
In Memorium

Jaak Panksepp

JAAK PANKSEPP, a neuroscientist and psychobiologist best known for his work on animal emotions and a charter member of the editorial advisory board of the *American Journal of Play*, died on April 18, 2017. Panksepp was not only an eminent researcher but also a pioneer in the evolutionary neurobiology of human nature. He founded the new field he called affective neuroscience and investigated the primary processes of brain and mind that enable and drive emotion and in which he located the deep roots of play. His stunningly original and amazingly wide-reaching discoveries in both the circuitry and chemistry of the human brain and its social mind hold much promise for future research. Some play theorists, like his friend and colleague Stuart Brown, have compared Panksepp's investigations into the neural foundations of social joy to the paradigm-shifting discoveries of more famous twentieth-century scientists such as Albert Einstein and Richard Feynman. As proof, they cite Panksepp's half-century of discoveries and the books and scientific articles that, according to Brown, culminated in "a grand unifying, neuroevolutionary theory about the brain substrates of the ancient mind that all mammals still share."

As an undergraduate, Panksepp briefly considered a career in electrical engineering before turning instead to psychology, which led him to a 1969 University of Massachusetts PhD dissertation examining how electrical stimulation of brain regions affects aggressive behavior. Panksepp wrote more than three hundred articles in scientific books and journals, along with the pathbreaking 1998 *Affective Neuroscience*, in which he detailed the neurology, neuroanatomy, neurochemistry, and functions of the emotional brain. For Panksepp and his students, studying animal play offered a window into what they and other thinkers came to call the BrainMind or MindBrain. He discovered that rats chirp ("laugh") during their rough-and-tumble bouts and that play deprivation is a potent moti-

vator akin to thirst or hunger. Optimal brain development depends on healthy play experiences in early life, Panksepp contended, and he observed that over the long evolutionary haul, play has promoted social bonds and nourished social learning. In his lengthy, lustrous career, Panksepp was the Baily Endowed Chair of Animal Well-Being Science in the College of Veterinary Medicine at Washington State University; a Distinguished Research Professor of Psychobiology at Bowling Green State University; and head of Affective Neuroscience Research, Falk Center for Molecular Therapeutics at Northwestern University.

Panksepp first appeared in these pages in a long interview conducted for a special issue of the *American Journal of Play* (volume 2, number 3) that explored pioneering discoveries about the MindBrain and play. In this searching conversation, he reached back into the history of our species to find that over the long evolutionary haul, play has promoted social bonds and nourished social learning. Looking back more specifically on individual life histories, he observed that optimal brain development depends on healthy play experiences in early life. And as the interview turned autobiographical, he discussed his own remarkable early experiences to highlight an important role for play.

Born in Estonia in 1943, Panksepp was not yet a year old when, in 1944, his family fled west to escape the invading Russian Red Army. After the Allied victory, the family lived in a series of displaced persons' camps in Germany until 1949. He remembered the internment not for the crowding and deprivation that so affected adults but as a deceptively carefree interval sustained by continual rough-and-tumble play with age-appropriate playmates. With adults otherwise preoccupied with the exigencies of camp life, the kids who abounded there, left largely on their own, ranged and rummaged and played freely. He recalled skinning his head while scrambling over ruined tanks and wrecked army trucks, and he remembered joining the mock battles where kids substituted snowballs with clods of earth that had been churned up by explosions. As an adult scientist, Panksepp open-mindedly regarded these episodes of free play as a "fun way to test the social realities into which one was born." And he noted how this testing highlighted the evolutionary function of play—finding out "what is fun and fair or not fair on the field of life." The twin experiences of hardship and liberty that defined his early life granted Panksepp a lifelong habit of flexibility that extended to his scholarship and research.

This constitutional open-mindedness led, accidentally, to one of his most important, simple, and ingenious discoveries—that rats, like us, laugh when tickled, even though we humans and those rodents last shared a common ances-

tor seventy-five million years ago. And he made this discovery even though rats chirp in the ultrasonic range, well above and beyond the range of human hearing. To overcome this sonic obstacle, Panksepp and Jeff Burgdorf, his enterprising graduate student, recorded the lab animals with detectors that could listen to the squeaks of echolocating bats. They discovered that the tickle-induced giggles of rats proved to sound the very same as the giggles they giggled when they wrestled—their favorite kind of rough-and-tumble play.

Some very special—and fortunate—circumstances had to occur before Panksepp could discover that rats and humans shared a seventy-five-million-year-old impulse to titter while at play. In the twentieth century, most experimental psychologists followed the radically narrow research agenda of John B. Watson, B. F. Skinner, and other behaviorists, who were interested in stimulus and response and prediction and control of learned behavior. (Famously, they ran rats through mazes and timed their learning curves.) Jaak Panksepp was more interested in the natural behaviors and social transactions that arose in animals as a result of the original equipment evolution had provided them—the instinctual and apparently emotional prompts to action that helped them survive generation after generation.

The behaviorists dominating the faculties of the better-known university psychology departments as a rule disallowed research into “experienced emotionality” and discounted “experience” in general. But at the freewheeling Bowling Green State University, where Panksepp held a professorship, no such behaviorist hegemony prevailed. Escaping what Panksepp called the “enforced silence” of behaviorist research left him free to investigate motivations and mental processes in animals with complex brains. He turned his investigation to the fundamental primary-process mechanisms (basic socioemotional talents and built-in capacities and ancient feeling states) that he termed in capital letters, SEEKING, RAGE, FEAR, LUST, CARE, PANIC/GRIEF—and the deep positive emotion and ancient adaptive behavior, PLAY.

Panksepp believed that PLAY was the most complex of the positive emotions and the most recent of them as well—though this proximity was measured in scores of millions of years over the sweep of evolutionary history. Our loyalty to the human prospect counsels us to think that play is primarily about thinking—a conscious cognitive process. Thinking seems uniquely human, and after all, we need look no further than the elaborate rules and laws that referee our competitive games for proof. They are so cognitively complex, in fact, that referees sometimes must adjudicate them with the mechanical aid of instant

replay. But Panksepp's investigations of the behavior of decorticated rats revealed that play impulses emerge primarily not from the neocortex, the latest addition to our thinking human brain; instead, wild, joyful, and playful impulses actually originate from deep within the ancient brainstem.

This primordial impulse to play thrived and deepened with social evolution. Panksepp discovered, for example, how rats isolated for a time played with a special verve when rehoused in their rodent society. And he found that rats deprived of nurture and playful experience as infants grow up to become particularly unsuccessful adults unable to recognize threat (learned from play signaling) and awkward at or even incapable of mating. Both emotional deficits threaten their survival as well and, consequently, their ability to pass on their genes in the natural world.

We humans prize our separate status, our cognitive sophistication, and our ability to think; we invoke the self-congratulatory moniker *Homo sapiens*—wise men—and term modern humans by the even more complementary *Homo sapiens sapiens* to separate ourselves from other mammals who have not constructed skyscrapers, invented government, codified legal systems, or written best-selling novels. But in-group sentimentality turns arrogant when we discount our mammalian inheritance. Nearsightedness to our remote evolutionary past adds up to danger in the pressing present, Panksepp insisted. We put ourselves in social and emotional peril when we ignore the ancient impulse to play. Thus Panksepp, ever the visionary and ever the practical thinker, imagined playgrounds as play sanctuaries, antidotes against current trends toward playlessness. At length, Jaak Panksepp made positive states like playfulness, laughter, love, and joy the legitimate subjects of neuroscience research.

—SCOTT G. EBERLE