The Father of Ethology and the Foster Mother of Ducks

Konrad Lorenz as Expert on Motherhood

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ABSTRACT

Konrad Lorenz's popularity in the United States has to be understood in the context of social concern about the mother-infant dyad after World War II. Child analysts David Levy, René Spitz, Margarethe Ribble, Therese Benedek, and John Bowlby argued that many psychopathologies were caused by a disruption in the mother-infant bond. Lorenz extended his work on imprinting to humans and argued that maternal care was also instinctual. The conjunction of psychoanalysis and ethology helped shore up the view that the mother-child dyad rests on an instinctual basis and is the cradle of personality formation. Amidst the Cold War emphasis on rebuilding an emotionally sound society, these views received widespread attention. Thus Lorenz built on the social relevance of psychoanalysis, while analysts gained legitimacy by drawing on the scientific authority of biology. Lorenz's work was central in a rising discourse that blamed the mother for emotional degeneration and helped him recast his eugenic fears in a socially acceptable way.

THE IMAGE SHOWN IN FIGURE 1 is the most familiar depiction of Konrad Lorenz (1903–1989), the Austrian researcher referred to as "the father of ethology and the foster-mother of ducks."[1] Lorenz became world famous for his studies of imprinting, the process whereby some species of birds follow and become attached to the first moving object they encounter after hatching. This object is usually the mother, but it could be a

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[1] This is how Lorenz described himself to René Spitz and how Spitz introduced him at a conference: "Introduction," p. 1, Box M2116, Folder 7: Lorenz 1970, René Spitz Papers, Archives of the History of American Psychology, Akron, Ohio.

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Figure 1. *Lorenz followed by geese that have imprinted on him. With permission from the Konrad Lorentz Archive, Altenberg, Austria.*

toy, a human, or an animal of another species. In these latter cases, however, the bird will not develop the standard social and sexual responses of its species. In adulthood, the ducks that imprinted on Lorenz tried to copulate with him or another human being and had no sexual interest in their own species. Lorenz's work on imprinting was central in the development of an approach to studying animal behavior that he and his colleague Niko Tinbergen called ethology.

Historians have provided insightful accounts of the men who turned watching animals into a science and have illuminated the development and reception of their ideas. Richard Burkhardt, John Durant, Theodora Kalikow, Robert Richards, and others have examined central conceptual and institutional developments, and recent biographies of Tinbergen and Lorenz give us a fascinating picture of their lives and work.[2] As some of these studies have shown, the reception of ethology was not a monolithic affair and numerous factors

[2] Richard W. Burkhardt, *Patterns of Behavior: Konrad Lorenz, Niko Tinbergen, and the Founding of Ethology* (Chicago: Univ. Chicago Press, 2005); Klaus Taschwer and Benedikt Föger, *Konrad Lorenz: Biographie* (Vienna: Zsolnay, 2003); Hans Kruuk, *Niko's Nature: A Life of Niko Tinbergen and His Science of Animal Behavior* (Oxford: Oxford Univ. Press, 2003); John R. Durant, "Innate Character in Animals and Man: A Perspective on the Origins of Ethology," in *Biology, Medicine, and Society*, ed. Charles Webster (Cambridge: Cambridge Univ. Press, 1981), pp. 157–192; Durant, "The Making of Ethology: The Association for the Study of Animal Behaviour, 1936–1986," *Animal Behaviour*, 1986, *34*:1601–1616; Theodora J. Kalikow, "History of Konrad Lorenz's Ethological Theory, 1927–1939: The Role of Meta-theory, Theory, Anomaly, and New Discoveries in a Scientific 'Evolution,'" *Studies in History and Philosophy of Science*, 1975, *6*:331–341; Robert J. Richards, "The Innate and the Learned: The Evolution of Konrad Lorenz's Theory of Instinct," *Philosophy of the Social Sciences*, 1974, *4*:111–133; Ingo Brigandt, "The Instinct Concept of the Early Konrad Lorenz," *Journal of the History of Biology*, 2005, *38*:571–608; Paul E. Griffiths, "Instinct in the '50s: The British Reception of Konrad Lorenz's Theory of Instinctive Behavior," *Biology and Philosophy*, 2004, *19*:609–631; and Nadine Weidman, "Gender and Aggression in 1960s Pop Ethology: Lorenz and Storr at the Animal–Human Boundary," paper presented at the annual meeting of the History of Science Society, Pittsburgh, 2008.

contributed to Lorenz's popularity; these included the breadth of his work and its social implications, as well as his charisma and ability to adapt his ideas for different audiences. Lorenz became known to the general public first through his vivid anecdotes of his life with animals and later through his controversial book on aggression. Biologists, ornithologists, and comparative psychologists all welcomed with excitement the study of behavior from a comparative and evolutionary perspective. But some of them criticized Lorenz's larger claims about the nature and role of instincts in animal and human behavior. In each of those areas Lorenz's ideas met a different fate, influenced by researchers' personalities, their practical, theoretical, and epistemological traditions, and their varying opinions on the animal/human boundary.

This essay aims to illuminate Lorenz's rapid rise to fame in the United States after World War II by focusing on the little-explored relation between ethology and psychoanalysis. As we will see, moving beyond disciplinary boundaries allows us to perceive the full significance of ideas and processes that are not fully appreciated within the limits of disciplinary stories. Specifically, I examine child analysts' interest in Lorenz's work and his reaction to their support. Lorenz's success, I argue here, was in no small measure due to his alliances with child analysts who emphasized the significance of the mother-child dyad. Lorenz's model of social behavior rooted in instinctual needs had much in common with the psychoanalytic vision of the human mind that was already receiving widespread attention in postwar America. Thus, when ethology came to the United States after the war, it found a cultural milieu informed by psychoanalytic work that supported a similar vision of development as the unfolding of instinctual drives. More specifically, Lorenz's work on imprinting as a process whose derailment distorted the social and sexual responses of an animal resonated with psychoanalytic views on the central role of the mother in her child's emotional development. For Lorenz, imprinting was a first relationship that determined the bird's future. A breakdown in the relationship with its mother led to a disruption in the development of a bird's normal social behavior. Likewise, child analysts like David Levy, René Spitz, Margarethe Ribble, Therese Benedek, and John Bowlby claimed that a disruption in the child's attachment to its mother had grave consequences for his or her adult personality. In appealing to the work of Lorenz, psychoanalysts gained legitimacy by drawing on the scientific authority of biology. In appealing to the child analysts' work, Lorenz built on the social capital and cultural relevance of psychoanalysis. Understanding the interrelations between child analysts and Lorenz is central to comprehending his success in the United States and explaining the perseverance of the idea that maternal care is essential for a child's normal development.

This essay is divided into six sections plus a conclusion. In the first, I show that explaining human behavior was an integral part of Lorenz's ethological program and examine his views on the infant-mother relation. In Section II, in order to understand the U.S. postwar intellectual and cultural context in which Lorenz's work was discussed, I explore the work of child analysts on the mother-infant dyad. Then, in Section III, I examine how Lorenz extended his views about imprinting in birds to human behavior. Many child analysts adopted Lorenz's views on imprinting and instincts and adapted them to their own research, as shown in Section IV. Section V examines Lorenz's turn to psychoanalysis to support his views on human behavior. In Section VI, I show how Lorenz reformulated some of his early eugenic concerns in terms of the disastrous consequences of disrupting the mother-child dyad.

I. THE HUMAN ANIMAL

Lorenz's views on human behavior were part and parcel of his program to prove the instinctual nature of social behavior in all animals. Here I show that in his view maternal care was a matter of instincts, as was the behavior of an infant toward its mother.

Lorenz's thinking about animal behavior and his views about the human psyche were deeply connected from early on. His training encompassed three major areas: comparative anatomy, bird behavior, and human psychology. Following the wishes and the professional path of his father, Lorenz first attended medical school. He focused on comparative anatomy as a student of Ferdinand Hochstetter at the University of Vienna; he then obtained a Ph.D. in zoology. In this area, his main mentor was the assistant director of the Berlin zoo, the ornithologist Oskar Heinroth. In human psychology, Lorenz was a student of Karl Bühler, with whom he did one of his auxiliary fields for his Ph.D. exams. Lorenz considered himself well enough versed in psychology that he expected to take over his mentor's professorship in human psychology when the Nazis dismissed Bühler from the university.[3] During the war, Lorenz even worked as a military psychologist.

In his publications, Lorenz quickly developed a unitary framework for understanding all animal social behavior. Between 1927 and 1935, most of his publications presented detailed observations of the behavior of jackdaws and other birds that he had raised and followed around the grounds of his parents' mansion and the nearby countryside in the outskirts of Vienna. In his 1935 paper "Companions as Factors in the Bird's Environment: The Conspecific as the Eliciting Factor for Social Behaviour Patterns" he put forward the basic framework that he would defend for the rest of his career. In this very long essay, covering almost thirty different types of birds, Lorenz described the social behavior of birds as a set of instinctive responses that had been built by natural selection because of their survival value.[4]

Lorenz posited the existence of certain innate schemas or releasing mechanisms that, when activated by specific releasers, lead the bird to perform specific instinctive behavior patterns. He elaborated on the role of various companions as releasers of a bird's social behavior: the parental companion, the infant companion, the sexual companion, the social companion, and the sibling companion. The relation of the bird with each of these companions forms a functional system. For each of these relationships there is an innate schema or releasing mechanism, a companion whose conduct or image functions as releaser, and an instinctive pattern of behavior that is "released" in an automatic and uniform manner.

Instincts, in Lorenz's view, are fixed-action patterns that are innate. In a given behavior

[3] Burkhardt, *Patterns of Behavior*, pp. 239–240. As Burkhardt reveals, Lorenz wrote to the ornithologist Erwin Stresemann with the news that his former mentor in psychology had been jailed, possibly for having a Jewish wife. Lorenz hoped he could take over Bühler's professorship at the University of Vienna and codirect his research institute, but this plan did not materialize.

[4] For the early observations of birds see Konrad Lorenz, "Beobachtung an Dohlen," *Journal of Ornithology*, 1927, *75*:511–519; Lorenz, "Beiträge zur Ethologie sozialer Corviden," *ibid.*, 1931, *79*:67–127; and Lorenz, "Beobachtetes über das Fliegen der Vögel und über die Beziehungen der Flügel- und Steuerform zur Art des Fluges," *ibid.*, 1932, *81*:107–236. The 1935 paper was initially published in German: Lorenz, "Der Kumpan in der Umwelt des Vogels," *ibid.*, 1935, *83*:137–215. There were two partial translations into English: Lorenz, "The Companion in the Bird's World," *Auk*, 1937, *54*:245–273; and Lorenz, "Companionship in Bird Life," in *Instinctive Behavior*, ed. Claire H. Schiller (New York: International Univ. Press, 1957), pp. 83–128. Finally, for a complete translation see Lorenz, "Companions as Factors in the Bird's Environment: The Conspecific as the Eliciting Factor for Social Behaviour Patterns," in *Studies in Animal and Human Behavior*, Vol. 1 (Cambridge, Mass.: Harvard Univ. Press, 1970), pp. 101–258; this version will be cited throughout this essay.

there may be a conglomerate or intercalation of the innate and the learned, but the innate and learned components can be separated. A researcher can tell which behavioral patterns are innate because they have certain characteristics: they are species-specific, stereotyped, "machine-like" behaviors that are also "immutable in the face of experience." Lorenz presented a litmus test for determining whether a behavior is innate: a behavior is innate if an individual performs it without previous training.[5]

At this point Lorenz thought of instincts as reflexes, or chains of reflexes, set off by external stimuli, but in later writings he presented them as internal motivational mechanisms.[6] His motivational model was analogous to a hydraulic reservoir. Energy for a specific motor pattern or instinct accumulates and is unleashed by an internal releasing mechanism and by social releasers that "open the doors" to the appetitive actions of the organism. Lorenz held that every fixed-action pattern has its own, independent drive or energy system. The "action-specific energy" builds up until it is released. However, sometimes it can also explode "in vacuo." On some occasions, "displacement activities" substitute for the normal, natural, or instinctive actions of the organism.[7]

Although the social patterns of behavior are innate, the object that will release those patterns is not; it is acquired through a process Lorenz called "imprinting." In "Companions as Factors in the Bird's Environment" Lorenz articulated his views about this phenomenon, which Heinroth and others had already observed in some types of birds. Through imprinting, the bird attaches itself to the first object it sees upon hatching. As Lorenz put it, the bird has "an innate drive to fill this gap in the instinctive framework." He argued that imprinting takes place during an early critical period. Afterward, the brain, like hardened wax, cannot be molded. This process has irreversible consequences for the animal's behavioral development. If the infant bird is not imprinted on a member of its own species, it will not develop the standard social and sexual responses toward the members of its species.[8]

It is important to emphasize that, in normal circumstances, the mother is the one who provides the image of the right species. So the mother is the right object to fill the "gap" in the instinctual framework of the bird, the one who in a sense releases the infant bird's innate social responses to other companions. In the natural order of things, the mother is imprinted on her own infant. This relationship then allows the bird to develop the standard social responses of its species.

The mother's behavior toward her infants is also innate. Lorenz believed that one could not talk about birds' parental instinct as a general category because there are many small components of parental behavior, such as nest-building and feeding and protecting the infant. He considered these behaviors—and specifically those involved in maternal care—to be innate. In discussing the innate schema of the infant companion, Lorenz noted

[5] Lorenz, "Companions as Factors in the Bird's Environment," p. 122. See also Konrad Lorenz, "Betrachtungen über das Erkennen der arteigenen Triebhandlungen der Vögel," *J. Ornithol.*, 1932, *80*:50–98, trans. into English as Lorenz, "A Consideration of Methods of Identification of Species-Specific Instinctive Behaviour Patterns in Birds," in *Studies in Animal and Human Behavior*, Vol. 1, pp. 57–100 (see esp. p. 65); and Lorenz, "Über die Bildung des Instinktbegriffes," *Naturwissenschaften*, 1937, *25*:289–300, trans. into English as Lorenz, "The Nature of Instinct," in *Instinctive Behavior*, ed. Schiller, pp. 129–175 (see esp. p. 137). For more on instincts see Lorenz, "Über den Begriff der Instinkthandlung," *Folia Biotheoretica*, 1937, *B2*:17–50; Brigandt, "Instinct Concept of the Early Konrad Lorenz" (cit. n. 2); and Richards, "The Innate and the Learned" (cit. n. 2).

[6] Lorenz, "Companions as Factors in the Bird's Environment" (cit. n. 4). See W. Craig, "Appetites and Aversions as Constituents of Instincts," *Biological Bulletin*, 1918, *34*:91–107.

[7] Lorenz, "Nature of Instinct" (cit. n. 5), pp. 141–143.

[8] Lorenz, "Companions as Factors in the Bird's Environment" (cit. n. 4), pp. 126–128, on p. 126.

that in most cases parents recognize their progeny instinctively. Furthermore, the characteristics that release parental conduct cannot be acquired through earlier imprinting, since "the adult bird's own offspring are of course the first freshly-hatched conspecifics which it sees, and yet it must react to this first encounter with the entire repertoire of parental behaviour operating to preserve the species."[9] Invoking his major test for innateness, Lorenz noted that the fact that the mother bird performs the maternal behavior toward her first infant, without previous training, proves its instinctual nature.

In addition, Lorenz claimed that maternal behavior is automatic and independent of the offspring's behavior; this too confirmed its instinctive nature. For example, he reported that a Cairina mother would "rescue" a mallard duckling from the experimenter's hands, even though minutes later she would bite and kill it when it tried to mix with her own chicks. The "automatic nature of these parental care responses" was proof that "the unitary treatment of the offspring is thus determined within the instinctive framework of the adult bird and not in the role that the infant plays in its environment."[10] That is, the actions involved in caring for the offspring are already predetermined in the instinctual framework of the parents.

In sum, Lorenz postulated the existence of an innate mechanism in some species of birds that, in normal circumstances, leads an infant to follow its mother and an innate mechanism that leads a mother to look after her infant. In the case of maternal care, the mother's actions are predetermined within her instinctive framework. And once the mother becomes imprinted on the baby bird, the baby's actions toward her are also released instinctively. When Lorenz talked about innate behavior and the releasers of innate behavior, he often employed the metaphor of a lock and key. For any particular lock, "the form of the key-bit is predetermined."[11] In this case, the behavior within the mother-infant system is set like a lock and a key. The preservation of the mother-infant behavioral system, understood as an interlocking system of instincts, is essential for infant development. Its breakdown entails terrible consequences for the social life of the adult bird.

Could these conclusions be generalized to other species and, specifically, to humans? "Companions as Factors in the Bird's Environment" dealt only with birds, but here, for the first time, Lorenz made explicit his position on human behavior: "even in the highest animals, social behavior in particular is largely determined by instincts." He concluded this long monograph with a call to arms, urging researchers to "recognize that instinct, governed by its own laws and fundamentally differing from other types of behavior, is also to be found in human beings, and then go on to investigate this behaviour." In the following decade, Lorenz worried as much about human instincts as he did about animal behavior. He published articles on bird behavior, on the concept of instincts, and on the degeneration of instincts in domestic animals and in humans.[12]

His emphatic warnings about how civilization was leading to the degeneration of the human race notwithstanding, Lorenz had done no research on the behavior of humans. Nevertheless, eight years after his own call to investigate instincts in humans, he published another massive paper, "The Innate Forms of Possible Experience," in which he set out the basic points of his later writings in this area. Lorenz summarized his views on the major

[9] *Ibid.*, p. 168.
[10] *Ibid.*, p. 185.
[11] *Ibid.*, p. 244.
[12] *Ibid.*, p. 258. I discuss Lorenz's views on degeneration in Section VI.

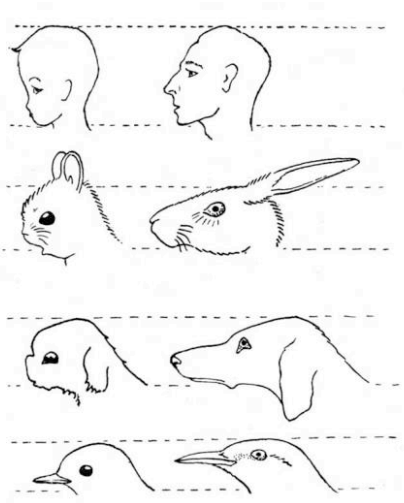

Figure 2. *Innate releasing mechanism for parental behavior. From Konrad Lorenz, "Die angeborenen Formen möglicher Erfahrung,"* Zeitschrift für Tierpsychologie, *1943,* 5*:235–409.*

areas of his thinking: animal behavior, evolutionary epistemology, the negative effect of civilization on human instincts, and the instinctual nature of human behavior. He postulated the existence of innate releasing schemas of different behavioral systems that shape human experiences, including those related to aesthetic and ethical appreciation. He highlighted the significance of the "inborn schemata of the infant [*Das Kindchenschema*]."[13]

According to Lorenz, the existence of the infant schema could be deduced from the identification of innate feelings associated with particular objects described as "*herzig*," a term that combines the connotations of "sweet," "neat," and "cute." An encounter with such an object releases the instinctual movement of "taking in the arms," as he had witnessed in a striking episode involving his daughter. When she was less than a year old, Lorenz's daughter saw a doll and, in mere seconds, ran to take it in her arms with a "motherly" expression. The automatic character of the response and the determination shown in a behavior performed for the first time seemed comparable to the instinctive movements of animals.[14]

Lorenz presented a diagram illustrating the features that serve as releasing characteristics of parental behavior in humans and other animals (see Figure 2). On the left-hand side are infants with the characteristics that release parental behavior—small heads, round features, big eyes ("*herzig*" features); they are contrasted with representations of adult organisms, on the right, that lack those characteristics.[15]

This essay, written while he was a military psychologist in occupied Poland, was Lorenz's last publication until 1949, when he was reunited with his fellow ethologists. After stints at the Russian front and in a military prison in Armenia, Lorenz returned safely

[13] Konrad Lorenz, "Die angeborenen Formen möglicher Erfahrung," *Zeitschrift für Tierpsychologie*, 1943, *5*:235–409 (here and throughout this essay, translations into English are mine unless otherwise indicated).
[14] *Ibid.*, p. 274.
[15] *Ibid.*, p. 276.

to Austria, ready to pick up where he had left off. He published a few short pieces for the popular press and a book for the general public, about his experiences raising and living with animals, that made him a household name internationally. He also returned to his work on ethology. Lorenz and Niko Tinbergen reunited at the 1949 symposium of the Society for Experimental Biology held in Cambridge, England. As a citizen of an occupied country and a prisoner in a detention camp, Tinbergen had been deeply affected by the war—and by the fact that Lorenz had been supportive of the Nazis. Nevertheless, he decided to renew their friendship for the sake of the field they wanted to develop. Energized by this fresh opportunity to launch his program, Lorenz presented a manifesto for the science of ethology. Drawing on the conceptual apparatus he had developed in the 1930s, he again set out a unitary framework for the study of both animal and human behavior. But he also developed another argument for the existence of human instincts.

Lorenz now claimed that the existence of human instincts was proved by the existence of human emotions. Here he was following scholars as diverse as Charles Darwin, William James, William McDougall, and John Watson, who had maintained that the presence of an emotion is always correlated with an instinct. Lorenz cited McDougall, agreeing with his view that "man has just as many instincts as he has qualitatively distinguishable emotions." He then used this correlation as a tool to infer instincts from emotions. Thus, he added, one could "suspect the existence of an innate releasing mechanism, wherever we can introspectively ascertain a specific quality of sensual pleasure."[16]

Following this line of reasoning, Lorenz argued that parental behavior in humans was innate. Incorporating the material used in his earlier writings, he contended that this was "proven" by the existence of the emotions associated with looking at and interacting with babies. In Lorenz's words:

> It is a distinct and indubitably sensuous pleasure to fondle a nice plump, appetizing human baby. . . . In this case, the existence of a true innate releasing mechanism in man has been clearly proven. . . . Also, the objective and subjective reactions activated by the mechanism are clearly distinguishable. A normal man—let alone a woman—will find it exceedingly difficult to leave to its fate even a puppy, after he or she has enjoyed fondling and petting it. A very distinct "mood," a readiness to take care of the object in a specific manner, is brought about with the predictability of an unconditioned response.[17]

As with other instincts, the emotional quality, the fixity of the response, the universality of the behavior, and its machine-like character proved the existence of the instinctual basis of parental, and especially maternal, behavior. This correlation between emotions and instincts explains why we often find Lorenz, as well as other authors, using the terms "maternal care" and "maternal love" interchangeably and assuming that if the first is instinctual, so is the second.

The study of instinct in animals and humans was thus central to Lorenz's quest to create an independent science, focused on the biology of social behavior, that he and Tinbergen called ethology. In 1947 Tinbergen had delivered the lectures in the United States that

[16] Konrad Lorenz, "The Comparative Method in Studying Innate Behaviour Patterns," *Symposia of the Society for Experimental Biology*, 1950, *4*:221–268, on pp. 263, 265. See also William James, *Principles of Psychology* (1890; New York: Holt, 1900), p. 442; John B. Watson, *Psychology from the Standpoint of a Behaviorist* (Philadelphia: Lippincott, 1919), p. 231; and William McDougall, *An Introduction to Social Psychology* (1908; Boston: Luce, 1916), p. 29.

[17] Lorenz, "Comparative Method in Studying Innate Behaviour Patterns," p. 265.

became the basis for *The Study of Instinct* (1951), the foundational text of ethology.[18] Here Tinbergen had presented Lorenz's work at great length, including his views on human instincts. After their reunion in 1949, the two initiated a concerted effort to export ethology to the American scene. Child psychoanalysts proved particularly receptive to Lorenz's ideas.

To understand why researchers on child development were interested in what Lorenz had to say about ducks and their mothers, as well as to appreciate fully the impact of Lorenz's opinions, we need to examine views about the mother-child dyad in postwar America.

II. THE PSYCHOANALYTIC MOTHER-INFANT DYAD IN POSTWAR AMERICA

After the war, emotions took center stage in American society. This interest contributed to the rise of psychoanalysis, especially work focused on understanding the emotional lives of children and the factors affecting their personalities. Child analysts emphasized the role of the mother as the most important factor in creating an emotionally stable personality, and some of them also pointed to the biological nature of the mother-child dyad.

In the United States, World War II, concern about its impact on children, and the problems associated with constructing a postwar social order all encouraged a focus on the emotions. The onset of another worldwide conflict barely two decades after World War I led to an increased interest in understanding how humans develop their potential for love or hate, for cooperation or destructiveness. There was also a heightened sensitivity to the problems of children displaced, orphaned, or otherwise affected by the war. "What has war done to the children of the world, and what can we do about it?" Discussion groups in the United States would tackle this question, announced Frank Fremont-Smith, director of the Josiah Macy, Jr., Foundation, at the 1947 World Mental Health Congress.[19] Adults faced their own emotional problems in adjusting to a new postwar order. In addition to discussing the emotional sequels of combat, contemporary literature highlighted the emotional toll of readjustment to civil society for returning veterans. For women, the war precipitated displacements with profound emotional consequences. During the war women had entered the workforce in unprecedented numbers. Afterward, many of them moved with their families to the suburbs—also in unprecedented numbers. They were expected to leave their jobs and focus on being supportive wives and nurturing mothers.[20]

[18] Niko Tinbergen, *The Study of Instinct* (Oxford: Clarendon, 1951).

[19] Albert Deutsch, "World Mental Health Congress Tackle Causes of War and Peace," *New York Times*, 7 Nov. 1947. On the turn to psychology to address social issues and the cultural power of psychology in the postwar era see Ellen Herman, *The Romance of American Psychology: Political Culture in the Age of Experts* (Berkeley: Univ. California Press, 1995).

[20] For contemporary assessments of the difficulties in veterans' readjustment see George K. Pratt, *Soldier to Civilian: Problems of Readjustment* (New York: McGraw-Hill, 1944); and Therese Benedek, *Insight and Personality Adjustment: A Study of the Psychological Effects of War* (New York: Ronald, 1946). For historical analyses see Rebecca Jo Plant, "The Veteran, His Wife, and Their Mothers: Prescriptions for Psychological Rehabilitation after World War II," in *Tales of the Great American Victory: World War II in Politics and Poetics*, ed. Diederik Oostdijk and Markha G. Valenta (Amsterdam: Vrije Univ. Press, 2006), pp. 95–106; and Elaine Tyler May, *Homeward Bound: American Families in the Cold War Era* (New York: Basic, 1988). For treatments of the changing roles of women see Susan M. Hartmann, "Prescriptions for Penelope: Literature on Women's Obligations to Returning World War II Veterans," *Women's Studies*, 1978, *5*:223–239. See also Steven Mintz and Susan Kellogg, *Domestic Revolutions: A Social History of American Family Life* (New York: Free Press, 1988); and Nancy Cott, *Public Vows: A History of Marriage and the Nation* (Cambridge, Mass.: Harvard Univ. Press, 2000).

Social scientists attributed major troubles in society to underlying emotional problems like anxiety, insecurity, immaturity, and imbalance. Everything from failed marriages to the rise of delinquency to the problems encountered by individuals in adjusting to the new corporate world—even threats to the survival of democracy—seemed rooted in emotional problems. In this context, the question of how emotions develop and how one becomes an emotionally healthy individual came to the fore of scientific and public debate. Psychologists and psychiatrists emphasized the need to understand how individuals develop into emotionally stable people. The Harvard psychologist Gordon Allport, for example, called for more attention to "problems of human affection and the conditions for its development."[21]

Psychoanalysts provided an answer: the mother molds her children's emotional character and future adult personalities. According to Sigmund Freud, the relationship with the mother is "established unalterably for a whole lifetime as the first and strongest love-object and as the prototype of all later love-relations—for both sexes." Freud's own child, Anna, played a major role in turning the mother into the source of an individual's emotional personality. On the basis of her work with Dorothy Burlingham at the Hampstead war nurseries, Anna Freud argued that the child develops an attachment to the mother before the end of the first year. The relationship later expands to the father and other family members. In this way, the first relationship with the mother allows the child to develop the "ability to love."[22] The mother-child dyad was thus the cradle of the emotional self.

Among the most influential analysts working on the mother-child dyad in the United States were David M. Levy, chief of staff of the New York Institute for Child Guidance and a professor of psychiatry at Columbia University; Margarethe Ribble, a psychoanalyst and psychiatrist; Therese Benedek, an Eastern European who worked at the Chicago Institute for Psychoanalysis; and René Spitz, another European refugee with impressive psychoanalytic credentials. They all had medical degrees, used little theoretical and psychoanalytic jargon, and presented their views as based on observational and experimental research carried out in hospitals and nurseries. The impact of their studies, which appealed to standard epistemological values in science, transcended the psychoanalytic community and reached wider scientific and popular audiences.

All these analysts argued that maternal care and love are vital necessities for a child's psychic and even physical development. According to Levy, without mother love children grow up to seem normal in health and physical appearance, but inside they are emotional cripples. In her 1943 book *The Rights of Infants*, Ribble concurred that infants have an "innate need for love, which is a necessary stimulus for psychological development." This innate need is the root of other essential developmental processes as well: "It is the first relationship of life which activates the feelings of the baby and primes his dormant nervous system into full functional activity." Benedek argued that infants need mother love to develop the trust that lays the basis for their future sense of self. Focusing on the

[21] Gordon W. Allport, "Scientific Models and Human Morals," *Psychological Review*, 1947, *54*:182–192, on p. 189. On the rise of emotions and instincts in American society and science see Marga Vicedo, "Just the Right Amount of Mother Love: Science Disciplines the Maternal Instinct in Postwar America," unpublished MS, 2008.

[22] Sigmund Freud, "On Narcissism: An Introduction" (1914), in *The Standard Edition of the Complete Psychological Works of Sigmund Freud*, ed. James Strachey in collaboration with Anna Freud, assisted by Alix Strachey and Alan Tyson (London: Hogarth, 1953–1974), Vol. 14, pp. 67–102, on p. 78; and A. Freud and Dorothy T. Burlingham, *War and Children: A Message to American Parents* (New York: International Univ. Press, 1943).

psychosomatic implications of "the primary unit," the mother-child relationship, she argued that love provided instinctively by the mother allows the infant to differentiate himself as an independent individual.[23]

The power of mother love was dramatically illustrated in René Spitz's studies of "hospitalism." Spitz had observed children in the nursery of a women's prison outside New York City and in a foundling home at an undisclosed location in Central America. In the prison nursery, the delinquent girls took care of their children. In the foundling home, nurses fulfilled the children's material and physical needs. Whereas the babies in the penal institution developed normally, the infants in the foundling home lost weight, suffered from insomnia, and became withdrawn. Many of them literally withered away. Spitz coined two terms, "hospitalism" and "anaclitic depression," to refer to the debilitating conditions affecting children deprived of maternal care and love. He concluded that the mother provides the emotional sustenance that is the basis of all other aspects of human growth.[24]

Despite important differences among their views, all these authors presented the mother-infant dyad as resting on a biological foundation and held that any breakup in the relation produced extreme pathologies, a view that reached a worldwide audience through a 1951 World Health Organization (WHO) report entitled *Maternal Care and Mental Health*, written by the British psychiatrist John Bowlby. Head of the children's department of the Tavistock Clinic in London, Bowlby became the most successful proponent of the view that maternal care in infancy is essential for mental health. To explain the mother's role, Bowlby established an analogy between psychic and embryological development. He noted that biologists had proposed the existence of "organizers," specific tissues that induced development and guided the growth of the embryo. "In the same way," Bowlby argued, "if mental development is to proceed smoothly, it would appear to be necessary for the unformed mentality to be exposed, during certain critical periods, to the influence of the psychic organizer—the mother."[25]

This conception of the mother as the determinant agent in childhood built on and encouraged a discourse of mother blame prevalent among scientific and lay writers. As American historians have shown, mothers were blamed for loving their children either too much or too little. The underlying logic of both discourses is the same: the mother is the agent responsible for the emotional development of her children. The popular writer Philip Wylie and the psychiatrist Edward Strecker were the most visible critics who pointed to the disastrous consequences of loving children too much and thus curtailing their independence.[26] Despite the scant evidence they provided for the existence of the overbearing

[23] David M. Levy, "Primary Affect Hunger," *American Journal of Psychiatry*, 1937, *94*:643–652; Margaret Ribble, *The Rights of Infants: Early Psychological Needs and Their Satisfaction* (New York: Columbia Univ. Press, 1943), pp. 8, 13 (Ribble's first name is sometimes given as "Margaret," sometimes as "Margarethe"); and Therese Benedek, "The Psychosomatic Implications of the Primary Unit: Mother-Child," *American Journal of Orthopsychiatry*, 1949, *19*:642–654.

[24] René A. Spitz, "Hospitalism: An Inquiry into the Genesis of Psychiatric Conditions in Early Childhood," *Psychoanalytic Study of the Child*, 1945, *1*:53–74; Spitz, "Hospitalism: A Follow-up Report," *ibid.*, 1946, *2*:113–117; and Spitz, with Katherine M. Wolf, "Anaclitic Depression: An Inquiry into the Genesis of Psychiatric Conditions in Early Childhood, II," *ibid*., pp. 313–342.

[25] John Bowlby, *Child Care and the Growth of Love*, abridged and ed. by Margery Fry (Harmondsworth, Middlesex: Penguin, 1953), pp. 57, 59; this volume is based on Bowlby, *Maternal Care and Mental Health* (Bulletin of the World Health Organization, 3) (Geneva: World Health Organization, 1951), pp. 355–539.

[26] Philip Wylie, *Generation of Vipers* (New York: Farrar & Rinehart, 1942); and Edward A. Strecker, *Their Mothers' Sons: The Psychiatrist Examines an American Problem* (Philadelphia: Lippincott, 1946). On Wylie and views about motherhood in postwar America see Rebecca Jo Plant, *Mom: The Transformation of Motherhood*

mothers they called "moms," their views were widely accepted, and "momism" became a scourge of the period. Some authors, including the psychoanalyst Erik Erikson and the sociologist Geoffrey Gorer, extended the pernicious power of the "mom" from her children to the whole society: since mothers determine the personality of their children and childhood experiences determine the personality of adults, mothers are ultimately responsible for the character of a nation.[27]

But whereas during the early postwar years the emphasis was on the overly doting mother, in midcentury, as mothers of young children started to enter the workforce, the emphasis shifted to children's need for mother love. This discourse appealed to a variety of influential authors of very different political and scientific orientations, from the guru of identity Erik Erikson to the anthropologist and cultural commentator Ashley Montagu. Remembered now for his opposition to biological explanations of human behavior, Montagu relied on Levy's and Bowlby's work to postulate an innate need for mother love and love for mother. He claimed that the diverse forms of love existing in different cultures were all "traceable to the need for the kind of love which is biologically determined, predetermined, to exist between mother and infant." The implications for mothers were serious: "To the extent to which women succeed or do not succeed in adequately loving their children, the boys and girls become inadequately loving men and women."[28]

The view that mother love and care are important for a child's moral and psychological development had long been present in American culture, but the idea that mother love was a biological need crucial for a child's mental health provided a compelling new twist to the functional logic of gendered social roles. As Ruth Bloch and Jan Lewis have shown, an insistence on the determinism of child experiences, a focus on the mother as the nurturer of the emotional character of the child, and the appeal to the wider importance of proper character formation to justify gender roles have been elements in American political and family history since the eighteenth century.[29] But now, in the years after World War II, child analysts argued that maternal love was an innate biological need on which the child's psychic and even physical—as well as moral—development depended.

During the Cold War years these views became central in heated debates about whether mothers of small children should work outside the home. In the midst of a terrifying global landscape, mounting domestic conflicts, and rapid social change, studies pointing to the terrible consequences of breaking the mother-child dyad contributed to a growing discourse about the need to reestablish traditional parental and gender roles. In the pages of the *New York Times* and the *Ladies Home Journal*, Bowlby's views about children's needs became standard ammunition against child care centers. Montagu, among many others,

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in Modern America (Chicago: Univ. Chicago Press, forthcoming). For a discussion of momism in the context of psychoanalytic views about child rearing and their relation to studies of national character see Mari Jo Buhle, *Feminism and Its Discontents: A Century of Struggle with Psychoanalysis* (Cambridge, Mass.: Harvard Univ. Press, 1998), Ch. 4. On momism see also Ruth Feldstein, *Motherhood in Black and White: Race and Sex in American Liberalism, 1930–1965* (Ithaca, N.Y.: Cornell Univ. Press, 2000).

[27] Erik H. Erikson, *Childhood and Society* (New York: Norton, 1950); and Geoffrey Gorer, *The American People: A Study in National Character* (New York: Norton, 1948).

[28] Ashley Montagu, "The Origins and Meaning of Love," in *The Meaning of Love*, ed. Montagu (New York: Julian, 1953), pp. 3–22, on pp. 18, 19. See also Pitirim A. Sorokin and Robert C. Hanson, "The Power of Creative Love," *ibid.*, pp. 97–159.

[29] Ruth Bloch, "American Feminine Ideals in Transition: The Rise of the Moral Mother, 1785–1815," *Feminist Studies*, 1978, *4*:101–126; and Jan Lewis, "Mother's Love: The Construction of an Emotion in Nineteenth-Century America," in *Mothers and Motherhood: Readings in American History*, ed. Rima D. Apple and Janet Golden (Columbus: Ohio State Univ. Press, 1997), pp. 52–71.

sent a straightforward message: "I put it down as an axiom that no woman with a husband and small children can hold a full-time job and be a good homemaker at one and the same time." In his view, the "tragedy of American women" was that they thought, mistakenly, that equality of rights implied "identity of function."[30]

Yet despite the hegemony of the discourse about children's need for mothers, some child psychologists questioned the validity of the empirical studies on maternal deprivation. Samuel Pinneau, of the University of California, published a devastating critique of Ribble's work. He dealt first with Ribble's claims that without the mother's emotional involvement a child would develop gastrointestinal disturbances, tension, respiratory problems, anxiety, and neurological functional disorganization. After examining dozens of studies, some of which failed to confirm Ribble's claims while others disconfirmed them, Pinneau agreed with the conclusion of the Yale anthropologist Harold Orlansky, who had also conducted an extensive critical review of child studies: "It is unfortunate that such an influential writer has not attempted to draw a line between her empirical findings and her personal opinions."[31]

Empirical fact or personal opinion? Much hinged on the answer—for children, for mothers, and even for psychoanalysis. At this time of rising criticisms of deprivation studies, it is not surprising that child analysts emphasizing the biological nature of the mother-infant dyad turned to animal research to support their claims. Levy and Benedek did so explicitly, calling attention to the role of biology for understanding human instincts. Levy advocated animal experimentation as a way to understand the biological basis of the maternal drive because, in his view, the basic pattern of maternal behavior, in the form of protecting and feeding the baby, was "essentially the same" in animals and humans.[32]

In this context, Lorenz's biological account of parental behavior must have been quite attractive. Beyond its relevance for understanding the biological nature of the mother-child dyad, the turn to ethology also represented an opportunity to clarify a central concept—instinct—that had been at the center of some of the fiercest discussions in the psychoanalytic camp. Freud had postulated a biological source for mental drives. Now psychoanalysts could turn to a new discipline that promised to unravel the mysteries of instincts, one that shared some intellectual common ground with psychoanalysis.

Although both Freud and Lorenz grew up in Vienna, trained in medicine, and aimed to situate psychology on a natural science foundation, it is difficult to trace Freud's impact on Lorenz because Lorenz did not refer to Freud in his early work. But it is clear that their programs share some basic tenets about the human psyche. For our purposes here, I want to note two of them. One is the postulation of early critical periods in childhood and the belief that the relationship with one's mother determines an individual's future social relations and sexual responses. The other is their similar conception of instincts. In both

[30] Ashley Montagu, "The Triumph and Tragedy of the American Woman," *Saturday Review*, 27 Sept. 1958, *41*(3):13–15, 34–35, on pp. 34, 14. On these debates see May, *Homeward Bound* (cit. n. 20); Maxine L. Margolis, *Mothers and Such: Views of American Women and Why They Changed* (Berkeley: Univ. California Press, 1984); and Marga Vicedo, "The Social Nature of the Mother's Tie to Her Child: John Bowlby's Theory of Attachment in Post-War America," unpublished MS, 2008.

[31] Samuel R. Pinneau, "A Critique of the Articles by Margaret Ribble," *Child Development*, 1950, *21*:203–228, on p. 222; he is citing Harold Orlansky, "Infant Care and Personality," *Psychological Bulletin*, 1949, *46*:1–48, on p. 12.

[32] David M. Levy, "Psychosomatic Studies of Some Aspects of Maternal Behavior," *Psychosomatic Medicine*, 1942, *4*:223–227, on p. 223. The turn to biology also fit well with the "medicalization" of psychoanalysis that took place in America and that scholars have shown speeded up during World War II; see Buhle, *Feminism and Its Discontents* (cit. n. 26), p. 9.

frameworks instincts are the somatic basis of the motivating forces of the mental apparatus and work through internal mechanisms of energy accumulation and discharge. In both models the release of the energy leads to "satisfaction" but pent-up energy sometimes releases with "inappropriate" objects. In both models individuals can redirect their instinctual drives: humans can sublimate them, and animals can perform displacement activities.[33]

After the war, looking to shore up their beliefs about the instinctual nature of the mother-child dyad, child analysts found a biological model of instinct, put forward by a researcher who was becoming an international celebrity. Furthermore, Lorenz proved quite willing to tease out the implications of his work for understanding the relation between mothers and their infants.

III. LORENZ AS AN EXPERT ON THE INSTINCTUAL BASIS OF THE MOTHER-INFANT DYAD

In his writings on humans and other animals, Lorenz usually talked about parental behavior or parental care or parental love, but most of his examples of those behaviors and emotions came from the female of the species. He argued that the innate responses of the infant bird formed a functional whole with the responses of the mother. In humans, Lorenz postulated the existence of an innate releasing schema toward babies, one that was especially strong in women.

The war seems to have had little effect on Lorenz's views on human instincts. Up to World War II, Lorenz had consistently maintained that his views about the role of instincts in social behavior applied to humans as well as to animals. Ten years after his long paper on "innate forms of possible experience," he published a condensed but otherwise almost verbatim account of his views about human instincts. Interestingly, Lorenz here noted for the first time the similarity between releasing and displacement in animals and catharsis and sublimation in humans. In this paper, too, Lorenz devoted much attention to parental care, repeated his views about the innate schema toward the cute—acting especially in women—and asserted the instinctive nature of mother love as well as monogamous love.[34] It is unlikely that many people read these German publications, but Lorenz made sure that his views became well known. After the war he published increasingly in English, many of his earlier essays and books were translated, and he welcomed many foreign visitors at his research stations. In addition, he traveled extensively in the United States and to international meetings throughout Europe.

Lorenz found an eager audience for his views on human parental care in an international Study Group on the Psychobiological Development of the Child, organized by the WHO after the publication of Bowlby's 1951 report. Chaired by one of the pioneers in studies about children and human emotions, Frank Fremont-Smith of the Macy Foundation, this group met in Geneva in 1953, in London in 1954, and in Geneva again in 1955 and 1956. Among the permanent members were Bowlby, Lorenz, the American anthropologist Margaret Mead, and the Swiss psychologist Jean Piaget. Guest speakers included the

[33] J. S. Kennedy, "Is Modern Ethology Objective?" *British Journal of Animal Behaviour*, 1954, *2*:12–19, pointed out some of the similarities between ethology and psychoanalysis.

[34] Konrad Lorenz, "Über angeborene Instinktformeln beim Menschen," *Deutsche Medizinische Wochenschrift*, 1953, *78*:1566–1569, 1600–1604, esp. p. 1603.

biologist Julian Huxley and Erik Erikson.[35] The meetings focused on developments in ethology and their implications for child psychology.

Bowlby made sure that the mother-child relationship would be the focal point of the discussions. In his introduction during the first meeting, he highlighted his interest in ethology and noted that his investigations of the effects of separation from the mother had led him to Lorenz's work: "the phenomenon of imprinting at once struck me as possibly important to my work. Whether it really has anything to do with the effects of separation we shall see. The other thing that fascinated me in his work was the mother-child relationship of animals. The mother-child relationship is manifestly an example of instinct, in the ethological meaning of the word, and it is also at the center of psychoanalysis."[36]

Speaking before an audience with few experts in biology, Lorenz made bold pronouncements about human behavior. In a memorandum he sent to the WHO regional office a few weeks before the first meeting, Lorenz said that he would focus on two processes of interest to the student of child development: innate releasing mechanisms (IRMs) and imprinting. He would talk about the existence of IRMs in the human species and deal "with the extreme probability of imprinting in human children." Finally, he would treat the pathological disintegration of IRMs and the pathology of imprinting. Lorenz's presentation on imprinting elaborated on the significance of this phenomenon, which until that point had been observed in only a few species: "Though imprinting has been found in its typical form in birds and insects rather than in mammals, I really do believe it to be fundamentally akin to those very lasting object-fixations of human beings, chiefly because these fixations also seem to be dependent on early childhood impressions and seem also to be largely irreversible. Some psychiatrists and psychoanalysts here I believe share this opinion, at least as a working hypothesis."[37]

During the discussions that followed his presentation, Lorenz acknowledged that little could be said about humans—or any mammal: "We don't know a thing about them. . . . Maybe in about five years I can just tell you something about small monkeys, or lemurs, with which we intend to start." Further, he pleaded: "As to experiments, I must ask you not to expect too much knowledge about imprinting in man from ethologists."[38] Yet it is hard to take Lorenz's cautionary words at face value because he had already stated his belief in the instinctual nature of human social behavior in no uncertain terms.

As in his previous writings—and in much the same words—Lorenz asserted that human maternal behavior was a clear instance of innate behavior, as proven not by biology but by social phenomena. This is how he put it:

> But now let me proceed to what interests us most, the mother child relationship. One of the best instances of the I.R.M., except for the snake, is our reaction to the quality of *cute*. . . . Now, let's look at the properties which produce the impression of a thing being *cute*. The head must have a large neurocranium and a considerable recession of the viscerocranium, it must have an eye

[35] The proceedings of the study group meetings were published by Tavistock in 1956 (both the 1953 and the 1954 meetings), 1958, and 1960. They were later collected in an edition that ran the four volumes consecutively: J. M. Tanner and Baurbel Inhelder, eds., *Discussions on Child Development* (London: Tavistock, 1971); all citations here are to this edition.

[36] Bowlby, in Tanner and Inhelder, eds., *Discussions on Child Development*, Vol. 1, p. 27.

[37] Konrad Lorenz, "Memorandum on Ethology," 7 Jan. 1953, PP/BOW/4/32, John Bowlby Papers, Wellcome Library, Archives and Manuscripts, London; and Lorenz, in Tanner and Inhelder, eds., *Discussions on Child Development*, Vol. 1, p. 117.

[38] Lorenz, in Tanner and Inhelder, eds., *Discussions on Child Development*, Vol. 1, pp. 215, 216, 211.

> which is below the middle of the whole profile. Beneath the eye there must be a fat cheek. The extremities must be short and broad. The consistency of the body ought to be that of a half-inflated football, elastic; movements that are rather clumsy elicit the reaction very strongly; and finally the whole thing must be small, and must be the miniature of something.[39]

In short, "cute" equals "baby"—as he had already asserted in his 1943 and 1953 papers.

But how can we know whether there is an innate behavior toward babies? There was no scientific research on this matter. To answer the question, Lorenz resorted to the results of social "experimentation":

> Now, in order to see whether many people have got that I.R.M., we ought to do a mass experiment with thousands or millions of experimental persons. Just this experiment has already been done: It has been done by the doll industry, which, of course, sells the supranormal object best. The exaggeration of key-stimuli can be very nicely shown in the "cupie" doll, and the "Käthe Kruse Puppe" in German, and if you want facts on what I say, then go to Walt Disney's films and see how Walt Disney represents cute animals.[40]

In the supranormal or supernormal object the characteristics that stimulate the release of an innate behavior are exaggerated. For example, the oystercatcher bird prefers a giant egg—even an artificial one—to a normal egg. In other cases it is not size but some other characteristic of the object that triggers the innate reaction.[41]

Lorenz had written earlier that the "traps set by the movie, fashion, toy, and advertising industries which relied on the analysis of the tastes and reactions of the general public" provided evidence for the existence of innate releasers of parental—or, more specifically, maternal—behavior.[42] Further evidence, in his view, was provided by the fact that childless women often have a dog or another pet as a substitute for a child. Lorenz had not performed research on these industries or on men's and women's reasons for having pets. He also did not consider the role of environmental influences on maternal behavior or attitudes, although by this point several researchers, including the American psychologist Leta Hollingworth and the sociologist Ruth Reed, had done extensive research showing that society's emphasis on women being nurturant, their roles as caretakers, and social expectations that they would be "maternal" all influenced women's interests in babies.[43]

Lorenz argued not only that maternal behavior is instinctual but also that the value societies place on it is innate:

> We must keep in mind that mother-love is not more necessary to the survival of the species than the drive to copulation. Why, then, are those drives to copulation "brutish" and why is "maternal love" sublime? This is simply our emotional valuation of instinctive behaviour in man—and it is largely dependent on supply and demand. I am convinced that we have

[39] *Ibid.*, p. 222.

[40] *Ibid.*, p. 223.

[41] See Tinbergen, *Study of Instinct* (cit. n. 18), pp. 44–45; and Konrad Lorenz and Niko Tinbergen, "Taxis und Instinkthandlung in der Eirollbewegung der Graugans," *Z. Tierpsychol.*, 1938, *2*:1–29, rpt. in Lorenz, *Studies in Animal and Human Behavior*, Vol. 1 (cit. n. 4), pp. 316–350.

[42] Lorenz called them "merkantiler Attrappensversuche" in "Die angeborenen Formen möglicher Erfahrung" (cit. n. 13), p. 398.

[43] Leta S. Hollingworth, "Social Devices for Impelling Women to Bear and Rear Children," *American Journal of Sociology*, 1916, *22*:19–29; and Ruth Reed, "Changing Conceptions of the Maternal Instinct," *Journal of Abnormal Psychology and Social Psychology*, 1923, *18*:78–87. On the maternal instinct see Marga Vicedo, "Human Nature and Mother Love: A History of the Maternal Instinct" (Ph.D. diss., Harvard Univ., 2005).

> something very deep, innate, in our behaviour, which tends to devalue sex and eating and to value very highly mother-love, social behaviour, defense of the family, and so on.

Margaret Mead, one of the few people in these discussions who sometimes criticized Lorenz, pointed out that no such universal valuation existed, since one could find "societies which put a high value on sex and eating, and a low value on maternity."[44] Lorenz did not respond to her objection.

At the third meeting, held in 1955, Lorenz argued that there was only a quantitative difference between men's and women's reactions to babies. Only cultural mores prevented the "utterance to these, certainly instinctive, urges" in males. However, he also thought that the urge to develop different gender roles was innate:

> Well, I had better come out and be honest about what I am aiming at. I do believe that there is a certain unlearned element—something like an IRM—which makes the little boy actually seek for somebody to take over the father role. Sylvia Klimpfinger has evidence for that in a hospital—a hostel—where all the children are reared by the female staff alone, and all these children—the boys more significantly than the girls—go for the gardener who is the only male accessible to them. This led me to suspect that there might be an unlearned preference for what to imitate—boys to imitate Pa and for girls to imitate Ma.[45]

In sum, after asserting that biologists knew nothing about the biological basis of behavior in mammals, let alone humans, Lorenz argued that parental and sex roles in humans are innate, as are the ethical valuations of those roles. There is an internal releasing mechanism for parental behavior toward babies, as shown by the universal tendency to consider baby features cute. In addition, there is an innate or instinctive valuation of mother love. Finally, there is an innate preference in boys to imitate their fathers and in girls to imitate their mothers. When you put it all together, he was arguing for the instinctual basis of traditional gender roles and, specifically, gendered parental roles.

Since Lorenz did not publish much on these topics, one might be tempted to conclude that his views about maternal care were not central to his career; but in fact Lorenz's role as an expert on maternal care transcended the confines of academic meetings. In the United States, his main public appearances emphasized his expertise on "motherhood" in ducks and humans. In his best-selling book *King Solomon's Ring*, Lorenz detailed his role as a devoted "foster mother" of jackdaws, ducklings, and goslings. His presentations in magazines and on television focused on his ability to substitute for birds' mothers. Thanks to his ability to "talk to the beasts, the birds, and the fish," like King Solomon, Lorenz could then share the wisdom of the beasts about mother love. His lessons came straight from nature, right from the duck's mouth.[46] When *Life* magazine ran a story about Lorenz in 1955, the title presented him in his most popular role, as an "Adopted Mother Goose" (see Figure 3).[47]

[44] Lorenz in Tanner and Inhelder, eds., *Discussions on Child Development* (cit. n. 35), Vol. 1, pp. 227–228; and Mead, *ibid.*, p. 228.

[45] Lorenz, in Tanner and Inhelder, eds., *Discussions on Child Development*, Vol. 3, pp. 36, 69; see also p. 45.

[46] Lorenz's most popular book was *King Solomon's Ring* (New York: Crowell, 1952). In some editions it included a subtitle: "He Spoke with the Beasts, the Birds, and the Fish"; this was the title of the German edition: *Er redete mit dem Vieh, den Vögeln und den Fischen* (Vienna: Borotha-Schoeler, 1949). On Lorenz's focus on parental behavior in his films see Gregg Mitman, *Reel Nature: America's Romance with Wildlife on Film* (Cambridge, Mass.: Harvard Univ. Press, 1999).

[47] "An Adopted Mother Goose: Filling A Parent's Role, a Scientist Studies Goslings' Behavior," *Life*

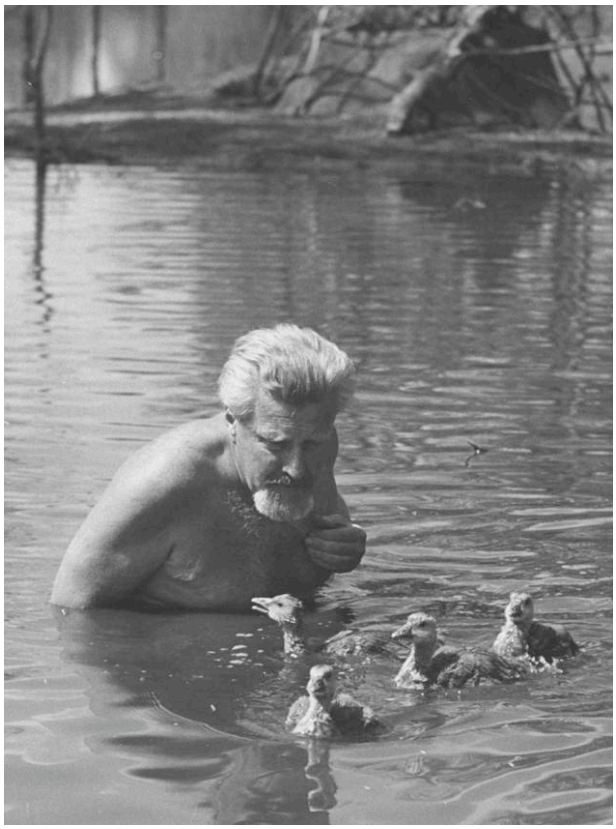

Figure 3. *Picture from* Life Magazine *(1955).*

IV. CHILD PSYCHOANALYSTS TURN TO LORENZ

Many psychoanalysts who worked on the role of the mother in child development welcomed Lorenz's views about the instinctual nature of the mother-child dyad. As I explained in Section II, many psychoanalysts had a genuine interest in exploring the biological basis of instincts. In addition, the increasing criticisms of deprivation studies in the scientific community must have encouraged their desire to find confirmation for their results elsewhere. In that context, their appeal to the authority of biological studies that pointed to the existence of a biological grounding for the mother-infant system was very important.

In the 1950s more scientists questioned the evidence on which the theory of the mother-child dyad had been erected. The Harvard psychiatrist Abraham Myerson implored scientists to "quit blaming mom," arguing that there was no scientific proof that pointed to mothers as the cause of their children's neurosis. The University of Wisconsin sociologist William H. Sewell concluded from an empirical study of 162 "farm children of old American stock" that there was no correlation between infant training and personality development. And Samuel Pinneau dealt a second major blow to "the doctrine of the

Magazine, July/Aug. 1955, *39*:73–78. For an analysis of Lorenz's role as "mother" of the animals he studied see Marga Vicedo, "Outside or Inside the Animal? Konrad Lorenz on Intuition and Empathy in the Study of Animal Behavior," unpublished MS, 2008.

mother," this time by criticizing René Spitz's work. By putting together information offered by Spitz in different reports about the same set of studies, Pinneau exposed great inconsistencies and shortcomings in his empirical data. Spitz had not provided sufficient information about the number of children involved, their backgrounds, their health, and the relationship with their parents. Therefore, it was not possible to determine whether separation from their mothers was the cause of the children's difficulties.[48]

Despite these devastating criticisms, Spitz went on to publish *The First Year of Life*, a book that summarized his views about children's biological need for maternal care and appealed to ethology to establish their validity. Spitz, who had "known and admired" Lorenz since 1935 and became friends with him "around 1952," presented himself as following "respectfully in the trail" that Lorenz was "blazing." Animal experimentation confirmed the existence of "critical phases" in development, he noted. With the backing of biological research, he reasserted his views about the emotional needs of infants and the essential role of mothers.[49]

Continuing to explore the biological basis of the symbiotic relationship in the primary mother-child unit, Therese Benedek also turned to Lorenz's studies of imprinting. Benedek argued that "pregnancy and mothering constitute the completion of psychosexual and reproductive maturity in women." She compared ovulation to the "Innate Releasing Mechanism (I.R.M.) which the ethologists consider the integrating factor of reproductive behavior in animals. Released automatically when the anatomical structure is ready, ovulation is the signal to which the psychic apparatus responds with a directional change of the drive energy, preparing to supply the psychodynamic correlates for the ensuing 'preparation for pregnancy.'" "Using the term as ethologists use it," Benedek argued that pregnancy is a "critical phase" in a woman's life. Like puberty, "pregnancy . . . is a biologically motivated step in the maturation of the individual which requires adjustments and psychologic adaptations to lead to a new level of integration that, normally, represents development."[50] She held that motherhood is the primary organizer of a woman's personality, rooted in the biological needs of individuals and the species. Similar biological constraints explained the role of the father: "among birds and mammals the male participates according to an instinctually preformed pattern in the care of the offspring, providing food and security of the territory which is their home. These observations prove that providing food and security is not a culturally imposed burden on the male of the species but 'nature's order.'"[51] In short, nature decreed the traditional division of parental roles.

The most ambitious psychoanalytic project to use ethology—specifically Lorenz's work—as support was launched by Bowlby. Bowlby aimed at synthesizing ethology and psychoanalysis into a single explanatory framework. In his 1958 paper "The Nature of the

[48] Abraham Myerson, "Let's Quit Blaming Mom," *Science Digest*, 1951, *29*:10–15, on p. 11; William H. Sewell, "Infant Training and the Personality of the Child," *Amer. J. Sociol.*, 1952, *58*:150–159, on p. 151; and Samuel R. Pinneau, "The Infantile Disorders of Hospitalism and Anaclitic Depression," *Psychol. Bull.*, 1955, *52*:429–452, on p. 448 (see also pp. 453 ff for Spitz's reply).

[49] René Spitz, untitled introduction to Lorenz's talk, p. 3, 11 Jan. 1970, Box M2116, Folder 7: Lorenz 1970, Spitz Papers; and Spitz, *The First Year of Life: A Psychoanalytic Study of Normal and Deviant Development of Object Relations*, with W. Godfrey Cobliner (New York: International Univ. Press, 1965), p. 118.

[50] Therese Benedek, "The Organization of the Reproductive Drive," *International Journal of Psychoanalysis*, 1960, *41*:1–15, on pp. 1, 9; and Benedek, "The Psychobiology of Pregnancy," in *Parenthood: Its Psychology and Psychopathology*, ed. E. James Anthony and Benedek (1970; London: Aronson, 1996), pp. 137–151, on p. 137. See also Benedek, "Motherhood and Nurturing," *ibid.*, pp. 153–165.

[51] Therese Benedek, "Fatherhood and Providing," in *Parenthood*, ed. Anthony and Benedek, pp. 167–183, on p. 169.

Child's Tie to His Mother," he presented his theory of component instinctual responses, later known as the "ethological theory of attachment." Here Bowlby posited five instinctual responses that made up attachment behavior in the mother-infant dyad. The baby was the active partner in three of them: sucking, clinging, and following. The other two, crying and smiling, served to "activate maternal behaviour." Rather than using the "cumbersome term 'species-specific behaviour pattern,'" as ethologists did, Bowlby called these behaviors "instinctual responses."[52]

Bowlby emphasized that he was using "instinct" in the ethological sense, not the psychoanalytic sense. He noted that in ethology instincts were "behaviour patterns . . . common to all members of a species and determined in large measure by heredity. They are conceived as the units out of which many of the more complex sequences are built. Once activated the animal of which they form a part seems to be acting with all the blind impulsion with which, as analysts, we are familiar."[53]

Bowlby's work was central in bringing ethology to the attention of psychoanalysts, and the publication of his article led to an intense discussion of ethological ideas within the psychoanalytic community. The 1959 annual meeting of the International Psycho-Analytical Association included a symposium on "Psycho-Analysis and Ethology," with talks by both psychoanalysts and ethologists. A panel at the annual meeting of the American Psychoanalytic Association in New York the same year also included members of both communities, with Spitz reporting on his recent visit to Lorenz's experiment station in Buldern, Germany. In 1960, a panel on animal research included contributions from the psychoanalysts Max Schur, Marcus B. Waller, and John L. Fuller and the animal behavior experts T. C. Schneirla, Jay Rosenblatt, and H. G. Birch.[54] As expected, many discussions focused on the concept of instinct in ethology and on Bowlby's importation of this concept into psychoanalysis.

Not all psychoanalysts thought that Bowlby's identification of psychoanalytic drives with biological instincts was a move in the right direction. As Bowlby himself recognized, ethologists focused on an animal's observable behavior. But, as Anna Freud pointed out, psychoanalysis dealt with the mental: the motivations, justifications for actions, dreams, and hopes of the individual.[55] Indeed, Sigmund Freud had been adamant that the mental could not be reduced to the biological. Doing that, in fact, would not synthesize psychoanalysis with ethology: it would eliminate psychoanalysis altogether. For similar reasons, Freud would not have endorsed Benedek's conversion of women's drives into a biological maternal instinct.

Moreover, it was becoming increasingly clear that empirical research on children did not

[52] John Bowlby, "The Nature of the Child's Tie to His Mother," *Int. J. Psychoanal*., 1958, *39*:350–373, on pp. 351, 362.

[53] *Ibid.*, p. 361.

[54] Mortimer Osrow, "Psychoanalysis and Ethology," *Journal of the American Psychoanalytic Association*, 1960, *8*:526–534. For later reviews see Leonard S. Zegans, "An Appraisal of Ethological Contributions to Psychiatric Theory and Research," *Amer. J. Psychiatr.*, 1967, *124*:729–739; and Max Schur, "Discussion: A Psychoanalyst's Comments," *Amer. J. Orthopsychiatr.*, 1961, *31*:276–291.

[55] For Bowlby's view on the reception of his work by psychoanalysts see John Bowlby to Yven Gauthier, 14 Mar. 1984, PP/BOW/B2/4, Bowlby Papers. For responses to Bowlby's presentation of "Grief and Mourning in Infancy and Early Childhood," *Psychoanal. Stud. Child*, 1960, *15*:3–39, see Anna Freud, "Discussion of Dr. John Bowlby's Paper," *ibid.*, pp. 53–62; Max Schur, "Discussion of Dr. John Bowlby's Paper," *ibid.*, pp. 63–68; and René Spitz, "Discussion of Dr. Bowlby's Paper," *ibid.*, pp. 85–94. For the history of the focus of psychoanalysis on object relations and the implications of Bowlby's turn to biology see Jay R. Greenberg and Stephen A. Mitchell, *Object Relations in Psychoanalytic Theory* (Cambridge, Mass.: Harvard Univ. Press, 1983); and Marga Vicedo, "Bios and Psyche: The Maternal Instinct in Psychoanalysis from Freud to John Bowlby," unpublished MS, 2008.

support the extreme views of some child analysts about the essential need for mother love. In 1961 the psychologist Lawrence Casler published an extensive review of work on maternal deprivation; he focused on Bowlby's 1951 WHO report, which was still considered to be the most influential summary of studies of maternal deprivation. Casler reviewed all forty-five studies cited by Bowlby. First, he examined the work of W. Goldfarb, since Bowlby relied heavily on nine studies by this author. Casler noted that at least five of the nine studies were descriptions of the same group of fifteen institutionalized children and fifteen controls and, furthermore, that the criteria for selection were not specified. Other studies dealt with only two children hospitalized for serious conditions. Casler pointed out a variety of methodological problems with the studies Bowlby relied on. Most of them ignored the factor of age, did not handle the data in a statistically meaningful fashion, and neglected the difference between deprivation of "love" and deprivation of other forms of perceptual and sensorial stimulation. "None of Bowlby's references offers satisfactory evidence that maternal deprivation is harmful for the young infant," Casler concluded. Another extensive review of the literature by N. O'Connor reached the same damning conclusion. In 1962 the World Health Organization decided to publish a new report, appropriately entitled *Deprivation of Maternal Care: A Reassessment of Its Effects*, just a decade after the first. All the papers focused on the lack of supporting evidence for the alleged disastrous effects of maternal deprivation, with one exception: Mary Ainsworth's paper, which had been conceived as a defense of Bowlby's position.[56] Yet none of these critical reviews or the new WHO report became widely known.

One reason the "doctrine of the mother" persisted, I suggest, is that it drew on the authority of ethology for support. Ethology had been very successful in elevating the scientific status of naturalistic observation. Much as ethology aimed to discover the natural, instinctive behavior of animals, child analysts touted the importance of their observations of children for uncovering the "natural" behavior of humans. Like ethologists, they presented their accounts as objective descriptions of behavior. In addition, many psychoanalysts used the results of ethology to support their claims. For example, by appropriating the ethological framework, Bowlby was better able to argue for the biological significance of his theory and then to claim support for it from biology:

> I wish to emphasize that it is a main part of my thesis that each of the five instinctual responses which I am suggesting underlie the child's tie to his mother is present because of its survival value. . . . The theory of Component Instinctual Responses, it is claimed, is rooted firmly in biological theory and requires no dynamic which is not plainly explicable in terms of the survival of the species.

This move enabled Bowlby to confer the authority of biological knowledge upon his own theory. As Evelyn Fox Keller has shown in her discussion of molecular biology's reliance on the social authority of physics after World War II, a discipline can benefit from associating itself with another discipline with higher social status and scientific standing.[57]

[56] Lawrence Casler, "Maternal Deprivation: A Critical Review of the Literature," *Monographs of the Society for Research in Child Development*, 1961, *26*(2) (Serial No. 80), pp. 1–63, on p. 9; N. O'Connor, "The Evidence for the Permanently Disturbing Effects of Mother-Child Separation," *Acta Psychologica*, 1956, *12*:174–191; and World Health Organization, *Deprivation of Maternal Care: A Reassessment of Its Effects* (Public Health Papers, 14) (Geneva: World Health Organization, 1962). The paper included in the WHO volume as a defense of Bowlby's position was Mary D. S. Ainsworth, "The Effects of Maternal Deprivation: A Review of Findings and Controversy in the Context of Research Strategy," *ibid.*, pp. 97–165.

[57] Bowlby, "Nature of the Child's Tie to His Mother" (cit. n. 52), p. 369; and Evelyn Fox Keller, "Physics and the Emergence of Molecular Biology: A History of Cognitive and Political Synergy," *J. Hist. Biol.*, 1990,

In conferring legitimacy on the view that the mother-child dyad is the cradle of personality formation, this conjunction of psychoanalysis and ethology supported two ideas of great social significance: the idea that early experiences have a determinant effect in the life of an individual; and the idea that nature dictates different parental and gender roles. By supporting the view that maternal behavior and the need for maternal care in animals and humans is instinctual and the idea that the disruption of the mother-infant dyad had disastrous consequences, Lorenz and like-minded child analysts provided a key defense of the naturalization of gender roles. In the Cold War context of "containment" and renewed support for the nuclear family, these views received widespread attention.

But were the psychoanalytic views about the mother-infant dyad "rooted firmly in biological theory," as Bowlby put it? Lorenz always presented his views as widely accepted in the biological community. Yet if we examine the sources Lorenz was citing for support in the 1960s and early 1970s, we find that they were not biologists but, mainly, psychoanalysts.

V. LORENZ TURNS TO PSYCHOANALYSIS

In this section I show how Lorenz appealed to psychoanalysis for the support of his own theories, highlighting three main reasons. First, he was happy to find supporters in other fields at a time when many biologists and comparative psychologists were criticizing important aspects of his work. Second, by noting that psychoanalysis had independently discovered the significance of maternal care, Lorenz could present those findings as providing independent evidence for his views on human behavior. Third, Lorenz was thus able to seize on the strong cultural authority of psychoanalysis in postwar America.

Starting in the mid 1950s, comparative psychologists published trenchant critiques of central concepts in Lorenz's work. The comparative psychologist Daniel Lehrman argued that Lorenz's methods were not capable of separating the instinctual and learned components of behavior and that animal conduct could not be understood without studying its ontogenetic development. The English ethologist Robert Hinde called for abandoning the drive concept and energy models of motivation, arguing that they were based on analogies that had outlived their heuristic usefulness.[58] Several researchers, including fellow ethologist Niko Tinbergen and the American psychologist T. C. Schneirla, criticized Lorenz's *On Aggression* as a superficial book that relied on unfounded analogies and outdated concepts.[59]

Furthermore, research on imprinting failed to sustain the strongest claims Lorenz had made: that imprinting was not influenced by experience, that it occurred only during a very short period, and that its effects on the sexual and social conduct of the adult bird were permanent.[60] Ducks imprinted on Lorenz were not interested in conspecifics in adult life. But was that because Lorenz was the first thing they had seen after hatching or because

23:389–409, esp. p. 390. On the history and significance of objectivity in science see Lorraine Daston and Peter Galison, *Objectivity* (Cambridge, Mass.: MIT Press, 2007).

[58] Daniel Lehrman, "A Critique of Konrad Lorenz's Theory of Instinctive Behavior," *Quarterly Review of Biology*, 1953, *28*:337–363; Robert Hinde, "Ethological Models and the Concept of 'Drive,'" *British Journal for the Philosophy of Science*, 1956, *6*:321–331; and Hinde, "Unitary Drives," *Animal Behav.*, 1959, *7*:130–140.

[59] Konrad Lorenz, *On Aggression* (London: Methuen, 1966); this text was originally published in German: Lorenz, *Das sogenannte Böse: Zur Naturgeschichte der Aggression* (Vienna: Borotha-Schoeler, 1963). For a collection of critical responses see Ashley Montagu, ed., *Man and Aggression* (New York: Oxford Univ. Press, 1968).

[60] Robert Hinde, "The Nature of Imprinting," in *Determinants of Infant Behaviour, II*, ed. B. M. Foss (London: Methuen, 1963), pp. 227–233.

they had remained in his company through their adulthood? What part was played by imprinting and what part was due to subsequent reinforcement? And how could one sort it out?[61] The existence of critical periods that determine adult behavior also did not seem to apply to many species. For example, in their study of the social development of the cat, Schneirla and Rosenblatt did not find that one particular period was the key to future behavior. At Yale University, Julian Jaynes carried out a series of studies with domestic neonate chicks to analyze different aspects of imprinting. He did find that there was a critical period for imprinting, but he also found that imprinting was a function of practice. In addition, it was not clear how general a phenomenon imprinting was, even in birds. The University of Chicago psychologist Eckhard Hess, a close friend and follower of Lorenz, was one of the foremost students of imprinting. Hess showed that Vantress broiler chicks are good imprinters, whereas white leghorn chicks are not, and that there are even individual differences within a breed. It turned out that imprinting was quite a complex phenomenon.[62]

Lorenz himself was painfully aware that few scientists shared his focus on instinctive behavior or his views on human conduct. He made this clear in a letter to Hess: "The influence of behavioristic thinking in Ethology is unfortunately not decreasing, as I had hoped. You have always believed that that infectious disease was dangerous and have emitted loud warning signals. . . . In reality, I write today only to tell you that among all the ethologists, including unfortunately my dear friend Niko Tinbergen, you are the only one who I consider a real and outspoken comrade."[63]

In his conversations with the media, however, Lorenz continued to emphasize the implications of his own work on geese for human behavior. "Imprinting is not limited to birds," he noted. "Especially in the higher animals, it is obvious that normal rearing plays a decisive role in producing a normal individual, and no doubt imprinting is part of this process." He reported how scientists in other communities were recognizing the value of his work: "I must say, the psychologists, and even the psychiatrists, have finally begun to be much interested by this imprinting phenomenon."[64]

Lorenz's interactions with psychoanalysts took place mainly during the WHO sessions and during several trips to the United States. When Lorenz visited the United States for the first time during 1954–1955, he gave talks to biology departments and had contact with colleagues working in biology and comparative psychology. But over time his audience shifted to

[61] W. H. Thorpe, *Learning and Instinct in Animals* (Cambridge, Mass.: Harvard Univ. Press, 1956), p. 358; Howard Moltz, "Imprinting: Empirical Basis and Theoretical Significance," *Psychol. Bull.*, 1960, *57*:291–314, on p. 300; and Howard S. Hoffman and Alan M. Ratner, "A Reinforcement Model of Imprinting: Implications for Socialization in Monkeys and Men," *Psychol. Rev.*, 1973, *80*:527–544, argue that the phenomenon can be explained with behavioral principles.

[62] T. C. Schneirla and Jay Rosenblatt, "Critical Periods in the Development of Behavior," *Science*, 1963, *139*:1110, 1112–1114, esp. p. 1112; Julian Jaynes, "Imprinting: The Interaction of Learned and Innate Behavior, I: Development and Generalization," *Journal of Comparative and Physiological Psychology*, 1956, *49*:201–206; Jaynes, "Imprinting: The Interaction of Learned and Innate Behavior, II: The Critical Period," *ibid.*, 1957, *50*:6–10; Jaynes, "Imprinting: The Interaction of Learned and Innate Behavior, III: Practice Effects on Performance, Retention, and Fear," *ibid.*, 1958, *51*:234–237; Jaynes, "Imprinting: The Interaction of Learned and Innate Behavior, IV: Generalization and Emergent Discrimination," *ibid*., pp. 238–242; and E. H. Hess, "Imprinting," *Science*, 1959, *130*:133–141. For a review see Gordon M. Burghardt, "Instinct and Innate Behavior: Toward an Ethological Psychology," in *The Study of Behavior*, ed. John A. Nevin (Glenview, Ill.: Scott, Foresman, 1973), pp. 323–400.

[63] Konrad Lorenz to Eckhard Hess, 13 July 1964, Konrad Lorenz Papers, Konrad Lorenz Institute, Altenberg, Austria.

[64] Lorenz is quoted in Joseph Alsop, "Profiles: A Condition of Enormous Improbability," *New Yorker*, 8 Mar. 1969, pp. 39–93, on p. 65.

students of human behavior. After a trip to the United States in 1958, he reported: "I am just back from America where I have been talk-talk, talking to Psychiatrists, Psychoanalysts and Psychotherapists."[65] Lorenz realized that he could benefit from being connected to this field. During his 1960–1961 trip he met mainly with psychoanalysts, including a workshop at the Menninger Foundation in Topeka, Kansas. Increasingly, the child analysts who relied on his work became his main supporters. In the preface to a 1966 edition of *King Solomon's Ring*, the editors noted: "in recent years all of Lorenz's invitations to the United States have come from psychiatric institutions and clinics."[66]

By examining the introduction to a collection of his articles published in 1970, we can uncover Lorenz's strategies to bolster the epistemological soundness of his position and the role of psychoanalysis. First, applying the same strategy that psychoanalysts used when appealing to the authority of his work, Lorenz appealed to the authority of more established areas of biology, like evolutionary theory. He asserted that the instinctual basis of human behavior was "treated as a matter of course" by biologists and presented his own views as the "public property of biological science since *The Origin of Species* was written."[67]

But when Lorenz appealed to the work of other contemporary scholars to support his views, he turned to psychoanalysis. He asserted that belief in the existence of human instincts "was maintained in 1910 and everything which ethology has brought to light since, and particularly that which resulted from *the progressive synthesis of ethology and psychoanalysis*, has fully confirmed Heinroth's assertion." In *On Aggression* Lorenz had also emphasized the "unexpected correspondences between the findings of psychoanalysis and behavioral physiology, which seemed all the more significant because of the differences in approach, method, and above all inductive basis between the two disciplines."[68] Here Lorenz was taking advantage of the well-known idea that the convergence of two independent lines of inquiry on a result provides evidence for it. He thus could use psychoanalysis to bolster ethology. On the matter of human instincts, Lorenz now used the fact that some psychoanalysts had discovered phenomena in humans similar to those he had found in animals to justify his extrapolations between the two realms. Pointing to Spitz's and Bowlby's work, Lorenz emphasized the analogies between the social interactions in greylag geese and human beings.

In the media, Lorenz insisted that his views were well supported in the scientific community and that his opponents had a political ax to grind. In a profile of Lorenz published in the *New Yorker*, the journalist Joseph Alsop claimed that "Dr. Lorenz's seriously hostile critics include almost no ethologists, who are, after all, the people who do the work and know the data of their own discipline." Regarding *On Aggression*, Alsop further claimed that ethologists "have strongly affirmed the over-all thrust of Dr. Lorenz's argument."[69] But this was hardly the case.

By coincidence, the same *New Yorker* issue contained a long review of Philip Roth's

[65] Lorenz to William Thorpe, 12 Mar. 1958, in W.TH/M/201.307 Add 8784 M 16, William Thorpe Papers, Cambridge University Library, Department of Manuscripts and University Archives, Cambridge.

[66] "Editor's Preface," in Konrad Lorenz, *King Solomon's Ring* (New York: Time, 1966), pp. vii–xiv, on p. xiv. I do not mean to suggest that child analysts were Lorenz's only supporters, as he had some followers in the field of animal research as well. Later in his life Lorenz was also very successful in Vienna among philosophers interested in his views about evolutionary epistemology and people interested in his views on ecology.

[67] Konrad Lorenz, "Introduction," in *Studies in Animal and Human Behavior*, Vol. 1 (cit. n. 4), pp. xxii–xx, on p. xii.

[68] *Ibid*., p. xii (emphasis added); and Lorenz, *On Aggression* (cit. n. 59), p. xiv, where he also refers to the "legitimate use of [his] work done by John Bowlby, René Spitz., etc."

[69] Alsop, "Profiles" (cit. n. 64), p. 82.

Portnoy's Complaint, the story of a young Jewish man who attributes his obsession with sex and his failure to establish mature emotional relationships to his mother's overbearing character. At the start of the novel, Roth included a mock dictionary definition of Portnoy's affliction, including a citation to the relevant literature: "Portnoy's Complaint: . . . Citing Spielvogel, O. 'The Puzzled Penis,' *Internationale Zeitschrift für Psychoanalyse*, vol. XXIV, p. 909: 'It is believed by Spielvogel that many of the symptoms can be traced to the bonds obtaining in the mother-child relationship.'"[70] "*Spiel*" is the German word for "game" and "*Vogel*" is "bird." Was Roth caricaturing the basis on which some psychoanalysts erected their views on the influence of mothers—the games of birds? Unlikely. But his novel was a satirical commentary on the social tendency to blame mothers for their sons' immaturity. The simultaneous presentation of an article on Lorenz and a review of Roth's novel in this major U.S. intellectual magazine was surely a fluke, but it is quite revealing about American society's enduring concern with the mother-child dyad.

Once it was established that the mother was responsible for individual pathologies, it was only a short step to blaming her for all sorts of social pathologies and identifying her as the main element in a new discourse of emotional degeneration.

VI. THE MOTHER AND DEGENERATION

From the beginning of his career, Lorenz had been concerned about the deterioration of human instincts, a process that could lead to racial degeneration or even the extinction of the human species. After World War II, building on psychoanalysts' emphasis on the mother-infant dyad during a period of widespread social concern about children, Lorenz found a socially acceptable way to recast his eugenic fears.

Lorenz believed that civilization in humans, like domestication in animals, led to the deterioration of instincts. For him, this meant that biologists had to participate in the social control of human evolution. During the Nazi regime in Germany and Austria, Lorenz encountered a political climate favorable to these ideas. The extent of Lorenz's involvement in Nazi activities has remained unclear to this day. In several writings in the early 1940s he couched his concerns about social decadence in the language of racial degeneration and used medical metaphors about degeneration as a cancer of the social body. But his eugenic pronouncements were not simply a way to get support for his studies from the Nazi regime. In its general lines, Lorenz maintained this view about the perils of civilization throughout his life, but after the war he did not employ Nazi-style rhetoric.

Lorenz's concerns about degeneration were rooted in his unwavering belief about the superiority of wild animals to domesticated forms. He pointed to the short extremities, fat belly, and female promiscuity in some domestic animals as evidence for the degeneration from the wild form. In humans, he believed, the process of civilization led to physical degeneration as well as a decline in innate moral and aesthetic capacities. One of Lorenz's main worries was the waning of maternal instinct and love in the modern world.

Even in his early writings, maternal care and love were part of Lorenz's eugenic concerns. In 1940 he wrote:

> Fighting spirit and motherly love, the characteristics that are necessary for the preservation of the species, are being lost not only in animals, but in humans as well, through the process of

[70] Brendan Gill, "The Unfinished Man" [rev. of Philip Roth, *Portnoy's Complaint*], *New Yorker*, 8 Mar. 1969, pp. 118–120, on p. 120.

> civilization. Which is why one may draw comparisons between the two realms without further ado. Race politics knows that the continuous ups and downs, the flowering and decline of cultures originate in the resting on their laurels of the victorious people. Today, the biologist researches consciously and with scientific precision the causes of these phenomena.

Lorenz sustained similar views in the postwar period, though stripped of their Nazi flavor. In fact, he repeated these views years later, including during his discussions in the WHO group and in other publications.[71] He claimed that mother love was instinctive and continued to be worried about the degenerative effects of its disappearance in Western civilization, which was in danger of throwing these two basic instincts, aggression and motherly love, out of balance.

In *On Aggression* Lorenz pointed to the intrinsic bond between aggression and the maternal instinct, arguing that aggression is essential for sexual selection and parental care. Thus, he asserted that aggression is an instinct as necessary for the survival of a species as the maternal instinct. But in a society that possessed nuclear weapons and suffered from disrupted attachments, there was a great danger that humans would overrun their innate inhibitions against killing members of their own species. "Innate behavior mechanisms can be thrown completely out of balance by small, apparently insignificant changes of environmental conditions," he warned. Among the conditions he characterized as particularly dangerous were disruptions in the attachment patterns between mothers and children.[72] The reason why this concern about the absence of an environmental factor—maternal care and love—can be considered eugenic is that, for Lorenz, the mother is the object selected during evolution to act as releaser of the infant's innate behavior. Maternal care is also instinctual—that is, part of the genetic makeup. A disruption in this interlocking system of behaviors disrupted the natural development of innate social behavior and affected the genetic makeup of the species. A disruption of the biological basis of the mother-infant dyad, furthermore, affected the innate capacity for aggression as well. In the current situation of proliferation of nuclear arms, that could have fatal consequences for the human race.

Over time, Lorenz's friend Spitz also became more concerned about the social impact of deterioration in the mother-infant bond: "Disturbed object relations in the first year of life, be they deviant, improper, or insufficient, have consequences which imperil the very foundation of society. Without a template, the victims of disturbed object relations subsequently will themselves lack the capacity to relate." Again, with inflated rhetoric, he asserted: "They are emotional cripples; more than a century ago jurisprudence coined the now obsolescent term 'moral insanity' for these individuals." And he predicted that emotionally deprived babies would become the criminals of tomorrow: "Deprived of the affective nourishment to which they were entitled, their only resource is violence. The only path which remains open to them is the destruction of a social order of which they are the victims. Infants without love, they will end as adults full of hate." When Lorenz

[71] Konrad Lorenz, in *Königsberger Allgemeine Zeitung*, 2 Nov. 1940; quoted in Taschwer and Föger, *Konrad Lorenz* (cit. n. 2), p. 110. For other expressions of these views see Lorenz, in Tanner and Inhelder, eds., *Discussions on Child Development* (cit. n. 35), Vol. 1, p. 224; and Lorenz, "Über angeborene Instinktformeln beim Menschen" (cit. n. 34).

[72] Lorenz, *On Aggression* (cit. n. 59), pp. 46, 113.

visited his department in 1970, Spitz declared that only people like Lorenz could save the world from a foretold fatal decline. He minced no words: "Armageddon is upon us."[73]

Lorenz also became more daring in his pronouncements about parental relations and the social costs of deviating from nature's path. He claimed that, for the sake of society, one had to support the instinctual basis of family life. As he put it in an interview with the *New York Times* in 1970: "The survival of society at all—of human society—is in doubt, particularly if the family structure is not kept up. I believe that the innate program of the human individual is such that he cannot deploy all his possibilities and evolve all his inherent faculties unless it's done within the frame of the normal family. And the normal family even implies the grandmother." The title of the article summarized his position: "The Family, to Lorenz, Is All."[74]

In another interview, he made it clear that when he spoke about the family he was referring to the patriarchal family: "I would venture to say that in man there is a direct correlation between the hate among children and the lack of a dominant father." In his opinion, hostility in the United States "between brother and sister" was due to the lack of a strong father in the American family. Again, animals provided the "proof" for such an assertion: "In wolves, for example, when the alpha animal disappears, hostility develops among the inferior wolves. Battles for superiority immediately break out among the young."[75]

Yet Lorenz did not provide any data to back up his assertion that there was hostility between brothers and sisters in the United States or a correlation between hate among children and the lack of a dominant father. He also did not provide any justification for the analogy between men and wolves. As in *On Aggression*, Lorenz never explained why humans should sometimes be compared to pigeons, sometimes to wolves, and sometimes to some other creature in the animal kingdom.[76]

In 1973 Lorenz, Tinbergen, and Karl von Frisch were jointly awarded the Nobel Prize in Physiology or Medicine. They received this most prestigious scientific award "for their discoveries concerning organization and elicitation of individual and social behavior patterns." According to the communication from the Nobel Institute, their first discoveries "were made on insects, fishes and birds, but the basal principles have proved to be applicable also on mammals, including man." In discussing the honorees' "discoveries concerning organization, maturation and elicitation of genetically programmed behavior," the committee included "the behavior of a mother to her newborn child."[77]

The Nobel communication was as misleading as it was revealing. Lorenz, Tinbergen, and von Frisch had never worked on mothers. They could not have shown that mothers' behavior to their newborn children was "genetically programmed." Yet the fact that the Nobel committee highlighted this behavior reveals how successful Lorenz had been in

[73] Spitz, *First Year of Life* (cit. n. 49), p. 300; and Spitz, "Discussion of Dr. Lorenz's Paper," p. 12, 11 Jan. 1970, Box M2116, Folder 7: Lorenz 1970, Spitz Papers.

[74] "The Family, to Lorenz, Is All," *New York Times*, 22 Jan. 1970.

[75] "Rats, Apes, Naked Apes, Kipling, Instincts, Guilt, the Generations, and Instant Copulation—A Talk with Konrad Lorenz," *New York Times*, 5 July 1970.

[76] See Burkhardt, *Patterns of Behavior* (cit. n. 2), Ch. 10. On Lorenz's racist writings and Nazi ideology see Ute Deichmann, *Biologists under Hitler* (Cambridge, Mass.: Harvard Univ. Press, 1996), pp. 185–205; Burkhardt, *Patterns of Behavior*; Benedikt Föger and Klaus Taschwer, *Die andere Seite des Spiegels: Konrad Lorenz und der Nationalsozialismus* (Vienna: Czernin, 2001); Taschwer and Föger, *Konrad Lorenz* (cit. n. 2); and Theo J. Kalikow, "Konrad Lorenz's Ethological Theory, 1939–1943: 'Explanations' of Human Thinking, Feeling, and Behaviour," *Phil. Soc. Sci.*, 1976, *6*:15–34. On eugenics see Diane Paul, *Controlling Human Heredity, 1865 to the Present* (Atlantic Highlands, N.J.: Humanities, 1995).

[77] Press release: Karolinska Institutet, www.nobel.se/medicine/laureates/1973.

turning his role as a surrogate mother for ducks into a position of scientific authority on human mothers.[78]

With the recognition provided by the Nobel Prize, Lorenz continued to write on complex social issues. The same year he published *Civilized Man's Eight Deadly Sins*. Reminiscent of eugenicists' tracts about the decline of Western civilization, this new book featured Lorenz's most alarmist rhetoric proclaiming the perils of, among other things, "genetic decay." But in accord with the shift from the prewar concern about mentally defective people to the postwar concern about the emotional lives of individuals, Lorenz's "emotionally defective people" now replaced the eugenicists' morons. Among the major causes of degeneration was the mother of the race.[79]

Referring to Spitz's work, Lorenz argued that "lack of personal contact with the mother during early childhood produces—if not still worse effects—the inability to form social ties, with symptoms extremely similar to those of innate emotional deficiency." He warned as well that the limited role of natural selection in modern society allowed the reproduction of "hereditary instincts defects." Perhaps recalling his friend Spitz's claim that Armageddon was upon us, he claimed that it was "difficult to argue with those who believe that we are living in the days of antichrist. . . . There is no doubt that through the decay of genetically anchored social behavior we are threatened by the apocalypse in a particular horrible form." Years later, he continued to trace this apocalyptic threat to the mother: "The capability of creating personal ties is atrophying . . . often caused by a traumatic scarcity of mother-child contacts in early infancy."[80]

Having used his experience of "surrogate" motherhood in his rise to stardom, Lorenz now relied on his recognized scientific expertise on behavior to identify the mother as a main cause of degeneration. Scientists had erected the mother as the source of all emotions and, thus, the cause of all emotional maladies. After World War II, it was no longer acceptable to blame morons for the degeneration of the race; but it was acceptable to blame mothers. In this context, Lorenz was able to rephrase his eugenic fears in a socially acceptable form. Lorenz's work on the mother-infant dyad had helped to promote his status as the father of the fledging science of ethology. Now he could use this status to discipline the role of mothers.

CONCLUSION

I have argued that Lorenz's success had much to do with his role as a substitute mother of ducks and his views about the mother-infant dyad. After the war, amid heightened

[78] To the surprise of many, Tinbergen talked about mothers in his acceptance speech, as he and his wife were at the time writing on autism. The story of how Tinbergen also ended up blaming mothers for some of their children's conditions and, specifically, autism is fascinating, but it is beyond the scope of this essay. I cover this in my current book project, tentatively entitled: *The Nature and Nuture of Love: How Mother Love Became a Biological Instinct in Post-War America.*

[79] Konrad Lorenz, *Civilized Man's Eight Deadly Sins* (New York: Harcourt Brace Jovanovich, 1974), pp. 43, 48 (the German version had appeared in 1973). For Lorenz's early views on the perils of racial degeneration see Lorenz, "Über Ausfallserscheinungen im Instinktverhalten von Haustieren und ihre sozialpsychologische Bedeutung," in *Charakter und Erziehung: Bericht über den 16. Kongress der Deutschen Gesellschaft für Psychologie in Bayreuth* (Leipzig: Teubner, 1939), pp. 139–147; and Lorenz, "Durch Domestikation verursachte Störungen arteigenen Verhaltens," *Zeitschrift für Angewandte Psychologie und Charakterkunde*, 1940, *59*:2–81. For a discussion of Lorenz and National Socialism see Föger and Taschwer, *Die andere Seite des Spiegels* (cit. n. 76); and Burkhardt, *Patterns of Behavior* (cit. n. 2).

[80] Lorenz, *Civilized Man's Eight Deadly Sins*, pp. 48, 53, 59; and Konrad Lorenz, quoted in "Nobel Laureate Watches Fish for Clues to Human Violence," *New York Times*, 8 May 1977.

scientific and public interest in the development of emotions in childhood and the importance of the mother for her child's development, Lorenz's studies of imprinting received much publicity. By showing that disruption of the normal process of imprinting in ducks made them unable to perform the normal and natural social responses of their species, Lorenz's work seemed to confirm what psychoanalysts claimed about humans. According to child analysts like David Levy, René Spitz, Margarethe Ribble, Therese Benedek, and John Bowlby, many psychopathologies and sociopathologies could be traced back to the disruption of the mother-infant bond. In providing a biological foundation for the mother-infant dyad, Lorenz's work furthered the project of naturalizing parental roles and thus justifying traditional gender roles in postwar America. Appealing to the authority of biological knowledge, his views contributed to a defense of a social vision that emphasized the need for the mother to focus on her role as caretaker of the family and her children. Thus, the social concern about the impact of disruptions in the mother-infant dyad was a key element in Lorenz's rise to stardom in the postwar era.[81]

I have explored the reasons why Lorenz and child analysts seized on this cross-disciplinary alliance. Child analysts turned to Lorenz for three main reasons: studies of child deprivation showing the need for mother love faced increasing criticisms; analysts saw an opportunity to flesh out the concept of instinct; and they were able to capitalize on the higher scientific status and authority of biological studies. But the impact of the interaction between ethology and psychoanalysis was not one sided. Lorenz's turn to psychoanalysis allowed him to build on the widespread cultural authority of psychoanalysis in American society and helped him to bolster the epistemological foundation for his claims about humans at a time when his own empirical work was under critical scrutiny by comparative psychologists. In addition, the focus on the mother-child dyad gave him a way of casting his concerns about the degeneration of social behavior in an idiom that was socially acceptable and resonated with concerns in the wider culture.

Thus, I conclude that Lorenz's remarkable popularity in the United States has to be understood in the context of the widespread interest in maternal love and its effects on child development after World War II. Lorenz's authoritative pronouncements on mother love and expertise on mothering behavior, based on his surrogacy experience with ducks and geese, are central to his wide appeal in American society and must be understood as part and parcel of his scientific views about animal nature, including human animals. Lorenz himself emphasized his role as "foster mother" in his scientific discussions and public presentations. Interpreting his views on human behavior only as "extrapolations" from his work on animals prevents us from fully understanding his goals, his contributions to science and social thought, and his extraordinary influence on popular culture.[82]

[81] In the late 1950s, Harry Harlow's experiments with rhesus monkeys raised with dolls as mother substitutes were also connected to Bowlby and Spitz, but analyzing these experiments is beyond the scope of this essay. See Marga Vicedo, "Mothers, Machines, and Morals: Harry Harlow's work on Primate Love from Lab to Legend," *Journal of the History of the Behavioral Sciences*, Vol. 45, no. 3 forthcoming 2009.

[82] See Alec Nisbett, *Konrad Lorenz* (New York: Harcourt Brace Jovanovich, 1976); and Franz M. Wuketits, *Konrad Lorenz: Leben und Werk eines grossen Naturforschers* (Munich: Piper, 1990).