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The Existential Elephant

She is middle-aged, amiable, but known to keep to herself. Unlike others her age, she has no children and there are no men in her life. She has two neighbors who are contemporaries, Patty and Maxine, but the two have formed a fast friendship, leaving Happy something of a third wheel. According to records, Happy was born in 1971. As an infant, she was forcibly taken from her family in the Asian wild and shipped to the United States. After five years at a facility in West Palm Beach, on March 21, 1977, she was transferred to the Bronx Zoo, where she received the identification number 771057.[1] *For a short while she had a companion, Samuel R., a teenager almost young enough to be her offspring, but the youngster sickened and died. Happy has never experienced the traditional family life of her native culture, in which she would have spent her life with her mother, sisters, cousins, and aunts, caring*

for babies and mentoring teenagers. The Bronx Zoo announced that the elephant exhibit will close when one or two of the trio dies. Happy will probably live out her days alone in New York City, unless she can be sent to sanctuary.

Who is an elephant? A simple-sounding question, but one that launches us on a long and fascinating journey into unexplored terrain. The idea of an elephant being a "who," not a "what," is somewhat unfamiliar. Even questions of human identity are complex, and the riddle of the self has haunted humankind throughout history. The French philosopher Jean-Paul Sartre and his lifelong colleague Simone de Beauvoir sat for hours on end in smoky Parisian cafés debating the idea of existence, its meaning, or lack thereof. Today, philosophical reflections on the nature of the self are tackled in the language of neurons and synapses, but the essence of the search remains, and while few of us have written weighty tomes on the subject, most recall at least one time when we set out to find out who we really were.[2]

One of the ways we get a glimpse of this entity called the self is by gazing into a mirror. Copper was crafted in Egypt to reflect the human face as early as 2900 B.C.E., and mirrors of all sorts of shapes and sizes inhabit myths, legends, and fairy tales around the world.[3] Snow White and her wicked stepmother would hardly be the same without "mirror, mirror on the wall," and Alice could hardly have discovered the things she did without her looking glass. Mirrors are mysterious; they entreat the viewer into a world beyond the ordinary, something and somewhere that reveals what an outward gaze cannot, an inner identity and sense of "meness" that is more than skin-deep.

Musings on existential meaning and looking glasses may seem a far cry from the world of bloodied rhinoceroses and stalking elephants, but they relate intimately to the tale. Elephants are among the few nonhuman species known to recognize themselves in mirrors. This, according to scientists, demonstrates self-awareness. Gordon Gallup is a psychologist who is credited for inventing the "mirror test," a method of investigation intended as a way to probe the mind's inner world—the means by which the elephant self was formally discovered to exist.[4]

The Mirror Self-Recognition (MSR) test identifies critical levels of cognitive development, the ability to engage in abstract psychological levels of knowing that relate to the theory of mind (TOM), indicating that one is not only conscious but self-conscious. The assumption behind the test is that only a subject who has a sense of self, an awareness of her existence as a unique being and who acts as an instrument of her own fate, is able to recognize her form in a mirror's reflection: to know what she looks like on the "outside." Though philosophers and scientists have had a difficult time agreeing on what lies behind a sense of self, and even its definition, the MSR test purports to objectively measure something as subjective as the interior felt sense of self-awareness.

Self-recognition typically develops in humans between the ages of eighteen and twenty-four months; until recently, it was believed to be absent in animals and assumed to distinguish humans from all other species. But in recent years this exclusive club has been joined by chimpanzees, orangutans, dolphins, and magpies, and it was Happy, the middle-aged Asian elephant living in the Bronx Zoo, who carried home the intellectual gold medal to qualify the pachyderm for membership.[5]

Despite its popularity, the mirror test is a subject of some debate.[6] Criticism comes from both those who doubt the equivalence of animals with humans and those who do not. Skeptics maintain that the test is arbitrary and that each species may respond differently based on variations in species-specific and individual characteristics and motivations unrelated to any intrinsic ability of self-awareness. Measures and meaning of self may not hold universally given species' diversity. Other argue that there may be systemic species differences that relate to patterns of evolutionary pathways. Neither do responses appear consistent within species. Some researchers report self-recognition in gorillas, whereas others have found the opposite, and not all chimpanzees test successfully.[7] So when scientists decided to investigate the elephant self at the Bronx Zoo, the experiment was meticulously designed to meet specific protocols, then documented and filmed.

More is involved than merely hanging up a mirror and watching elephants. The subjects are stepped through a sequence of stages to ensure that their behavior really reflects what the test is meant to demonstrate.

Happy, Maxine, and Patty were introduced to the mirror only after it had been kept covered for several days in the outdoor area, in order to contrast behavior related to the appearance of something new in the environment—no small event for an animal in confinement—with that specific to use and awareness of the mirror's reflecting quality.

Zoo life is routine. Residents follow a schedule shaped to human schedules and customs. Feeding, bathing, veterinary check-ups, training, and exhibition times are regimented, and living quarters are spare compared with life in the wild. Exhibits are generally concrete, with bars and barriers, and not infrequently animals are bereft of companionship. Even if there are other conspecifics (others of their own species) with whom to interact and socialize, relationships are often temporary, as animals die prematurely, fall ill, or are traded between institutions.

Elephants have evolved with the natural rhythms of weather, landscapes, variations in food and water, and the cycles and drama of birth and death. Free-ranging elephant life is rich with relations, color, flora, fauna, and freedom, and days are spent on the move, with nearly constant social contact while foraging for grasses, bark, leaves, twigs, and roots of diverse botanical species. The family group covers tens of miles daily, roaming across terrain that demands physical strength and mental competence.

Zoos have looked for ways to make life more bearable and interesting for their residents. Plastic balls, barrels, tree branches, and treats are intended to "provide environments of greater physical, temporal, and social complexity that [afford animals] more of the behavioral opportunities found in the wild."[8] Such objects are meant to break the monotony of confinement and compensate for what captivity lacks and what elephants need.

It is no wonder, then, that when a full-length mirror is brought into the stalls of the Bronx Zoo, the sophisticated but underchallenged minds and senses of Happy, Patty, and Maxine might just be reacting to something new. The subjects testing for MSR work through four stages, each of which the subject must pass to demonstrate self-recognition. The first stage is referred to as the "social response": when an individual sees her

reflection, she may initially think it is someone else and react defensively by roaring, running away, or trying to interact in some fashion. But the Bronx Zoo elephants did none of these things. Instead, they skipped ahead to the second stage, called "investigative behavior," using their trunks to probe over and behind the mirror and even tried to climb over the wall to see what was behind it. Happy, on the other hand, did not investigate behind the mirror.

After only three or four days, all progressed to the third stage of the experiment, which determines whether the elephants will investigate themselves—a test of self-consciousness. They carried their food over to eat in front of the mirror, using their trunks to touch parts of their bodies. For example, Maxine put her trunk tip first into her mouth and at another time pulled her ear slowly toward the mirror. These behaviors were interpreted as evidence of mirror use. But Happy excelled all the others when, on the first day, she passed the fourth and final stage, the "mark" test, which reveals self-directed behavior or actual signs of recognition of herself in the mirror.

A white cross was painted on one side of the individual's forehead such that it was not visible without the use of a reflective surface. A "sham" invisible cross was also painted but on the opposite side of the forehead, to eliminate the possibility that the white cross could be detected through smell or feel. Happy touched the white cross with her trunk while standing in front of the mirror, but she lost interest after the first day. Even though she continued to approach and explore herself using the mirror, Happy never touched the mark on her forehead again, and the second day did not even visit the mirror. Maxine and Patty showed no interest at all, technically failing the mark test. However, together, the evidence was sufficient to qualify a pass on the MSR test and demonstrate elephants' capacity for self-awareness.

All this may seem like a complex scheme just to show that an elephant can use a mirror, but the study provides ethological evidence that parallels findings from neuroscience: a trans-species model that simultaneously describes human and other animal brains and behavior.[9] Dr. Lori Marino, a neuroscientist in the neuroscience and behavioral biology pro-

gram at Emory University, has made the point that the neurobiology and behavior involved in mirror recognition are strikingly similar across species. Whereas Happy and her compatriots brought hay to the mirror and ate in front of it, dolphins sometimes bring their toys. As in humans, the capacity for self-recognition appears to be developmentally linked. Young chimpanzees exhibit self-awareness over a range of ages, some as early as two and one half years old. Dolphins just over a year old have shown a fascination for their reflected images.[10]

Such similarities are not surprising, and ethologists and others have accumulated an impressive list of examples. All vertebrates (and, some would argue, invertebrates) have a common suite of brain structures and mechanisms that underlie complex processes of cognition and affect, including areas of the brain that involve self-awareness, decision making, and planning.[11] Key cortical and limbic structures in the brain are conserved evolutionarily across species, as are areas in the brain responsible for processing and controlling emotional and social information associated with specific psychophysiological and behavioral traits. We "social brained" animals, whose circuitry evolved to interact and deal with our conspecifics in complex ways, have developed shared structures and functions in the brain that engender similar capacities to think, feel, and behave. Maternal behavior, the ability to recognize faces and expressions, play behavior, sexual behavior, fear, aggression, and emotions and feelings are but a few items on a very long list shared across the animal kingdom. In this new trans-species world, dolphins have culture, crows use tools, sheep empathize, and snakes play. Fish subjected to electrical shocks retreat into dissociative rocking as a means of coping with pain, much as human victims of torture might.[12]

The fact that we can be so different on the outside yet otherwise so similar is both fascinating and eye-opening. We have learned something not only about elephants but, as Gordon Gallup predicted, also about ourselves. "The history of science . . . can be viewed . . . as having brought about gradual changes in man's conception of man, and with such changes man may eventually have to relinquish, or at least temper, his claim to special status."[13] By having a sense of self, elephants and other animals erase a significant delineation of human uniqueness.

Historically, the sense of a personal self has defined much of what it means to be human. But not all cultures have such strongly held assumptions. Many American Indian cultures regard other animals as fellow tribes—the Wolf People, the Buffalo People, and the Eagle People—each with its own language, customs, law, and land. In contrast, the concept of human uniqueness has been an organizing nucleus of Western, Euro-American culture and informs the basic rules of everyday life—social rules and laws, eating habits, cultural practices, and science. What may seem an immutable assumption today actually represents the culmination of a long intellectual and political evolution.

The separation of humans from other animals dates back to the Stoics, who defined *hegemonikon*—the highest component of the soul—as the personalized, private imagination. Along with consciousness and awareness, hegemonikon brought an individualistic definition of spirituality to the communion between God and humans. Concepts from the Berber Saint Augustine of Hippo deepened the split by creating an image of self as inner space apart from the outer world. Later, during the Reformation, the self became inextricably identified with the religious and political identity and autonomy that have become the collective agenda of liberalism, capitalism, and the broader agenda of human dominion over all other creatures.[14] The portrayal of a singular, bound human self relates to the overall pattern of splitting that dualism has created: humans/nature, mind/matter, and so forth.

Consequently, when Happy and her predecessors stepped across the divide between those who do possess self and those who don't, more than a few sacred and unwitting bovines of Western civilization were challenged.

For instance, the question of whether an animal has a self turns attention to the culturally accepted premise of keeping Happy and other animals confined in zoos. In the absence of a sense of self, keeping elephants in zoos seems less inhumane than human captivity. But once science demonstrates that animals have joined humans in this one crucial respect, doubts are raised about the legitimacy of institutionalized captivity, and about owning animals, using them in experiments, and consuming them as food. Self-recognition is one of the more formidable

and controversial scientific salvos against the long-held assumption that animals are fundamentally different from humans.

But the burden of proof does not lie on the shoulders of the mirror test alone. The decades of ethological observations collected conform to criteria identified by the psychologist William James to describe the core self and have laid the foundation for extending the concept across species.[15] James identified four abstract features of the "I" that relate to actual lived experience and felt action and give us each a subjective sense of self.[16]

First, a sense of self involves agency, the knowledge of one's own behavior and movements that acts on the world. Second, this sense of agency feels coherent and embodied. According to developmental psychology, self-knowing relates to the moment when an infant first realizes that Mother or Father is "not me," thereby initiating a process of awareness that evolves over time. The incipient and growing sense of agency relates to the understanding that when "I" throw the ball at Billy, it is Billy who feels the pain, not the "I" who caused it, and who may subsequently live to regret my impulsive action when I become the embodied target of Billy's wrathful agency after he recovers.

Given James's first two definitions, it is hard to imagine that any animal would not qualify. A sense of agency is vital for survival: how do "I," not Mum or Dad or Billy, know what and how to eat, interact with another, or decide which trail to take in the woods? Self-capacity is consistent with current behavioral models that describe elephants, humans, and fish alike. Historically, animals were envisioned as functioning much like organic, genetically programmed robots, their behaviors largely or exclusively instinctual, with predetermined responses awaiting appropriate stimuli. In this view, agency was in no way required to prompt neurons to fire and muscles to contract as the animal learned how to stalk, pounce, and gobble up a grazing gazelle, how to decide who is friend and foe, or whether to come running at the sound of the cry of one's infant. Elephants offer a superb illustration of and necessity for Gallup's bidirectional consciousness.

It is by dint of the exigencies of social life that elephants know and remember "who's who," self included. Not only do they recognize each

other out of hundreds of other elephants, but each understands who and what he is relative to this complex hierarchical web of relationships. As part of a social network that once stretched across Africa, elephants adapted to a multitiered social hierarchy that demands the ability to recognize and distinguish among themselves. Much like avid fans of soap operas like *Dallas* and *All My Children,* elephants, and in particular the matriarch, must be able to recall myriad relational connections and intrigues that make up the fabric of everyday social life upon which survival depends. The matriarch is vested with social and ecological knowledge garnered over the years that guides her decisions, life-and-death choices that keep members of the group safe and healthy.[17]

Elephants' ability to discriminate through smell, vocalizations, touch, and sight extends beyond kith and kin. Elephants have shown that they can also distinguish among humans. Lucy Bates and her coresearchers discovered that elephants react differently when presented with red clothing worn by the Maasai people (who kill elephants) and with clothing worn by the agricultural Kamba tribe (who do not).[18] Shown Maasai clothing, elephants became startled and ran away, whereas they displayed little reaction to Kamba clothing. The elephants were also more perturbed when presented with red as opposed to white clothing, an effect that researchers inferred was related to the Maasai's frequent use of red. As we shall see later, Dame Daphne Sheldrick, founder of the David Sheldrick Wildlife Trust outside Nairobi, Kenya, makes the same point: elephants can distinguish between who has hurt them and who has helped them.

Elephants have been discovered doing other "humanlike" things. They are vocal learners, similar to parrots. For example, they have been heard mimicking the sound of trucks and lawnmowers. And they are no strangers to tools. Asian elephants commonly use their trunks with remarkable dexterity to position and agitate a well-placed stick to scratch a hard-to-reach spot on their challenging bulk or to shoo an irritating fly.[19]

Cognitive acrobatics, memory feats, and intricate social interactions all point to a degree of individuality that contradicts past claims that elephants, and animals in general, are little more than wind-up bundles of instincts. When you see a stick grasped by a coiled trunk, navigated

through space, and delicately directed to a specific area amid the gray sea of the vast pachyderm frame, then lazily pulled back and forth to relieve an itch, it's hard not to recognize ourselves and recall that same pleasure.

All this accounts for why—despite how different we may appear—when we look at an elephant, we recognize so much of ourselves. Neuroscientists have found another explanation for why we can feel and anticipate what an elephant is experiencing. The answer is mirror neurons, tiny brain cells wired for empathy that fire up at the sight of an elephant scratching, or that make us salivate while watching someone eating an ice cream cone on a hot summer day. The discovery of mirror neurons has articulated a much-needed bridge that can span the gap between cognition and biology by providing a neural mechanism for the psychological phenomenon of empathy.[20]

What is most intriguing here is not just the discovery of a cross-species physiological basis for emotional states such as empathy, but also the implications about who the self really might be, and where the boundaries between you and me and between Happy and the zoo visitor start and end. The sensate biological connection between two individuals that is activated by mirror neurons suggests that perhaps our sense of self, that ineluctable essence, derives from something beyond the individual, a realm where "I" is more than one. This brings us back to William James's checklist and his last two definitions of self.

The third feature James associated with a sense of self was the capacity to feel and show emotions, particularly when there is a clear demarcation between the sensor and the sensed—that is, between one person and another person. Studies on elephants in the African and Asian wilds and those in captivity indicate that in addition to complex cognitive skills, elephants feel and express a range of emotions. Elephants are well known for showing wrenching grief when a loved one dies or somehow departs forever, as was probably the case with Happy when she was captured and taken away from her mother. Perhaps more than any other quality, elephants show an understanding of death with their displays of grief and repeated visits to the bones of relatives.[21]

George Adamson, who with his wife, Joy, inspired the film *Born Free,* is one of many who have seen elephants burying their victims. In his memoirs, Adamson recounts how he was led to an area where the earth was furrowed and was littered with bits of rags and bones. This marked where an elephant had killed and then buried a man. Even after the burial, the elephant would return and visit the grave each afternoon to plow up the ground around the grave with his tusks.

On another occasion, Gobus, a Turkana game scout for Adamson, related that his half-blind mother, after finding herself lost in the woods, had decided to settle down for the night under a big tree rather than risk an encounter with a nocturnal predator. Suddenly in the night, she awoke to find that she was surrounded by elephants. One by one, each proceeded to drape her with branches and leaves until she was completely covered. When her son discovered her in the morning, they both realized that the elephants had presumed her dead and were burying her as they do with humans whom they have killed. Others have also observed elephants covering their own dead with branches and dirt.[22]

Like us, elephants perceive the emotions and anticipation of others and extend their empathy to companions who are injured or ailing. Grieving and mourning rituals make up an integral part of elephant culture. A mother may grieve over her dead child for days after his death, alternately trying to revive the baby and caressing and touching the corpse. Cynthia Moss and Joyce Poole have observed a mother risking her own life for a week to grieve over her stillborn child.

The death of a matriarch is particularly difficult for the community. Senior females form the pillars of elephant communities, and when they die, the entire herd is affected. A matriarch's death means not only the loss of a loved one but also a loss of cultural and environmental knowledge. An elephant matriarch's uncanny memory and her ability to process complex social and ecological information to successfully guide her family to food and safety can be traced back to her neuroanatomy: magnetic resonance imaging reveals that an elephant possesses an extremely large and convoluted hippocampus, the brain structure most responsible for mediating long-term social memory.[23] But any death in the family is

significant. Emily, in the "EB" group studied for many years by Cynthia Moss, died in 1989, was "the greatest trauma in this family's life" since 1973, when Moss had first met them.[24] The deaths of calves are distressing for their mothers, but the death of an adult female disrupts the whole family.[25]

After Emily's death, the group performed mourning rituals. Later, when time had dissolved the last vestiges of her massive flesh, her whitened bones lay spare, but not forgotten. For years the aftershocks of Emily's passing could be observed as the group visited her bones.

> The three animals stopped and cautiously reached their trunks out. They stepped closer and very gently began to touch the remains with the tips of their trunks, first light taps, smelling and feeling, then strokes around and along the larger bones. Eudora and Elspeth, Emily's daughter and granddaughter, pushed through and began to examine the bones, and soon after Echo and her two daughters arrived. All the elephants were now quiet and there was a palpable tension among them. Eudora concentrated on Emily's skull, caressing the smooth cranium and slipping her trunk into the hollows in the skull. Echo was feeling the lower jaw, running her trunk along the teeth—the area used in greeting when elephants place their trunks in each other's mouth. The younger animals were picking up the smaller bones and placing them in their mouths, before dropping them again. . . . Several years before, I had also seen the EBs start to bury the carcass of a young female from another family who had died of natural causes.[26]

Genetic studies now confirm ethological observations: researchers have found that it may take up to twenty years for a family to rebuild after suffering the devastation of loss and fragmentation from poaching and other forms of mass killings.[27]

The same emotions follow elephants into captivity. Pat Derby is the director and founder of the California sanctuary Performing Animal Welfare Society (PAWS)established in 1984, where rescued African and

Asian elephants and other "refugee" animals from zoos, circuses, and the entertainment industry are given a home. She recounts another example of deep bonds, when an elephant named Annie's companion of forty years, Tami, died:

> I have never seen such grief. We thought we were going to lose Annie. She just became passive, and when she looked up, it was as if she looked right through us. The only thing that seemed to give her pleasure was to float in the Jacuzzi that we had built for Tami. After Tami died, Annie refused to lie down to sleep at night. It was only in the Jacuzzi that she would be able to get some rest. She would walk in and then float and nod off and relax. For seven months she lived that way. Then suddenly, one day, it was like she had turned off a faucet inside. We were leading her up the hill when she suddenly stopped halfway and looked at us with the funniest expression. Then she turned around and went down to the lake to be with Minnie and Rebecca. She was ready to be with others again. It's as if she had to have this period of mourning for Tami, and then that was it. You can tell she hasn't forgotten Tami. Even though she gets along with the other elephants, she's still off into herself. You know her relationship with Tami was so special that there is no one else who can take her place. She'll be devoted to Tami's memory the rest of her life.[28]

Outside the confines of captivity, bonds are just as strong, and an entire group may pace its progress to match what an ailing member can manage. In Kenya, when a young African elephant, Ely, was born crippled by poorly articulated carpal joints, his mother and older sister stayed with him, assisting, and prodding him along. Martyn Colbeck recalls that "the threesome headed toward us through the picturesque palms of Ol Tukai Orok. As the two older elephants walked, they continually turned to look back at the calf that was shuffling along behind. Every few feet they stopped and waited for him to catch up before moving on. Their

progress was very slow, but they showed no impatience. It was a poignant sight and highlighted the incredibly caring nature of these animals."[29] Eventually Ely was able to walk unassisted.

Elephant emotions and empathy may be novel to Western science and cultures, but in places where people have lived side by side with elephants for millennia, such skepticism is trumped by experience. When an elephant was killed recently in Jharkhand, India, there was concern, and one official observed, "When an elephant dies, others keep coming to that spot for three to four days. We have deployed our team with all necessary resources as a precautionary measure."[30] The Indian official's worry was rightly placed. With humans after a violent death, emotions may run high and relations between groups can be tense. Similarly, at an elephant wake, as with humans memorials, family members will be distraught over the passing of their comrade, and that any misunderstanding could spark further violence.

This brings us to William James's fourth and final quality defining a sense of self: possession of one's own sequence of experiences, a history and sense of continuity. John Locke asserted that continuity of self—meaning a feeling that persists over time of being who you are—derives from a concatenation of memories. And as we have seen, memory is a marvelous adaptation to a social and biological environment that requires intimate knowledge about one's friends and enemies.

In zoos and circuses, elephants are known for what has been called their "retaliatory cunning," a calculated, directed attack on someone who has harmed them in the past. In more formal psychological terminology, retaliatory cunning relates to "autobiographical memory," long-term recollections of significant personal experiences. It is self-knowledge that involves engagement with the external world, memory of self and of experiences with people and places, and the ability to wait, plan, and seize a propitious fleeting circumstance to redress past mistreatment or preempt it in the future.

After experiencing injury in the course of training for circus performance and other types of entertainment, elephants sometimes seem tc use patience as part of a strategy to extract vengeance or to prevent fur·

ther injury by the same individual. Numerous trainers, veterinarians, and keepers have given accounts of elephants who remembered the agents of their suffering and waited for years to exploit an opportune moment. The results are sometimes fatal for both humans and elephants.

The veteran "elephant tramp" George "Slim" Lewis recounts how a male circus elephant, Black Diamond, struck out at a former keeper who had been particularly abusive in the past but whom the elephant had not seen for many years. In the process, Black Diamond knocked down and fatally gored a tourist standing nearby who was trying to pet the "rogue" elephant. In almost all such incidents, the attacking elephant is summarily disposed of.

Hours after the incident, three of Black Diamond's legs were chained to three other elephants, and he was led through streets lined by thousands of shouting, vengeful Texan spectators. Upon arriving at the circus grounds, the condemned bull was tied to his block and his leg chains were transferred to trees on either side. He was then given several bags of peanuts, some of which were poisoned. According to Lewis, Black Diamond tentatively examined them and slowly and carefully chose only the peanuts that were not poisoned. After this unsuccessful execution, he was offered poisoned oranges, which he refused. Finally, more than 170 rounds were shot into him, and Black Diamond "died without making a sound or fighting his chains." His bullet-ridden head was mounted with artificial tusks and displayed in Houston.[31]

In light of what we are beginning to discover about how closely elephants resemble us emotionally and otherwise, Black Diamond's memory-inspired aggression should not be confused with the rampages of young South African elephant bulls who killed more than one hundred rhinoceroses and who, as we shall see, play such a pivotal role in our exploration of the elephant mind and psyche. These individuals were eventually diagnosed with posttraumatic stress disorder (PTSD), and while Black Diamond might also have been a prime candidate for a similar diagnosis given his experience of violence in the circus, their histories differ.[32] An attorney who attributes his client's angry outburst to war experiences makes a different case than she would in defending Romeo for

slaying Juliet's cousin Tybalt in a grieving rage after Tybalt has killed his beloved friend Mercutio. To understand elephant experience, it is necessary to continue unraveling elephant psychological mysteries—to understand individual differences in elephants in the same way we try with humans. Something that is now scientifically possible.

C. G. Jung once wrote that humans remain a mystery to themselves because they are unique, lacking someone or something against which comparisons can be made. This argument can no longer be made. The practice of using animals as human surrogates for probing into the human mind and human behavior implicitly acknowledges cross-species similarities, but somehow, though sharing the attributes that privilege humans, animals have been denied psyche and rights.

Today, the seemingly impermeable species barrier has eroded, similarities outweigh differences, and a theoretical and perceptual fusion has taken place. Human psychology and animal behavior are brought together in the creation of a trans-species science, a new scientific paradigm, the beginnings of which were described by Charles Darwin more than 150 years ago. Investigations into the natural world no longer revolve around the question "How are humans different?" Instead, they cause us to wonder in awe at our relatedness. How we as humans think, feel, and behave is reflected not just in our mirrors, but in the faces of elephants like Happy.