's attention is focused jointly, and they think and feel together in the "we-centric" state about an aspect of reality—the ball, and their joint intention to roll it to and fro.

### COLLABORATIVE ENGAGEMENT

Shortly after the first birthday, babies understand other people as planners. They understand that an adult can adopt any of a variety of means to reach a goal, and they can discern which plan the adult is pursuing.<sup>26</sup> Babies engage

in collaborative engagements with adults creating and enacting a joint plan. By sharing attentions and intentions, infant and adult work with a shared commitment to attain a jointly created goal. In most empirical studies of adult-infant joint attention, the operational definition used is a look to the eyes; the infant knows that the adult knows that they are sharing.<sup>27</sup> For example, some infants this age join adults in a basic turn-taking “conversation” using first words or gestures, as in the “What’s that?” pointing and naming game so popular with Western toddlers. The infant points at an object, turns to look in the mother’s eyes expectantly, and then turns back to the object as Mother names it, “the cup!” The one-year-old understands that the roles played must be coordinated, and in some activities they are interchangeable. In this way, the enterprise of joint thinking itself becomes an object for joint contemplation. This state of communion becomes part of the concept of the experience itself, and the result is an essentially and deeply social representation of reality. Arguably these are the very skills necessary to acquire, sustain, and advance culture.<sup>28</sup>

### COMPARATIVE CONSIDERATIONS

In many ways, the social lives of humans and other primates are similar. Macaques have mirror neurons that resonate to the actions of others,<sup>29</sup> infant chimpanzees imitate facial expressions,<sup>30</sup> and adult chimpanzees emulate the results of another’s behavior.<sup>31</sup> As Tomasello and Carpenter have shown, apes will follow another’s gaze direction and gesture communicatively to bring about an instrumental goal.<sup>32</sup>

Like humans, other species are motivated socially by both competition and affiliation, and they use their social skills to act on those motivations in appropriate situations. Chimpanzees compete skillfully, create formidable adversarial coalitions, deceive one another to gain advantage, and fight fiercely. They also make peace.<sup>33</sup> In fact, in all species capable of mirror self-recognition (elephants, dolphins, and apes, as well as humans), there are demonstrated acts of compassion for unfortunate individuals, such as targeted helping and consolation, with no obvious direct advantage to the comforter. De Waal argues that the self-other distinction that underlies mirror self-recognition supports these pro-social capacities and constitutes a basic form of empathy.<sup>34</sup>

In many ways, the cognitive lives of humans and apes are also similar. In understanding the physical world, a two-year-old human has no advantage

over an ape. Systematic testing comparing young humans (before their cognition could be radically affected by advanced cultural products) and two ape species (adult chimpanzees and orangutans) revealed no differences across the three species in tasks involving understanding or manipulating space, quantities, or causality.<sup>35</sup> Very young human brains have general cognitive capacities equivalent to those of the great apes, suggesting that a general intelligence increase with increases in brain size does not fully explain species differences.

However, Herrmann and colleagues also showed that two-year-old children are dramatically better than apes at tasks recruiting social-cognition skills—theory of mind (including gaze following), communication, and especially social learning (solving a problem by observing a model).<sup>36</sup> As Emery and Clayton put it, apes are good ethologists, but poor psychologists;<sup>37</sup> they understand motivations, perceptions, intentions, goals, and even knowledge of others, but they do not understand that others have mental representations of the world.<sup>38</sup> In tests of theory of mind, no ape has been found to understand false beliefs, which requires a flexible appreciation of another's mental representation of reality. Nearly all children develop this ability spontaneously. Apes will “copy” (emulate) a model's use of a novel tool, usually by reproducing the ends of the demonstrated tool use, but not the means, dropping out or changing steps in the modeled routine that are not necessary to reach the goal.<sup>39</sup> Children not only faithfully copy the means and ends of the model's behavior, but they overimitate, reproducing obviously unimportant and irrelevant details in the model's behavior, possibly because this is a means of learning from adults about causal relations in opaque systems, but certainly not solely to obtain the goal.<sup>40</sup> In their commitment to reproduce every detail of the adult's behaviors, we see evidence of the powerful motivation of children to be with others in a special way—to act and think and feel with them, even if the short-term gain is not evident.

Apes do not attempt to enter into joint attention with others, to intentionally share a common focus for its own sake, as human children do. Only children present a toy to an adult for the sole purpose of sharing attention to it, for the joy of experiencing it together. Only children, as they are about to do a somersault or jump into the pool, shout, “Watch me. Watch me, Mommy. Watch me while I do this!” The urgency with which children request another's attention to an action they perform suggests that the action itself is not satisfactory, or even fully real, unless the other is sharing in it.

This seemingly modest difference between great-ape and human social cognition makes human culture possible. Understanding mental



representations, inviting shared experiences, faithfully reproducing the strategies others use—all are the products of deeply social, collective thought. Humans make faithful transmission of culture possible via teaching and learning transactions that literally require seeing eye-to-eye. The human power to create and transmit culture is the result of the synergy of our common primate cognitive capacities and our uniquely human desire to enter into communion with others. By entering into shared states, we are able to learn and transmit the cultural practices and products that are distinctive of the species.

The left sides of figures 1 and 2 represent the cognitive and social-cognitive similarities of humans and apes. They refer to our shared primate heritage of understanding the physical world, understanding the intentions and motivations of others, and our common social emotions fueled by competition and affiliation. The right sides represent the key differences in cultural outcomes between apes and humans. For apes, individuals live in groups characterized by positive and negative encounters, and their group lives are sustained by the

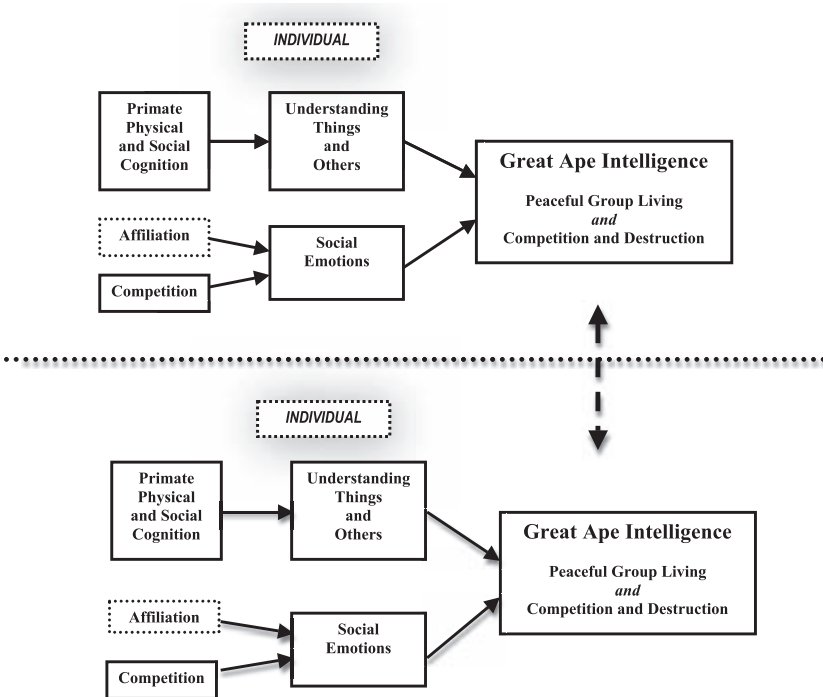


Figure 1.

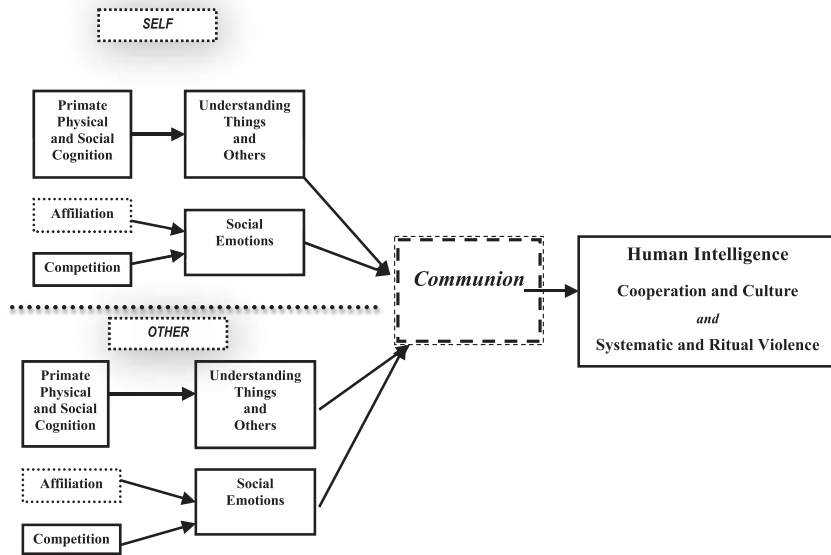


Figure 2.

interactions of their individual capacities. For humans, social life is more than the transactions of individuals; it also involves the intentional communion of self and other to create “we-centric” spaces. Thus, in human life there is the complexity of accumulated and modified cultural traditions, also characterized by positive and negative enterprises, but encased in intricate systems of meaning. The center of figure 2 illustrates the small but powerful species difference—the sharing of thoughts and feelings, the communion of psychological states—that is the source of culture.

Note that human cultural products, created through the powerful force of communion, may have initially been motivated by competition or affiliation. In this sense, the theory of hominization proposed here deviates from Girard’s, whose emphasis is on the creation of cultural systems (ritual sacrifice and prohibitions) to control a communal crisis based on competition and uncontrolled mimetic violence. While the practice of ritual sacrifice, as described by Girard, is ultimately a cultural institution of immense communal and cooperative action with affiliative means and ends, its initial impetus is to curb collective violence based on competition. In the model illustrated in figures 1 and 2, culture evolves to solve problems of complex social life, whether motivated by affiliation unrelated to group conflict, or disruptive

violence based on competition. Perhaps the main question here is whether or not scapegoating and its subsequent ritualization was *the* communal act out of which all other cultural institutions originated, as hypothesized by Girard. It should be noted, however, that a new data-based theory has been published asserting that cooperation was the primary driving force in the evolution of human intelligence.<sup>41</sup>

Just as the human brain is three times the size of the ape brain, the sclera (white) of the human eye is three times larger as well. This makes detecting the gaze direction of a human very easy, even from some distance. What advantage would it serve humans to “give away” to another person the location of a resource they have spotted, or the identity of an individual with whom they have improperly consorted? Similarly, what is the advantage of human sharing? Very early in life, humans are generous with food and eager to supply information to others. They freely jump into joint adventures with others for no particular reward other than the experience itself. Apes do not share food easily, do not offer information, and do not cooperate with others unless a certain reward awaits them. Their eye anatomy minimizes the sharing of information since their gaze direction is much harder to detect. The Cooperative Eye Hypothesis argues that these anatomical and behavioral differences between the species are markers for the different niches into which they evolved.<sup>42</sup> To live in large and complex social groups, a propensity for helping and sharing was an adaptive advantage for individuals. Humans have survived, even flourished, and been remarkably creative through their fundamental ability to share, to help the other, and thus to create intricate cultural systems to support life. Of course, humans have negative and destructive intentions, but they are often carried out cooperatively (as in armies) and collectively symbolized as sanctified.<sup>43</sup>

## CULTURAL LEARNING

Michael Tomasello and I distinguished three types of cultural learning that appear over ontogeny (at approximately one, four, and six years, respectively) and that rely on engagement with others with shared intentions.<sup>44</sup> These are descriptions of how an expert and novice, or even two novices, can teach, learn, or create new cultural products through the processes of communion. Cultural learning is different from social learning, in which others may highlight certain aspects of the environment, but the learner is left on her own to figure things out. In cultural learning, the process involves communion, and

the product includes a representation of the other person's perspective that is internalized by the learner.

In *imitative learning*, the earliest form of cultural learning, toddlers attend to the intentions of someone performing a task, and then they represent and recreate (sometimes after a delay) the means and the ends of the model. In a series of creative experiments, Andrew Meltzoff has shown that when the model is frustrated or unsuccessful in her attempts at the task, the toddler reproduces what rationally *appeared* to be the model's intended behavior and outcome, not the accidents or false starts.<sup>45</sup> As we have seen, when adults' *intended* behavior is superfluous or unnecessary, children still reproduce it (overimitation).<sup>46</sup> Children are motivated to imitate others not only to reproduce their intentions and outcomes, but also to be in a shared state with them.<sup>47</sup> In addition to the qualitative power of shared states, there is a quantitative relationship between time spent in joint states and the amount learned.<sup>48</sup> For example, compared to singletons, twin toddlers have fewer opportunities to be in shared, one-on-one states with their parents; the frequency of those opportunities positively correlates with their vocabulary size.<sup>49</sup>

In *instructed learning*, the teacher and the learner share the intention of knowledge transmission. The learner has limited understanding, and the teacher has more advanced understanding of the content or procedure to be learned. Each must take steps to enable the learner to reach the teacher's understanding, or to reach a lesser but satisfactory level predetermined by the instructor. To do this, they communicate about their perspectives on the task, and the teacher scaffolds the learner's experience, creating intermediate goals, and monitoring until the learner is successful. They must both work determinedly to coordinate their roles and perspectives and to support the learner to become eventually more like the teacher.

It is worth noting that adults in every culture intentionally instruct their young in this way, focusing on the knowledge or skills they see as being of greatest cultural value.<sup>50</sup> No other species has been observed to instruct their offspring with such intention, and to monitor and adapt the instructional interaction until the learner is successful.<sup>51</sup> Thus, the we-centric teaching and learning described in imitative and instructed learning may explain what makes human cultural transmission possible.

In *collaborative learning*, two individuals begin with comparable levels of knowledge and have the shared goal of solving a problem. They may have differing perspectives on the task, as in the case of two young girls struggling to divide the limited funds they earned in a weekend lemonade-stand venture. The partners describe their current state of understanding, question

and critique each other, and ultimately find together a new, more objective understanding. Children are more likely to engage in this critical thinking with their peers than with their parents, and the more they engage in this type of thoughtful exchange, the more they advance in their reasoning.<sup>52</sup> The initial perspectives, the critical stance, and especially the shared purpose of putting their heads together lead the partners to create a new, third perspective. In this way, collaborators create innovations that advance culture.

### COMMUNION AND CULTURE IN THE CLASSROOM

Several years ago, I began to wonder whether the theory of cultural learning could be applied to solve practical problems in American education. Is part of the problem of American schools the reliance on rote learning at the expense of shared psychological states between children and those instructing them? In the United States there is an “achievement gap” that begins before the child’s first day of school. Children from low-income backgrounds enter kindergarten with less than half the vocabulary of their affluent classmates, placing them at high risk for academic failure.<sup>53</sup> Unfortunately, in schools with large populations of such children, kindergarten instruction often does not resemble child-centered early education, and didactic instruction alone does not suffice where the needed foundational competencies are not in place. In other words, it does not take advantage of the uniquely human forms of learning.

To address these students’ need for enriched social and communicative experiences—*cultural learning* experiences—we introduced an intervention in which teaching artists assisted classroom teachers to infuse drama into the language-arts curriculum. From my own experience in theater, I know that drama is inherently mimetic. It calls upon all participants (playwrights, designers, actors, and audience) to identify with each other and to share subjective experiences. In effect, it raises “Watch me while I do this!” to an art form. I reasoned that for children to become enculturated in the ways of school, classroom experiences that invite them to share psychological states with others, especially with adults, are necessary.

In our intervention, students, teachers, and artists collaboratively engaged in the mimetic art of story; they created characters, communicated intentions, and made meaning with each other. Sharing one another’s lived experiences is essential to creating even the simplest drama, and we hoped this might provide the shared engagements that would support the children’s adaptation to the culture of school. (In one of our early studies, an older child said of

the playwright-teacher, “Nobody cares about little kids anymore, but Mr. P. listens to us.”)

Although the intervention was brief, only 13 lessons over two months, we hypothesized that the emotionally and linguistically rich experience of joint pretense would enhance the children’s language development. We anticipated that if students were free to know their teachers and to be known by them in this context—to be in communion—their cultural learning, in this case learning of language, would flourish. During our observation of one classroom visit by a teaching artist, we learned what the possibilities were for children’s engagement and identification. As the artist approached, the students scurried about the classroom searching for the storybook they had used previously as the starting point for their drama. The book was not to be found, but the students kept insisting, “We need the book! Where is the book?” One little girl stepped forward to address her classmates, reassuring them with a gesture that suggested her entire body was opening like a volume of stories, and said, “We don’t need the book. We *are* the book.” In this proclamation, mimesis and communion are found.

To test our hypothesis, we randomly assigned volunteering schools to intervention and waiting control conditions. Data were collected each year on approximately 100 control and 100 intervention students, 94 percent African American, 71 percent classified as low-income. Before and after the intervention, each year for three years, kindergarten students were individually given standardized assessments of language development and a creative writing task. School administrators provided student achievement data.

Kindergarten students in the drama intervention schools showed superior improvement in their writing—the size of the vocabulary they used, the number of sentences, the structure, the theme, and the resolution of their stories all improved compared to controls. They also were significantly more likely to improve in their performance on tests of syntax development than were the students in the control schools. We followed the students as they entered first and second grade to measure any enduring effects of the 13 drama lessons. Without the benefit of any further intervention, the students who were in drama intervention schools in kindergarten had superior report-card grades and superior language-arts achievement-test scores in first grade, and continued to have superior report-card grades in second grade. Students with special needs benefited even more. We have embarked on a four-year study to adapt this intervention to the needs of kindergarten students with limited English proficiency, testing to see if we can enhance their performance in the English-only schools they attend. We expect that the cultural learning

process of shared story-making will support the language acquisition of these children to a greater degree than the standard instructional practices do.

Formal education in schools is designed for the transmission of culture. However, large national studies in the United States show that the home environment accounts for most of the variance in students' achievement. Many low-income children enter school without the advantage of cultural consistency between home and school; the supportive processes we associate with first-language acquisition, such as are found in the linguistic environment of the home, must be experienced in the classroom for them to succeed. Creating an environment in school that supports the child's powerful motivation to share feelings and intentions with others will enhance the cultural learning opportunities these children need to become a part of the school community. Communion and cultural learning are the natural process and product of rich human engagement, in the classroom as elsewhere.

## CONCLUSION

One of the unique and central features of hominization is the pervasive developmental importance of shared states, or communion. Chimpanzees have impressive capabilities, but they do not have this. As children grow, communion becomes the foundation of cultural learning—first imitative learning, then instructed learning, and finally, the most creative process, collaborative learning. Traditional educational methods, especially for disadvantaged children, have failed to take advantage of this uniquely human developmental course. Recent interventions with drama in disadvantaged schools suggest that supporting these processes can make a significant practical difference in how children learn. The role of mimesis in learning with and through stories has only begun to be explored, and the power and generativity of communion in the classroom, the shared intimacies of thought and feeling, may hold the key to genuine educational reform and would better reflect what we know to be the unique human capacity for cultural learning.

## NOTES

1. Harry J. Jerison, *Evolution of the Brain and Intelligence* (New York: Academic Press, 1973).
2. Elizabeth V. Lonsdorf, "Sex Differences in the Development of Termite-Fishing Skills in the Wild Chimpanzees, *Pan troglodytes schweinfurthii*, of Gombe National Park, Tanzania," *Animal Behavior* 70 (2005): 673–83.

3. Michael Tomasello, *The Cultural Origins of Human Cognition* (Cambridge, MA: Harvard University Press, 2000).
4. Christophe Boesch and Michael Tomasello, "Chimpanzee and Human Cultures," *Current Anthropology* 39 (1998): 591–614.
5. René Girard, *Things Hidden since the Foundation of the World* (Stanford, CA: Stanford University Press, 1987), 96.
6. For additional viewpoints on mimesis, see Mark R. Anspach, "Imitation and Violence: Empirical Evidence and the Mimetic Model," and René Girard, "Mimesis and Science: An Interview with René Girard," both in this volume.
7. Andrew Meltzoff and M. Keith Moore, "Imitation of Facial and Manual Gestures by Human Neonates," *Science* 198 (1977): 75–78.
8. See also Andrew N. Meltzoff, "Out of the Mouths of Babes: Imitation, Gaze, and Intentions in Infant Research—the 'Like Me' Framework," this volume.
9. Michael Tomasello et al., "Understanding and Sharing Intentions: The Origins of Cultural Cognition," *Behavioral and Brain Sciences* 28 (2005): 675–735.
10. Esther Herrmann et al., "Humans Have Evolved Specialized Skills of Social Cognition: The Cultural Intelligence Hypothesis," *Science* 317 (2007): 1360–66.
11. Tomasello et al., "Understanding and Sharing Intentions: The Origins of Cultural Cognition."
12. Vittorio Gallese, "The 'Shared Manifold' Hypothesis: From Mirror Neurons to Empathy," *Journal of Consciousness Studies* 8 (2001): 33–50. See also Vittorio Gallese, "The Two Sides of Mimesis: Mimetic Theory, Embodied Simulation, and Social Identification," this volume.
13. Gerald Echterhoff et al., "Shared Reality: Experiencing Commonality with Others' Inner States about the World," *Perspectives on Psychological Science* 4 (2009): 496–521.
14. Tomasello et al., "Understanding and Sharing Intentions."
15. C. Trevarthen, "Intrinsic Motives for Companionship in Understanding: Their Origin, Development, and Significance for Infant Mental Health," *Infant Mental Health Journal* 22 (2001): 95–131.
16. For a summary of infant sociality research, see Philippe Rochat, *The Infant's World* (Cambridge, MA: Harvard University Press, 2001).
17. Andrew Meltzoff, "'Like Me': A Foundation for Social Cognition," *Developmental Science* 10 (2007): 126–34. See also Andrew N. Meltzoff, "Out of the Mouths of Babes: Imitation, Gaze, and Intentions in Infant Research—the 'Like Me' Framework," this volume.
18. D. Stern, "Mother and Infant at Play: The Dyadic Interaction Involving Facial, Vocal, and Gaze Behaviors," in *The Effect of the Infant on Its Caregiver*, ed. M. Lewis and L. A. Rosenblum (New York: Wiley & Sons, 1974), 187–213.
19. S. Hains and D. Muir, "Infant Sensitivity to Adult Eye Direction," *Child Development* 67 (1996): 140–51; L. Symons et al., "Look at Me: Five-Month-Old Infants' Sensitivity to Very Small Deviations in Eye-Gaze during Social Interactions," *Infant Behavior and Development* 21 (1998): 531–36. See also Andrew N. Meltzoff, "Out of the Mouths of Babes: Imitation, Gaze, and Intentions in Infant Research—the 'Like Me' Framework," this volume.



20. For example, see Jelena Ristic and Alan Kingstone, "Taking Control of Reflexive Social Attention," *Cognition* 94 (2004): B55–B65.
21. Dirk Neumann et al., "Looking You in the Mouth: Abnormal Gaze in Autism Resulting from Impaired Top-Down Modulation of Visual Attention," *SCAN* 1 (2006): 194–202.
22. K. A. Bard et al., "Group Differences in the Mutual Gaze of Chimpanzees (*Pan troglodytes*)," *Developmental Psychology* 41 (2005): 616–24.
23. M. Tomasello et al., "Reliance on Head Versus Eyes in the Gaze Following of Great Apes and Human Infants: The Cooperative Eye Hypothesis," *Journal of Human Evolution* 52 (2007): 314–20.
24. Tomasello et al., "Understanding and Sharing Intentions."
25. C. Moore and P. Dunham Moore, Eds., *Joint Attention: Its Origins and Role in Development* (Hillsdale, NJ: Erlbaum, 1995).
26. Tomasello et al., "Understanding and Sharing Intentions."
27. For example, see Roger Bakeman and Lauren Adamson, "Coordinating Attention to People and Objects in Mother-Infant and Peer-Infant Interactions," *Child Development* 55 (1984): 1278–89.
28. Tomasello et al., "Understanding and Sharing Intentions."
29. Vittorio Gallese and A. Goldman, "Mirror Neurons and the Simulation Theory of Mind-Reading," *Trends in Cognitive Sciences* 2 (1998): 493–501.
30. Masako Myowa-Yamakoshi et al., "Imitation in Neonatal Chimpanzees (*Pan troglodytes*)," *Developmental Science* 7 (2004): 437–42.
31. Claudio Tennie et al., "Push or Pull: Emulation Versus Imitation in Great Apes and Human Children," *Ethology* 112 (2006): 1159–1169; Michael Tomasello et al., "Cultural Learning," *Behavioral and Brain Sciences* 16 (1993): 495–552.
32. Michael Tomasello and Malinda Carpenter, "Shared Intentionality," *Developmental Science* 10 (2007): 121–25.
33. Franz de Waal, *Chimpanzee Politics: Power and Sex among Apes* (London: Jonathan Cape, 1982); Franz de Waal, *Peacemaking among Primates* (Cambridge, MA: Harvard University Press, 1989).
34. Franz de Waal, "Prosocial Primates: Empathy, Fairness, and Cooperation," (paper presented at the Evolution of Brain, Mind and Culture Conference, Emory University, Atlanta, GA, November 12–13, 2009).
35. Herrmann et al., "Humans Have Evolved Specialized Skills of Social Cognition."
36. *Ibid.*
37. N. J. Emery and N. S. Clayton, "Comparative Social Cognition," *Annual Review of Psychology* 60 (2009): 87–113.
38. J. Call and M. Tomasello, "Does the Chimpanzee Have a Theory of Mind? Thirty Years Later," *Trends in Cognitive Sciences* 12 (2008): 187–92.
39. Michael Tomasello et al., "Cultural Learning," 495–552.
40. Derek Lyons et al., "The Hidden Structure of Overimitation," *PNAS* 104 (2007): 19751–56.

41. Michael Tomasello, *Why We Cooperate* (Cambridge, MA: MIT Press, 2009).
42. M. Tomasello et al., "Reliance on Head Versus Eyes in the Gaze Following of Great Apes and Human Infants."
43. See Melvin Konner, "Sacred Violence, Mimetic Rivalry, and War," this volume.
44. Michael Tomasello et al., "Cultural Learning," 495–552.
45. For example, see Andrew Meltzoff, "Understanding the Intentions of Others: Re-Enactment of Intended Acts by 18-Month-Old Children," *Developmental Psychology* 31 (1995): 838–50. See also Andrew N. Meltzoff, "Out of the Mouths of Babes: Imitation, Gaze, and Intentions in Infant Research—the 'Like Me' Framework," this volume.
46. Lyons et al., "The Hidden Structure of Overimitation."
47. M. Carpenter, "Instrumental, Social, and Shared Goals and Intentions in Imitation," in *Imitation and the Development of the Social Mind: Lessons from Typical Development and Autism*, ed. S. J. Rogers and J. Williams (New York: Guilford, 2006), 48–70.
48. Michael Tomasello and Ann Cale Kruger, "Joint Attention on Actions: Acquiring Verbs in Ostensive and Non-Ostensive Contexts," *Journal of Child Language* 19 (1992): 311–33.
49. Michael Tomasello et al., "Linguistic Environment of 1- to 2-Year-Old Twins," *Developmental Psychology* 22 (1986): 169–76.
50. Ann Cale Kruger and Michael Tomasello, "Transactive Discussions with Peers and Adults," *Developmental Psychology* 22 (1986): 681–85.
51. Michael Tomasello et al., "Cultural Learning," 495–552; Boesch and Tomasello, "Chimpanzee and Human Cultures."
52. Ann Cale Kruger and Michael Tomasello, "Transactive Discussions with Peers and Adults." Ann Cale Kruger, "The Effect of Peer and Adult-Child Transactive Discussions on Moral Reasoning," *Merrill-Palmer Quarterly* 38 (1992): 191–211; Ann Cale Kruger, "Peer Collaboration: Conflict, Cooperation, or Both?" *Social Development* 2 (1993): 165–82.
53. Betty Hart and Todd Risley, *Meaningful Differences in the Everyday Experience of Young American Children* (Baltimore: Paul H. Brookes, 1995).