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Faces of Babies: Empirical Evidence on the Borders of Biology, Psychology, and Feminism

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Empirical Evidence on the Borders of Biology, Psychology, and Feminism

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Rachel Weitzenkorn
B.A., Colorado College, 2010

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An abstract of
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Abstract

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By Rachel Weitzenkorn

Through the case of infant facial expression this dissertation offers a critical history of the scientific evidence of human behavior. Infant researchers are engaged in a creative process of translating emotions that are bodily, historical and cultural into identifiable entities that can be seen in and on the bodies of others. Important feminist work has demonstrated how this process dangerously reduces culturally specific emotions to inert and universal biological markers. Recently however, feminists have begun to reconsider scientific knowledge through practices, material arrangements, and 'on the ground' engagement with scientists. This renewed interest in materiality has focused on biological evidence such as the brain, the genome, and pharmaceuticals, with less critical engagement with the psychological sciences. Thus, a distinction between mind and body is maintained. This dissertation challenges this hierarchy by tracking the ways empirical observations of infant facial expressions travel between biological, psychological, and social understandings of behavior. It adds to feminist theorizing of the 'material body' through sustained attention on what material evidence is in our current moment. My research argues that non-expert empirical observations of bodily behaviors—blushing, looking, crying—become locations for mind outside of our disciplinary frameworks.

The dissertation focuses on three infant researchers (René Spitz , Silvan Tomkins, and Ed Tronick) during the era leading up to contemporary neuroscience (1946-1980). Each used the mother-infant relationship to traffic between scientific psychology and interpretative psychoanalysis. Through two layers of source materials, this dissertation shows the contradictions of empirical evidence. First, it analyzes the images produced by each researcher—films, photographs, charts and diagrams. Next, it contextualizes this raw data through the disciplinary location of each researcher—the historical moment of U.S. psychology and changing political views of motherhood and subjectivity. Along with introducing a broadened conception of empirical evidence, this dissertation examines the behavioral sciences as a way to expose the hierarchies of evidence that currently infiltrate feminist projects. Furthermore, this project argues that empirical researchers, themselves, reveal intricate theories of evidence and sensory experience.

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between Contradictory Messages in Face-to-Face Interaction," *Journal of the American Academy of Child Psychiatry Winter 1978* 17, no. 1 (1978): 2.

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Thank you to my mom who listened patiently and to my dad for his support and biting humor. Thank you to my sister to whom I always turned when I needed to lighten up. And thank you to Sasha Klupchak who helped me feel joy through this process.

…..it is unclear whether psychology is best understood as the object of analysis, a methodological tool, or an alternative to more reductionist accounts. This ambiguity has its advantages.[1]

Does not evidence, especially in the sense of that which has been made observable—under some circumstances also have a standing on its own—not merely for or against a hypothesis but also of a phenomenon that is neither more nor other than itself….when seeing is itself a kind of understanding.[2]

Chapter One

Feminist Empiricism and the Tensions of 20th Century Psychology

The sciences of the mind have an evidence problem. In 2013, Dr. Thomas Insel, the head of the National Institute of Mental Health, surprised many commentators by stating that the official manual for mental health researchers and clinicians, the Diagnostic and Statistical Manual (DSM), is "based on a consensus about clusters of clinical symptoms, not any objective laboratory measure."[3] This statement responded to the growing necessity in psychiatric and psychological sciences to identify biological foundations of behavior in the

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[1] Michael Pettit, "Book Review: Subject Matter: Human Behavior, Psychological Expertise, and Therapeutic Lives," *Social Studies of Science*, December 21, 2014, 7.

[2] Evelyn Fox Keller, *Making Sense of Life: Explaining Biological Development with Models, Metaphors, and Machines* (Harvard University Press, 2003), 206.

[3] It was no accident that this skepticism from the leading funding body of psychiatric research appeared just two weeks before the publication of the long awaited release of the American Psychiatric Association's Diagnostic and Statistical Manual of Mental Health (DSM-5). This new edition marks the growing tension in psychiatry between random control trials and other ways of documenting efficacy like case studies, and open ended surveys. Thomas Insel, "Director's Blog: Transforming Diagnosis," *National Institute of Mental Health: Director's Blog*, April 29, 2013, http://www.nimh.nih.gov/about/director/2013/transforming-diagnosis.shtml.

form of genes, anatomical lesions or physiology. A host of assumptions about the limits and standards of scientific evidence underlies this trend; in particular, the behaviors and experiences that comprise 'clinical symptoms' are excluded from the possibility of 'objective laboratory measure'. In short, good scientific evidence appears antithetical to experiential and behavioral observation. By focusing on a single site of psychological investigation, infant facial expression, this project examines the often-unacknowledged assumptions about the constitution of proper scientific knowledge of human behavior.[4] It investigates the modern standards of good and bad scientific evidence, not to adjudicate between them, but to glimpse the delicate process by which human behavior becomes a scientific object. It charts the separations between biological and psychological knowledges that make scientific evidence possible.

Since the nineteenth century, scientific theories for the foundations of human behavior have clustered around two paradigms: biological origins (genetic and physiological) and life experiences (cognitive and developmental). The infant provides evidence for both. The infant, imagined to be prior to culture, provides evidence of the foundations of universal behaviors. For this reason, the infant materialized as a popular site of observation as modern psychology began to claim scientific status in the late 19th century. Developmental psychology, evolutionary psychology, and paedeatrics were all consolidated as fields during this time. Theories of teleological heredity and growth raised concern for child welfare, the development of language, and the intelligence of varying populations. Specifically, this dissertation explores psychological research on the infant's face in the United States during a

[4] Debates about the definition of an infant are vast and historically revealing. For the sake of methods, this project defines research on the infant through Piaget's definition as prior to verbal speech from birth to approximately 18 months. The methods and definition of determining 'infancy' will be explored further in the dissertation.

burgeoning moment in psychology, between 1946 and 1980. I bookend this project with World War II and 1980 for three reasons. First, this period marks a standard timeline of historical research on American psychology. It was during this time when anxieties about the mental health of the nation, especially youth, became especially prevalent. Thus, both psychiatry and psychology made massive gains in research programs and training institutions. As on researcher put it, "the dominant narrative has revolved around the patronage of the Veteran's Administration in the dramatic expansion of the ranks of clinical psychologist in the United States and the exportation of this vision during the Cold War."[5] Second, while psychiatry and psychology made massive gains during this period, psychoanalysis was in a disciplinary crisis. By 1980 the DSM III had almost completely wiped psychoanalytic theory from its pages. Third, second-wave feminism became mainstream during this period and women entered the work place. This raised new questions about childcare and motherhood. Because of its liminal status between theories of biological determinism and psychological mutability the infant offers an ideal case study of modern hierarchies of evidence. This dissertation, then, has two objectives. First, it tracks the practices through which infant facial movements become scientific evidence for human emotion. Second, it uses this case to unsettle entrenched boundaries between mind and body that continue to haunt our evidentiary standards.

This hierarchy that I position here as a problem of evidence is especially troublesome for feminist theorists. Specifically, it is an important task for feminists to loosen the link between bodily variability, such as genital differences, hormone differences, skin color, etc., and explanations of function, health, inequality, or societal roles. This dissertation, then, discusses something about which feminists have had much to say: the relation between

[5] Pettit, "Book Review," 6.

empirical evidence and theories of bodily difference. Yet, for some, the title of this project may sound a bit dated. Today, feminists interested in scientific knowledge frame their project through practices, material arrangements, and 'on the ground' engagement with scientists. This dissertation draws from this methodology that allows for practices and biology to exist outside of or in unknowable relations to language. I will argue, however, that this recent polemic to return to the material world maintains distance from empiricism or theories of sensory experience. As I will explore in section two of this introduction, I propose a very precise definition of empiricism, not to be equated with positivism. For me, following Lynn Hankinson Nelson, empiricism is a theory of sensory evidence. Recent work on materiality in affect theory, and feminist science and technology studies (FSTS) tends to understand bodily materiality through the most scientific of sciences—physics, technology, biology. Biological sciences, following Insel's statement, are upheld by recent feminist scholarship as accomplished and stable, while psychological sciences are disregarded as unruly and unreliable. Thus, a hierarchical distinction between mind and body is maintained. This dissertation challenges feminist theorizing of the 'material body' by focusing on the undeniably empirical observations on infant behavior. I say undeniably here, to mean common-sense, self-evident observations of human behavior like the blush, crying, reaching, and nodding. How do these non-expert empirical observations become scientific evidence? What counts and what has counted as an explanation for mental pathology? What counts as an explanation in scientific practice?

In this chapter I develop these claims by providing a genealogy of current feminist scholarship that has become progressively invested in the evidence of the material body, especially that developed in the biological and physical sciences. In the first section I give a brief overview of constructionist accounts of the body developed by feminists in the late

1970s into the 1990s that frames much of the current humanistic scholarship on developmental psychology. I draw from contemporary scholarship that highlights the possibilities of a detailed account of the material body outside of this constructionist mode.[6] I argue, however that the materialist turn in feminist theory has swung the pendulum at the expense of a careful explanation of what material evidence is. Next, I offer an alternate genealogy: feminist empiricism. Feminist empiricism has remained somewhat outside of the purview of new feminist materialism. In part, because it remains particularly tied to normative question of scientific practice. This theory, developed by Lynn Hankinson Nelson through William Van Ormand Quine, frames the dissertation that argues epistemology, or theories of evidence can offer a rich account of bodily variability. This account does not necessarily shy away from positing the constraints of the biological and material world. Finally, I introduce the objects of the project— three infant researchers that defied disciplinary boundaries. Importantly, in this section I introduce psychoanalysis as a major alternative for feminists conceiving gender difference outside of the "cult of empiricism."[7] This has important consequences for this project that analyzes psychoanalytic infant research that is unabashedly empirical. Furthermore, this project argues that empirical researchers, themselves, reveal intricate theories of evidence and sensory experience. Using methods from feminist STS that offer a thoroughgoing appreciation for the biological and technological reality of science, I examine an often disregarded area of science. Along with introducing a broadened conception of empirical evidence, this dissertation examines the

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[6] This broad body of work sometimes called post-human, ontological turn, or material has been aptly encapsulated by Maureen McNeil as "post-millennial." In this chapter and throughout the dissertation I will primarily refer to at feminist materialism. Maureen McNeil, "Post-Millennial Feminist Theory: Encounters with Humanism, Materialism, Critique, Nature, Biology and Darwin," *Journal for Cultural Research* 14, no. 4 (October 1, 2010): 428.

[7] David Leary and Stephen Toulmin, "The Cult of Empiricism in Psychology, and Beyond," *A Century of Psychology as Science*, January 1, 1985, 594–617.

behavioral sciences as a way to expose the hierarchies of evidence that currently infiltrate feminist projects.

Section I: The Unsolved Problem of Empirical Evidence

Observational research on infants is likely to provoke robust feminist skepticism. In the mid 19th century infant behaviors, facial movements, and bodily capacities became legitimate scientific evidence for biological origin stories of human motivation and action. This is perhaps most notable in the work of Charles Darwin. Visual evidence in the form of photographs, along with detailed descriptions of the daily lives of infants were taken as proof of a host of theories of inheritance, sexuality, racial hierarchies, and definitions of humanness. In addition to a record that Darwin kept of his earliest memories, in 1838 he began a four-year observational notebook of his first son William. Not published until 1877 in the journal *Mind*, this infant record captured the late 19th century scientific imagination as a window onto human evolution.[8] As such, this publication is a catalyst moment for a new area of science which relied on observation and experimentation of the young child.[9]

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[8] Charles Darwin, "A Biographical Sketch of an Infant," *Mind* os-2, no. 7 (1877): 285–94. Darwin's role in developmental theory will be explored throughout the dissertation. The most sustained discussion of Darwin will be in the third chapter on Universalism, facial expression and Silvan Tomkins. Especially important for this project is Darwin's less remarked on book, Expression of Emotion in Man and Animals. Charles Darwin, *The Expression of the Emotions in Man and Animals*, Original edition (London: Penguin Classics, 2009).

[9] Sally Shuttleworth gives a thorough and thoughtful exegesis of the early history of child development in literature and science. Her book, *The Mind of the Child,* focuses on the British context between 1840-1900 showing that the Victorians solidified the child mind as an object of literary and scientific scrutiny. Sally Shuttleworth, *The Mind of the Child: Child Development in Literature, Science, and Medicine 1840-1900* (Oxford University Press, 2013). See also: Denise Riley, *War in the Nursery : Theories of the Child and Mother* (London: Virago, 1983); Ben S. Bradley, *Visions of Infancy: Critical Introduction to Child Psychology* (Cambridge, UK : Cambridge, MA, USA: Polity Press, 1992); Erica Burman, *Deconstructing Developmental Psychology* (Routledge, 2007); Erica Burman, *Developments : Child, Image, Nation* (London ; New York: Routledge, 2008); Emily D. Cahan, "The Child as Scientific Object," *Science* 316, no. 5826 (May 11, 2007): 835–835; Claudia Castañeda, "Developmentalism And The Child In

Feminists tend to be suspicious of the 'view-from-nowhere' authority of scientific knowledge, making observations of infant facial expression a likely object of critique. Indeed, critiques of scientific knowledge of anatomical and other bodily differences has a long and entrenched history in feminist theory. To this end, scholars question the epistemic privilege of science that affirms and solidifies the structural hierarchies that order society. Classic feminist texts analyze the history of medicine and science to unsettle a modern separation between evidence and theory that remains a trenchant ideal of scientific research. Feminists show the "processes through which naturalization takes place," by disaggregating the cultural meaning categories carry from their appearance as unquestionable observable facts.[10] Critiques of the biological evidence of human variability are crucial in this endeavor.[11] The knowability of the body is disrupted. Feminists focus especially on representations of the body—images, words—to challenge enlightenment ideals of knowledge as a direct reflection of reality. Rather feminists argue that knowledge mediates and influences the world it proposes to know.

As the 1979 introduction to the appropriately titled book *The Orders of Nature* notes, the history of science is increasingly interested in "natural knowledge as a product of our way

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Nineteenth-Century Science," *Science as Culture* 10, no. 3 (2001): 375–409; Roger Cooter, *In the Name of the Child* (Routledge, 2013); Shuttleworth, *The Mind of the Child*; Carlyn Steedman, *Strange Dislocations : Childhood and the Idea of Human Interiority, 1780-1930* (London: Virago Press, 1995).

[10] Ludmilla Jordanova, *Sexual Visions: Images of Gender in Science and Medicine Between the Eighteenth and Twentieth Centuries* (Univ of Wisconsin Press, 1993), 5.

[11] Lynda I. A Birke, *Feminism and the Biological Body* (New Brunswick, NJ: Rutgers University Press, 2000); Jordanova, *Sexual Visions*; Anne Fausto-Sterling, *Sexing the Body: Gender Politics and the Construction of Sexuality*, First Edition (Basic Books, 2000); Michel Feher, Ramona Naddaff, and Nadia Tazi, *Fragments for a History of the Human Body* (New York, N.Y.; Cambridge, Mass.: Zone ; Distributed by the MIT Press, 1989); Emily Martin, "The Egg and the Sperm: How Science Has Constructed a Romance Based on Stereotypical Male-Female Roles," *Signs* 16, no. 3 (1991): 485–501; Lynn Segal, *Why Feminism?: Gender, Psychology, Politics* (Columbia University Press, 1999).

of life."[12] Natural knowledge reflects society more than any kind of truth about nature. Catherine Gallagher and Thomas Lacquer, emblematically in 1990, analyzed the way representations of the differences between men and women change depending on historical location, showing that "no set of fact ever entails any particular set of difference."[13] By tracking pre-enlightenment to post-enlightenment, they demonstrate that sexual differences were visualized and described in vastly different ways, signifying the susceptibility of bodily representations to cultural and historical influence. Gallagher and Lacquer place the cause of the change distinctly in the political context. The movement from one sex to two sex depictions of sexual difference was due to the political unrest of the 18th century that sought stability in the biological and natural order to give form to cultural ambiguities. They argue, "distinct sexual anatomy was adduced to support or deny all manner of claims…"[14] Similarly, others argue that anatomy provides a key site for ordering and legitimizing societal structures—such as gender and racial hierarchies.[15] Anatomy, or the careful display and systematization of the body helps medicine lay claim to biological causes of difference and insist on unification and simplification.[16] Feminists considering multiple eras and fields draw out the way knowledge of the body appears easy and accomplished, rather than contested;

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[12] Barry Barnes, *Natural Order: Historical Studies of Scientific Culture* (Sage Publications, 1979), 9.
[13] Catherine Gallagher and Thomas Walter Laqueur, *The Making of the Modern Body: Sexuality and Society in the Nineteenth Century* (Berkeley: University of California Press, 1987), 19.
[14] Ibid., 152.
[15] Feher, Naddaff, and Tazi, *Fragments for a History of the Human Body*; Martin, "The Egg and the Sperm"; Jordanova, *Sexual Visions*; Lisa Jean Moore and Adele E. Clarke, "Clitoral Conventions and Transgressions: Graphic Representations in Anatomy Texts, c1900-1991," *Feminist Studies* 21, no. 2 (July 1, 1995): 255–301.
[16] As Roger Cooter argues in 1979 of the popularlizers of 19th century anatomy, the body "is man's most available metaphor" Roger Cooter, *"The Power of the Body: The Early Nineteenth Century" in. Natural Order: Historical Studies of Scientific Culture*, ed. Barry Barnes and Steven Shapin (Beverly Hills, Calif.: Sage Publications, 1979), 73. Subsequently Cooter explores "the metaphor" of physiology as a necessary ideology in the 19th century that supported the developing class divide. Cooter shows that "through physiology, actual social and ideological consensus was covertly appropriated" Ibid., 87.

they ultimately show that visual images of the body is particularly trenchant area for the naturalization of cultural processes.[17]

This project takes infant facial expression to be similar to anatomy in that it is seen, bodily, and often perceived to be the outward manifestation of less visual functions such as emotional development and bonding. Like 19th and 20th century medical research on genital differences, infants continue to be observed for the display of human emotion free of language, culture and reflection. In much of the scholarship on anatomy and medicine observation is a key tool. Visual evidence is an important thread throughout this dissertation. I will explore the role of visual evidence in Section III of this chapter. For now, it is important to note that the object of critique in many histories of the body, that include history of development, is visual displays. As such, this project is indebted to the early feminist histories of bodily variability. Babies are objects of scientific observation, in part, because they seem to depict a simplified psychology manifested in the body. They satisfy a positivist goal to ground hypothesis in the material world. As Ben Bradley argues, "neither the infant nor the psychologist needs to struggle with ambiguity or develop its own unique

[17] A contrasting but related critique of the categorization of the body shows not how scientific knowledge legitimizes society, but how the knowledge itself is influenced by cultural biases (Jordanova, *Sexual Visions*; Sarah Blaffer Hrdy, *The Woman That Never Evolved with a New Preface and Bibliographical Updates* (Cambridge, Mass.: Harvard University Press, 1999); Phyllis Rooney, "Gendered Reason: Sex Metaphor and Conceptions of Reason," *Hypatia* 6, no. 2 (1991): 77–103. Londa Schiebinger is emblematic of this type of scholarship as she points out the racial and gendered metaphors that helped determine the classification of Nature during the enlightenment. Her thesis is that 18th century taxonomists relied on sexual stereotypes to determine a unified classification system of Nature. The famous classifier, Linnaeus, used metaphors of marriage to visualize and order plants. For example, plants became husbands and wives, and leaves became "bridal beds" Londa L. Schiebinger, *Nature's Body: Gender in the Making of Modern Science* (Rutgers University Press, 1993), 22. Schiebinger draws the reader's attention to the metaphors that order society and come to act as useful images for the unification of plant and animal life. In this way, she argues that knowledge of nature is influenced by cultural practices and assumptions.

meaning. The meaning is simply there 'written on the rocks'."[18] In one way, then, infant observation can be understood analogically to other constructionist critiques of bodily knowledge.

Previous scholarship on childhood and developmental psychology shows the ways the infant materializes as a natural object of observation through changing historical conceptions of motherhood, love, and innocence. The infant as scientific object gains traction and importance as cultural anxieties about nationhood, security, and race evolve through the World Wars and the changing face of colonialism.[19] Sally Shuttleworth shows that during the 19th century evolutionary theory put the child at the center of "discourses of gender, race, and selfhood: a figure who is by turns animal, savage, or female."[20] The field now recognizable as childhood studies tracks the historical emergence of childhood in conjunction with social or cultural history. Historians argue that the 19th century, termed the century of the child, propels the sentimentalization of childhood as young children became a cornerstone of the 20th century welfare state. Similarly, feminists and queer theorists closely examine current attachments to the innocence, potentiality, and pureness of the cultural symbol of the child as the foundation for the ideology of the family. These scholars argue that the scientific evidence about the infant is dangerously inflected with, and adds to, the

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[18] Bradley, *Visions of Infancy*, 7–8.

[19] Burman, *Deconstructing Developmental Psychology*; Rima D. Apple, *Mothers and Medicine: A Social History of Infant Feeding, 1890–1950* (Univ of Wisconsin Press, 1987); Lisa Cartwright, "Emergencies of Survival': Moral Spectatorship and the 'New Vision of the Child' in Postwar Child Psychoanalysis," *Journal of Visual Culture* 3, no. 1 (April 1, 2004): 35–49; Linda C. Mayes and Stephen Lassonde, *A Girl's Childhood: Psychological Development, Social Change, and the Yale Child Study Center* (Yale University Press, 2014); Michal Shapira, *The War Inside* (Cambridge University Press, 2013); Willem Koops and Michael Zuckerman, *Beyond the Century of the Child: Cultural History and Developmental Psychology* (University of Pennsylvania Press, 2012).

[20] Shuttleworth, *The Mind of the Child*, 4.

cultural and historical idealization of childhood.[21] This project does not refute the pervasive symbolization of the baby and the child. Rather, it brackets a tendency in this scholarship to reflexively refute the validity of empirical research where observation of infant behavior always points toward idealization of family or the nation state. I focus, instead, on the infant as a *case* through which to examine the negotiations with empirical evidence.

Infant researchers, like other behavioral scientists, are engaged in a creative process of translating emotions that are biological, historical and cultural into identifiable entities that can be seen in and on the bodies of others. Important feminist work demonstrates how this process can reduce culturally specific emotions to inert and universal biological markers. In this scholarship, empirical evidence, visual observation, and positivism tend to blur together. Indeed, empiricism itself has been a key object of feminist critique for its sexist and androcentric foundations.[22] Varying theories of evidence are depicted as monolithic tools that solidify, as natural, the hierarchies between men and women, white and black, and normal and abnormal. Underlying this important claim by feminists is an assumption about evidence: that cultural and historical context is minimized in the process of standardizing human behavior as a scientific object.

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[21] Claudia Castañeda, *Figurations: Child, Bodies, Worlds* (Duke University Press, 2002).

[22] Ruth Bleier, *Science and Gender : A Critique of Biology and Its Theories on Women* (New York: Pergamon Press, 1984); Susan Bordo, *Unbearable Weight : Feminism, Western Culture, and the Body / Susan Bordo.* (Berkeley: University of California Press, 1993); Rachel T. Hare-Mustin, *Making a Difference: Psychology and the Construction of Gender*, ed. Professor Jeanne Marecek (New Haven: Yale University Press, 1992); Evelyn Fox Keller, "Feminism and Science," *Signs* 7, no. 3 (April 1, 1982): 589–602; Jill Gladys Morawski, *Practicing Feminisms, Reconstructing Psychology: Notes on a Liminal Science* (University of Michigan Press, 1994); Carolyn Merchant, *The Death of Nature: Women, Ecology, and the Scientific Revolution* (Harper Collins, 1990).

To put it more polemically, political intervention into the reductive tendencies of the biological sciences becomes unnecessarily aligned with anti-empiricism.[23] To counter this effect, feminists in the last 15 years theorize scientific knowledge through interaction, systems or what I call a relational approach to matter.[24] These feminists posit the intelligence or agency of matter as a way to move beyond constructionist critiques of scientific epistemology.[25] What some see as an over-emphasis on culture, subjectivity, and language has been combated by giving "material reality a radical reappraisal."[26] Framed against the linguistic turn, these theories illuminate new evidence from sciences that demonstrates the irreducibility of the material world. [27]

Particularly emblematic of the kind of cautionary note against the pervasiveness of epistemology and cultural analysis is Bruno Latour. Early in his career, Latour gave thorough and widely read accounts of the "construction of facts," but as the science wars heated up he

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[23] This echoes the sentiments of other scholars: Bruno Latour, *Pandora's Hope: Essays on the Reality of Science Studies* (Harvard University Press, 1999); Elizabeth A Wilson, *Psychosomatic: Feminism and the Neurological Body* (Durham: Duke University Press, 2004); Karen Barad, *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning* (Duke University Press Books, 2007); Stacy Alaimo and Susan J. Hekman, *Material Feminisms* (Indiana University Press, 2008); Deboleena Roy, "Somatic Matters: Becoming Molecular in Molecular Biology," *Special Issue, Rhizomes: Cultural Studies in Emerging Knowledge* 14 (2007); Eve Kosofsky Sedgwick and Adam Frank, *Touching Feeling: Affect, Pedagogy, Performativity* (Duke University Press, 2003).

[24] Donna Jeanne Haraway, *Modest−Witness@Second−Millennium.FemaleMan−Meets−OncoMouse: Feminism and Technoscience* (Psychology Press, 1997); Barad, *Meeting the Universe Halfway*; Stacy Alaimo, Susan Hekman, and Michael Hames-Garcia, *Material Feminisms* (Indiana University Press, 2008); Bruno Latour, "Why Has Critique Run out of Steam? From Matters of Fact to Matters of Concern," *Critical Inquiry* 30, no. 2 (January 2004): 225–48; Alaimo, Hekman, and Hames-Garcia, *Material Feminisms*; *The Nick of Time: Politics, Evolution, and the Untimely* (Durham: Duke University Press Books, 2004).

[25] As Susan Hekman argues, "ontological theories about matter; unlike epistemological theories, they cannot loose the real—it is their subject matter" "Constructing the Ballast: An Ontology for Feminism," in *Material Feminisms*, by Stacy Alaimo and Susan Hekman (Indiana University Press, 2008), 98.

[26] Diana H Coole and Samantha Frost, *New Materialisms: Ontology, Agency, and Politics* (Durham [NC]; London: Duke University Press, 2010), 2.

[27] Alaimo and Hekman, *Material Feminisms*.

started to caution the prevailing critical spirit. For Latour, the science wars crystalized the effect of earlier research where scientists and humanists were often pitted against each other. This despite, Latour's realization that often they shared common enemies.[28] Eventually he reconsidered his constructionist understanding of scientific knowledge. For Latour and others, the goals that sparked critical accounts of science, namely to undo racist, colonialist, and sexist forms of knowledge, were not achieved through pure critique. This oversight, for many scholars requires more engaged scholarship with the sciences. Vicki Kirby, in her meditation on the discourse surrounding scientific discovery, shows that cultural theorists like Judith Butler have displaced the question of nature. These theorists, according to Kirby, posit that nature can have no frame that isn't cultural.[29] Social constructionists argue that the transparent objectivity of science propels models, and representations of biology as life itself; these critics remind us that these biological objects are produced through textual or encoded forms of language that often propel societal hierarchies. Yet, in this conception, nature is forever inaccessible, meaningful only through language. In this dominant cultural analysis, Kirby argues, "humanness is profoundly unnatural. The abstracting technology of language, intelligence, and creative invention is separated from… the material body of human animality."[30] This refutation of an overemphasis on language, psychoanalysis, or epistemology, a decade and a-half in the making, has become a recognizable thread in feminist theory.

Following a growing body of work in science studies that seeks to look beyond social construction, this project attends to the details, contradictions, and dynamism of empirical

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[28] "Why Has Critique Run out of Steam?," 231.
[29] Vicki Kirby, "Natural Conversations: Or, What If Culture Was Really Nature All Along?," in *Material Feminisms*, by Susan Hekman and Stacy Alaimo (Indiana University Press, 2008), 220.
[30] ibid.

evidence.[31] As Bruno Latour states of the devolution of the science wars, "the question was never to get *away* from facts but *closer* to them, not fighting empiricism but, on the contrary, renewing empiricism."[32] Latour's aim is not to refute previous critical work, but to temper it. Like Latour and other STS scholars I aim to detail the ways that scientific practice is culturally embedded. I argue that this can be achieved through the empirical reality researchers contend with. To this end, this project analyzes empirical evidence in American psychology as variable and contradictory rather than as a single entity constructed through the myth of a universal knower.[33] Studying the evidence of the infant tests whether empirical data necessarily reduces complexity to a single culturally inflected marker of difference. Only through careful engagement with experimental science can a wider view of empirical evidence emerge.

Simultaneously I worry about the tendency of this new scholarship to privilege biological fact devoid or even cherry-picked from the processes through which the material world becomes evidence. Positing the dynamism of the material world through the evidences of biology, physics, ecology etc. should not come at the expense of a thoroughgoing appreciation for the debates, contradictions, and difficulty of developing these exciting discoveries. In short, I advocate for the importance of epistemology. Indicative of this

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[31] Eve Kosofsky Sedgwick, Adam Frank, and Irving E. Alexander, *Shame and Its Sisters: A Silvan Tomkins Reader* (Duke University Press, 1995); Elizabeth A Wilson, *Neural Geographies: Feminism and the Microstructure of Cognition* (New York: Routledge, 1998); Barad, *Meeting the Universe Halfway*; Alaimo and Hekman, *Material Feminisms*; Jane Bennett, "A Vitalist Stopover on the Way to New Materialism," in *New Materialisms: Ontology, Agency, and Politics*, ed. Diana H Coole and Samantha Frost (Durham [NC]; London: Duke University Press, 2010).
[32] Latour, "Why Has Critique Run out of Steam?," 229.
[33] Feminist epistemologists have shown the requirement of the universal knower in constructions of scientific observation. Knowledge is shaped by the position of the knower, and this is especially obscured in science where observation is meant to be universal. Scientific objectivity is "the subjectivity of quite a small group" Lorraine Code, *What Can She Know?: Feminist Theory and the Construction of Knowledge* (Cornell University Press, 1991), 22.; Haraway, *Modest−Witness@Second−Millennium.FemaleMan−Meets−OncoMouse*

unquestioned account of scientific evidence is the recent work by Elizabeth Grosz. As part of her case for the productivity of Darwin for feminism she writes, "feminists may have had good reason to object to the ways in which the study, the representations and techniques used to understand bodies and their processes and activities, have been undertaken….But there is a certain absurdity in objecting to the notion of nature or biology itself…"[34] She goes on to theorize Darwin's biological models as "biology itself." This project argues that Darwin's 'biology itself' is constitutively and irreducibly linked to his theories of evidence.

As I will explore further in the methods section of this chapter, this dissertation is invested and immersed in thinking through material practices and the body. It emerges indebted to and after key texts in this literature including Karen Barad's, *Meeting the Universe Halfway*, Elizabeth Wilson's *Psychosomatic*, and the later work of Bruno Latour. This project follows materialist sentiments by attending to the empirical reality of the infant that often confounds, troubles, and provokes the researchers under investigation here. I do this by centralizing, not eliding the epistemological stakes of the research programs under investigation. By focusing on a single site of empirical evidence this dissertation keeps tensions between matter of facts, interpretation, and theory unresolved. I argue that unraveling the dynamism, agency, and intelligence of the body and matter, should not happen at the expense of a careful account of what gets to count as material. We would do well to remember the epistemological lesson summarized by Lorraine Daston: on their own, facts are notoriously inert—'angular,' 'stubborn' or even 'nasty' in their resistance to interpretation and inference…. Only when enlisted in the service of a claim or a conjecture

[34] Elizabeth Grosz, "Darwin and Feminism: Preliminary Investigations for a Possible Alliance," *Australian Feminist Studies* 14, no. 29 (April 1, 1999): 32.

do they become evidence…" .[35] Daston shows that this separation between fact and evidence is a foundation of modern science that is iteratively maintained. This appreciation for the achievement of empirical evidence does not have to be at the expense of grappling with the possibilities and constrictions of the material world. This project seeks an alternative to the separations between constructionist critiques and new feminist materialism.

Section II: Feminist Empiricism as an Alternative

As an alternative to this binary that I have described in the first section I turn to feminist empiricism which emerged in the 1980s as part of the burgeoning scholarship at the intersection of feminism and science. In what follows I will focus on the work of Lynn Hankinson Nelson, specifically on the ways she uses Quine's philosophy of science to "smash boundaries."[36] Importantly, feminist empiricism offers a theory that dissolves the autonomy of science through an allegiance to material sensory data, i.e. empirical evidence. This has important consequences for the traffic between science and the humanities being fostered in fields like affect theory and material feminisms. In part, the usefulness of feminist empiricism is due to its temporality. That is, it was published before works like *Gender Trouble* that have come to characterize the landscape that new materialism counter-poses itself to.[37] It has not seen much traction in the new work on materiality, perhaps because empiricism is an epistemology—something recent feminist scholarship has turned away from.[38] While at

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[35] Lorraine Daston, "Marvelous Facts and Miraculous Evidence in Early Modern Europe," *Critical Inquiry* 18, no. 1 (1991): 93.
[36] Lynn Hankinson Nelson, *Who Knows: From Quine to a Feminist Empiricism*, 1st Edition (Philadelphia, Pa: Temple University Press, 1990), 9.
[37] Kirby, "Natural Conversations: Or, What If Culture Was Really Nature All Along?"; Barad, *Meeting the Universe Halfway*.
[38] Some feminists argue that the intervention of new feminist materialism is, in part, to think with the ontology of nature, rather than epistemology. See: Hekman, "Constructing the Ballast"; Coole and Frost, *New Materialisms*; Bennett, "A Vitalist Stopover on the Way to New Materialism."

the same time feminist empiricism cannot be aligned fully with cultural constructionist critiques of knowledge because of its loyalty to sensory data. Today it remains particularly useful for feminists practicing science or invested in improving scientific practice.[39] Despite the trends of the current moment, feminist empiricism offers many tools through which we can consider evidence through material sensory data. What model of evidence does a theory loyal to sensory experience of the world *and* to undoing assumptions about neutral science give us?

From its early days in the mid 1970s feminist science criticism has developed the possibility of a distinctly feminist epistemology. As Helen Longino argues, "the situatedness of the knower becomes a recurrent theme in feminist epistemology."[40] Sandra Harding gives an authoritative review of the contours of this early feminist epistemology of science. According to Harding, feminists that study science fall into three primary positions: feminist standpoint, feminist postmodernism, and feminist empiricism. Standpoint theory developed early on by Marxist philosopher Dorothy Smith argues that the oppressed or marginalized know the world differently and that we will only fully know the world if we start with what

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[39] There is a vibrant and expansive conversation among feminist scientists and feminist philosophers of science on how to bring feminism to the lab setting. For a clear exploration of this question see Deboleena Roy, "Asking Different Questions: Feminist Practices for the Natural Sciences," *Hypatia* 23, no. 4 (October 12, 2008): 134–56. For other feminist scholarship particularly concerned with improving see: Maya J. Goldenberg, "How Can Feminist Theories of Evidence Assist Clinical Reasoning and Decision-Making?," *Social Epistemology* 29, no. 1 (January 2, 2015): 3–30; Sandra Harding and Kathryn Norberg, "New Feminist Approaches to Social Science Methodologies: An Introduction," *Signs: Journal of Women in Culture and Society* 30, no. 4 (June 1, 2005): 2009–15; Sharlene Nagy Hesse-Biber, *Feminist Research Practice: A Primer* (SAGE Publications, 2013); Kristen Intemann, "25 Years of Feminist Empiricism and Standpoint Theory: Where Are We Now?," *Hypatia* 25, no. 4 (October 1, 2010): 778–96; Audrey Yap, "Feminist Radical Empiricism, Values, and Evidence," *Hypatia* 31, no. 1 (February 1, 2016): 58–73.

[40] "Feminist Epistemology at Hypatia's 25th Anniversary1," *Hypatia* 25, no. 4 (October 1, 2010): 736. For emblematic examples of this type of thinking see: Sandra G. Harding, *The Science Question in Feminism* (Cornell University Press, 1986).

those at the bottom of society (in this case the proletariat know). Harding furthers this claim through her idea of strong objectivity that argues that value-neutrality in research is achieved only by seeking out thought that starts from marginalized lives.[41] Where standpoint epistemology shows that marginalized knowers add to the strength of knowledge claims, current feminist scientists have begun to focus on the practices and material arrangements of doing science.[42] An increased focus on the material world has meant moving beyond epistemology. These material practices while historically located and contextualized, are meant to attend to the constraints of nature and the material world.[43] New scholarship thereby combines the lessons of early feminist critiques of knowledge with a contemporary twist—material arrangements. As contemporary work positions itself as contra to epistemology, the richness and controversies involved in 1980s and 1990s feminist epistemologies get homogenized and subsumed under standpoint as a single place holder. This scholarship, indebted to science studies scholars like Kuhn and Latour, has been influential in forging bridges between scientists and feminists by honoring the technological, mundane, practical, and personal constraints of the laboratory. Yet, we still need scholarship that offers explanation and exploration of how the material becomes evidence. Feminist empiricism, can enrich current modes of analysis loyal to the material, the real, or the ontological by positing a theory of sensory evidence.

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[41] "Rethinking Standpoint Epistemology: What is "Strong Objectivity?" *The Centennial Review* 36, no. 3 (1992): 460.

[42] Roy, "Asking Different Questions."

[43] This Kuhnian influenced sociology of science shows "the practices of scientific investigation, its products, and its norms are historically variant" Joseph Rouse, "What Are Cultural Studies of Scientific Knowledge," *Configurations* 1 (January 1, 1993): 7. See also Steve Fuller, *Social Epistemology* (Indiana University Press, 2002); Bruno Latour, *Science in Action: How to Follow Scientists and Engineers Through Society* (Harvard University Press, 1987); Helen E. Longino, "Feminist Standpoint Theory and the Problems of Knowledge," ed. Dorothy Smith et al., *Signs* 19, no. 1 (1993): 201–12; Steve Woolgar, *Knowledge and Reflexivity: New Frontiers in the Sociology of Knowledge* (London ; Newbury Park: SAGE Publications, 1988).

In the 1980s and 1990s feminist empiricism was pitted against Standpoint theory. According to Harding who argued for the value of Standpoint, feminist empiricists aim to remove bias in science by adhering more closely to the rules of scientific research. They also maintain that biased science is merely bad science that can be improved with reference to a more thoroughly empirical account of the world. Harding has critiqued feminist empiricism because it appears that in acknowledging the role of gender and social location in empirical observation, feminists dissolve the very foundations of empiricism—namely that there is a world to be accessed and known outside of the individual observer. My interest in this trouble with feminist empiricism is not to decide whether an unbiased account of the world is possible—feminists have decidedly answered no—but to examine feminist empiricism for a theory of sensory evidence.

For many feminists, empiricism dissolves into positivism and becomes the demarcation of reductive objective practices of science since the 19th century. Feminists from a broad range of disciplines have combated this view of the sciences, and sometimes science in general, by exposing the flimsiness of an ideal objectivity and the dangerousness of scientific authority garnered through the separation between fact and value. These projects generally incorporate a critique of empiricism, prompting many to ask: is feminist empiricism an oxymoron?

Nelson's answer is decidedly no. Nelson's first task then—and I would argue a problem that we continue to encounter in feminist theories—is to disaggregate empiricism from positivism. Nelson's empiricism does not presuppose an external world to be known, conquered and tamed by researchers. It is both more ubiquitous and more complicated than that. For Nelson, empiricism makes a single uncontroversial claim, that "there is a world that

shapes and constrains what is reasonable to believe."[44] Like many contemporary feminists, I advocate for serious attention to the constraints of nature, but I argue this can only be done through a careful theory of evidence.[45] Nelson's feminist empiricism is one place to start, or rather to return.

Nelson's book, *Who Knows,* unravels and develops two primary claims about evidence. The first, is that experience of the world guides our theories. The second posits that "our experiences of the world are sensory experiences, so that all evidence for science is, in the end, sensory evidence."[46] For Nelson, these axioms of evidence have important implications for feminists. Her task remains to convince feminists that an empirical theory of science does not rest on a separation between nature and culture or any of the other binaries that logical positivism perpetuates; and that empiricism can contend with the gender hierarchies of science. Even to our contemporary ears, now well acquainted with work that assimilates the body, biology, or nature, such a universal theory of evidence may be distinctly unsettling. I argue that it is precisely the blanket statement, or strong theoretical claim—all evidence for science is, in the end, sensory evidence—that makes empiricism a tool that can dissolve boundaries and hierarchies between disciplines, methods, and knowledges.[47]

The first objection we might raise to the above theory of evidence is that it posits the senses as foundational or prior to science. This model supposes an individual observer that can shed all prior experiences, biases, and histories in order to merely gather sensory data. Or taken further, traditional empiricism seems to rely on sensory experience that is prior to a

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[44] Nelson, *Who Knows*, 20.
[45] Alaimo and Hekman, *Material Feminisms*, 3.
[46] Nelson, *Who Knows*, 21.
[47] I will explore this idea of a strong theoretical claim in the third chapter on Silvan Tomkins. A useful discussion on this topic is Eve Kosofsky Sedgwick and Adam Frank, "Shame in the Cybernetic Fold: Reading Silvan Tomkins," *Critical Inquiry* 21, no. 2 (1995): 496–522.

speaking subject. Critiques of these models of knowledge are intrinsic to feminist theories as we know them. As alluded to previously, this view of scientific observation allows knowledge that is located in the cultural context and guided by gender and racial hierarchies to appear neutral and undisputable. This understanding minimizes or erases the role of cultural context at all levels of scientific practice. However, Nelson's view that all evidence is sensory evidence has a different emphasis. Rather than show the ways science and sensory evidence are indissoluble, Nelson pushes the claim that all evidence is sensory evidence to its zenith as a way to circle back on the separation between evidence and theory.

Significantly, a theory of evidence that posits all evidence as sensory expands the boundaries of science to include expert and commonsense theorizing alike. Empiricism, Nelson argues, does not necessarily, nor always require an ideal observer; it merely points to the presence of experience in evidentiary claims. Divesting empiricism from modernist conception of an all seeing observer, renders it quite rudimentary. Or aptly put by Nelson, empiricism may be a rather 'sparse' theory of evidence. What Nelson calls the 'sparseness' of empiricism enables its utility for feminists. This view of empiricism is sparse because it is stripped of all the ideals that separate science from other ways of sensing and knowing the world. It loosens the authority of an ideal scientific observer. Far from a positivist account of the sciences that gives scientific methods authority over all other ways of accessing the world, feminist empiricism argues that all theories are products of sensory experience, and therefore scientific.

Nelson frames this point through a rigorous analysis of two alternate theories of evidence, Thomas Kuhn's sociology of science and Ernest Nagel's logical positivism. Kuhn's theory of normal science pervades much scholarship in the sociology of science and in feminist theories of science, including standpoint epistemology. Kuhn details the idea that

science develops through communities. These communities are determined at different times through conceptual, theoretical, instrumental, and methodological commitments that comprise what Kuhn calls a paradigm. Paradigms govern the criterion for choosing relevant scientific problems, and they shape the world scientists encounter. Paradigms cannot be changed from within, or even identified by scientists, but shift only through revolutions that fundamentally alter the observable world. Paradigm shifts are determinate; "…after a revolution scientists are responding to a different world."[48] For example, the shift from Newtonian physics to Einsteinian Relativity is not amassed by a steady accumulation of new facts but comes from outside of the world that Newtonian physicists knew. The rules that had governed nature prior to the revolution of relativity no longer apply. Kuhn's theory of paradigm shifts is in direct opposition to the classic empiricists, represented by Nagel. The classic empiricist account of science is positivist in that it advocates for an objective, subjectless observer that can access the truth of the world. Scientific knowledge is only achievable when "a subject' and a subject's values' do not influence unduly or determine the development of scientific knowledge."[49] For Nagel and classic empiricists, science develops independently of individual opinion. Kuhn directly refutes this view of science positing the constitutive role of scientific communities in all observation.

Though Kuhn is positioned as a direct refutation of classic empiricism, Nelson convincingly demonstrates that each of these founding philosophers of science perpetuate the same problem. Both theories suppose a chasm between science and other forms of analyzing the world. Kuhn's scientific community "is as closed and isolated as Nagel's 'body

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[48] Thomas S Kuhn, *The Structure of Scientific Revolutions.*, [2d ed., (Chicago: University of Chicago Press, 1970), 111; Quoted by Nelson, *Who Knows*, 72.
[49] Nelson, *Who Knows*, 79.

of scientific knowledge' …and thus the sole arbiter of truth."[50] Where Nagel separates observation from theory, Kuhn views science communities as self-contained and self-regulating, naïve to their own location. These dissenting epistemologies of science spring from an identical assumption: that science is autonomous—autonomous from the world, autonomous from values, and autonomous from common sense. Therefore, Nelson turns to Quine to make the primary and far reaching intervention that posits all sensory evidence as scientific evidence.

Feminist empiricists, exemplified by Nelson, fundamentally alter the boundaries between "science, metaphysics, methodology, and epistemology."[51] Epistemology on this view, does not come from outside of science, it is within science. "It is not logically prior somehow to common sense or to the refined commonsense which is science; it is part rather of the overall scientific enterprise…."[52] Epistemology is not some removed meta-theory devoid of materiality and real world grounding; it can be revealed in the practices, data, and methodological attachments of researchers. Epistemology happens at the level and practices of scientific researchers themselves. This intervention into the boundaries that separate disciplines, methods, and knowledges is key to the way infant researchers are examined in this project. This is fundamentally a feminist tenet that seeks to undo the exceptionalism and authority of science; one that has been accomplished through several means including post-structural, psychoanalytic, and standpoint epistemologies. The interesting part about Nelson's move to dissolve these boundaries, is that it does not involve a kind of debunking or distancing from sensory evidence. Quite the opposite, it requires direct grappling with what sensory evidence *is* in this model.

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[50] Ibid.
[51] Ibid., 11.
[52] Ibid., 29.

So what is it? First of all, for Quine, sensory evidence is not on the order of single observable datum. It is linked through networks.[53] Quine explains, "science is a conceptual bridge of our own making, linking sensory stimulation to sensory stimulation."[54] There is no sensory evidence prior to science and no theory prior to sensory evidence. This radical circularity is due to the sparseness of empiricism. There is no outside of the claim that all evidence is sensory evidence. Science here, includes all efforts to link experiences. Additionally, it shows that the idea of evidence itself, an epistemology, comes from common-sense experiences with physical objects.

This bears not only on the boundaries of science but also on the ways we can understand sensory evidence. If all experiences are linked in our theorizing, then there is no autonomous sensory experience. Quine develops this point through developmental psychology. He draws from Piagetian understanding of knowledge that shows we cannot sense things prior to an object theory. This is a process of individuation where an apple only becomes such when a child learns "how much counts as an apple, and how much as another."[55] This means, in Quine's empiricism, that things and the way we talk about them are inseparable. For those now long familiar with post-structural intervention, this is quite a

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[53] This suggests Quine's location in the "cybernetic fold." Sedgwick and Frank introduce the term the cybernetic fold to describe the post war period in US thought roughly from the late 1940s to the 1960s. This dissertation draws largely from this period and scholars influenced by the possibility of computational processing. "The cybernetic fold is the then the moment of systems theory, and also, in a directly related but not identical development, the structuralist moment. Indeed part of our aim is to describe structuralism not as that mistaken thing that happened before poststructuralism…but rather as part of a rich moment, a rich intellectual ecology, a gestalt (including systems theory) that allowed it to mean more different, and more interesting things than have survived its sleek trajectory into poststructuralism""Shame in the Cybernetic Fold," 508. Quine, along with the infant researchers that comprise this project, are apart of this landscape that, like Sedgewick and Frank, I advocate a productive consideration of.

[54] W. V. Quine and Willard Van Orman Quine, *Theories and Things* (Harvard University Press, 1981), 1–2.

[55] Nelson, *Who Knows*, 101.

familiar gesture. It could be read as ceding all sensory, material data to language or culture. It's emphasis, however is on the ways sensory experience links together in a broadened view of science. Common-sense knowledge, grounded in experience is science, and provides the data for epistemology.

If all theories are constrained by our experiences of the world and all evidence in science is sensory evidence, then Quine is able to draw from science as justification for his claims about science. We cannot experience the object apple before there is a concept of apple. For Quine, "we accept this circularity, simply recognizing that the science of science is a science."[56] Each explanation is linked in an expanding network of sensory experiences. The hierarchies between good and bad science do not hold up in Quine's holism. This circularity is not on the order of a single line of links between theories and evidence. It is radically interconnected.

Moreover, this infinite bridge of sensory evidence that comprises all knowledge will never prove truth claims once and for all. No amount of sensory evidence will add up to complete knowledge of the world. As Quine puts it, "the truths that can be said even in common-sense terms about ordinary things are themselves… far in excess of any available data."[57] This means that our theories, speech, and ideas about the world are underdetermined by all the possible sensory evidence we might have for them. As Nelson argues there is "play" between our networks of theories and all available sensory evidence. This theory relies on an important conception of sense experience. Joan Scott is a useful counterpoint to this theory. Scott questions the epistemological power of experience. She argues that a belief in the historical evidence of experience presupposes the existent of social

[56] Ibid., 83.
[57] Quine and Quine, *Theories and Things*, 113.

identities. Instead she implores us to look beyond the link between experience and identity to "the workings of the ideological system itself" that give experience epistemological authority.[58] Scott's post-structuralism is a move against reductionism. It unsettles the link between experience and knowledge. Nelson's interpretation of Quine is also a move against reductionism but through the excess of sensory evidence, not a displacement of it. This play between sensory evidence and truth allows for gentler treatment of alternate methods and theoretical endeavors. It shows that a unique collection of sensory evidence will never prove a truth statement beyond the possibility of sensory experiences which could disprove it. This project takes this play seriously. It explores the ways scientists have contended with this play to appear like good scientists while also honoring the play inherent in their work. That is scientists are working with the knowledge that any empirical data could unseat their truth claim.

The theory of evidence that I am expanding in this dissertation draws from the archives of feminist theory. It explores the possibilities of thinking broadly about empirical evidence. It takes common-sense seriously as more than an object of critique. In the following chapters the researchers expand the networks of sensory experience. In their scientific practice they are also epistemologists. While the historical location of the researchers in post-World War II is intrinsic to their research, their networks also include empiricism or distinctive theories of sensory evidence. The task of this project is to explore what those are. They include how researchers deals with doubts, alternate sensory data and contradictory claims—how they manage the play between their theories and an excess of sensory evidence. By taking seriously the sensory claims of the researchers this project

[58] Joan W. Scott, "The Evidence of Experience," *Critical Inquiry* 17, no. 4 (July 1, 1991): 773.

follows feminist empiricism in its task to smash boundaries. These include good and bad science, theory and science, and experience and evidence.

Section III: Mind and Body Remainders

Each of the three areas discussed thus far, social construction of the body, feminist materialism, and feminist empiricism, are haunted by a key aspect of this dissertation, the strange realm of empirical evidence of the mental processes of humans. In the following section I detail what I see as the productive ambiguity of psychological evidence. I argue that this ambiguity has not been adequately studied by feminists.

The problem of psychological evidence in Quine provides Nelson with a feminist inroad. For Nelson, Quine's postulation that even the most meager sensory input leads to a torrential output in belief and theory allows for the possibilities of epistemological communities. Following Nelson I argue that "that slippage is interesting and worthy of attention…it is not enough simply to note it."[59] The slippage she identifies is Quine's acknowledgement that even the most meager sensory inputs are exceeded torrentially by the thoughts, beliefs and claims that result from them. This slack, Nelson argues, reflects the knowers location in communities. For her, what Quine sees as meager input, is not meager at all. It must include the sensory experiences of interactions with others through language and cultural experience. These sensory experiences add to empirical evidence as well.

The child emerges here as the primary example. As Nelson pulls from Quine, the child arrives in the thick of a community of knowledge where their sensory experience is already influenced by their experience with others. Developmental psychology provides the lynchpin in Nelson's feminist empiricism. It provides the data that expands Quine's tendency to focus on individual knowers and bring sensory evidence into the realm of

[59] Nelson, *Who Knows*, 285.

cultural inputs and a community of knowers. Psychology provides the empiricist grounds for a culturally located theory of evidence.

Yet, if we continue to follow Quine's postulations about sensory evidence we seem to loose any kind of philosophy of mind. Indeed, Quine positions the mental idiom in purely behaviorist terms. That is ideas, beliefs, and thoughts should be studied through behavioral science, but are in themselves not adequate objects of evidence.[60] To this end some have identified Quine as a physicalist. His views about what he calls "mental objects" sound quite reductionist. Mental objects, thoughts, beliefs, ideas, can not be sensed as things like the apple described earlier. They can only be understood as behaviors. Though mental states like thought and belief do not reduce to behavior, they can only be observed as "adjuncts" in behavior. Internal mental processes are not adequately specified to become objects for explanation, they must be contained and materialized as behaviors. This view of behavior aligns with the dominant understanding of behavior in experimental psychology.

And yet, Quine's model of epistemology turns to empirical psychology. He argues that the only way to understand how we develop theories and beliefs will be through behavioral and neurological research. In his proposed model of natural epistemology, a human subject is given a controlled stimulus input and "the subject delivers as output a description of the three-dimensional external world and its history. The relation between the meager input and the torrential output is a relation that we are prompted to study… in order to see how evidence relates to theory."[61] Psychology provides the possibility of an empiricist epistemology for Quine.

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[60] Ibid., 126.
[61] Ibid., 278.

I am interested in the productive troubles that nonphysical entities like emotion, thought, or belief pose for theories that are invested in strict physical and empirical evidence. Not only is an empiricist like Quine, loyal to this physical understanding of evidence. In the remainder of this section I show that feminists perpetuate similar trouble when it comes to empirical evidence in psychology. Psychological evidence appears to either be reductive or unreliable.

Not only does scholarship engaged in the material body elide discussion of how reality becomes evidence, it often recapitulates the evidentiary standards of modern science. Infant observation diverges from accounts of the construction of the body and their counter parts in material feminism because of its role in the scientification of psychology. Unlike the history of biology or medicine, that prior to the 70s took the form of a teleological narrative of discoveries, the history of psychology was always concerned with the status and definition of science. As Wilhelm Wundt, the father of modern psychology, said in 1871, "Experimental Psychology itself has, it is true, now and again suffered relapse into a metaphysical treatment of its problems."[62] This cautionary statement characterizes the anxiety that inaugurated modern psychology—placing pressure on experimental protocols, and objective methods to understand human behavior. This hypothetical philosophy of science based in positivism became a "prescriptive model of practice" for psychologists.[63] Because of its contested scientific status, psychology is explicitly invested in the problem of evidence.

Two effects emerge from the ambiguities of psychology. The first is an extreme focus on proper scientific method. For many researchers of the late 19th and early 20th

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[62] Robert Rieber, *Wilhelm Wundt and the Making of a Scientific Psychology* (Springer Science & Business Media, 2013), 34.
[63] Morawski, *Practicing Feminisms, Reconstructing Psychology*, 10.

century, most notably Skinner and Watson, this meant disregarding observational methods in favor of controlled experiments. The second is that psychological research is intrinsically concerned with society. Governmental funded studies on education, delinquency, labor, advertising, etc are central in the history of psychology. Therefore it directly grapples with the problems of society and culture, but through the ideals of scientific methods. A result of these broad conceptions is that psychology, on the one hand, is in a slightly marginal position in science and technology studies, while on the other is a key site for critiques of the ways that the human sciences discipline cultural variability. The analysis of psychological knowledge, like much of the above detailed work on the body, is indebted to Michel Foucault.[64] Traditionally, psychological knowledges have been examined as tools in society or population demographics rather than as emblematic examples in the philosophy of science. Psychologists are often read as "constantly psychologizing, economizing, and sociologizing the life world."[65] This takes the form of critiques of the naturalized, agential individual that is the ideal object in psychological research. In both conceptions and their accompanying critiques, psychology is understood as a weak example of positivist science.

For feminists engaged in scientific knowledges, the ambiguous scientific status of psychology has relegated it to a marginal category in relation to seemingly more challenging critiques of the most objective sciences. Psychology and less experimental disciplines appear to be explicitly open to sexist and racist bias. In this way, feminist critiques of the androcentrism of psychology align with positivist critiques: the discipline is not sufficiently

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[64] Nikolas Rose, "The Human Sciences in a Biological Age," *Theory, Culture & Society* 30, no. 1 (January 1, 2013): 3–34; Professor Nikolas Rose, *Inventing Our Selves: Psychology, Power, and Personhood*, Reprint edition (Cambridge, England; New York: Cambridge University Press, 1998); Ian Hacking, *Rewriting the Soul : Multiple Personality and the Sciences of Memory* (Princeton, NJ: Princeton University Press, 1995).
[65] Pettit, "Book Review," 6.

scientific. As Evelyn Fox Keller argues, "it is much more difficult to deal with the truly radical critique that attempts to locate androcentric bias even in the 'hard' sciences, indeed in scientific ideology itself."[66] For feminists dedicated to exposing the cultural and political underpinnings of science, psychology appears to be an easy target. The "truly radical critique" is reserved for those disciplines deemed truly scientific.[67] While demonstrating that the most neutral facts are inflected with the same exclusions and hierarchies that order society is a difficult task, this sentiment reinstates the hierarchies of knowledge that feminist alerted us to in the first place.

This oversight is not solved in current materialist scholarship. Much new feminist materialism continues to work within a dichotomous framework by valorizing organic and physical evidence. The recalcitrance of matter is primarily identified through the evidence of physics, biology, or ecology.[68] The epistemology of psychology remains open to bias and its object—human behavior and thought—are not sufficiently material. New feminist materialism then, has the effect of affirming a historical hierarchy of hard vs soft sciences without questioning the processes through which physics becomes material in more

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[66] Keller, *Making Sense of Life*, 592.

[67] To be sure there is a robust body of feminist psychology see Erica Burman, *Feminists and Psychological Practice* (London ; Newbury Park: Sage Publications, 1990); "Special Issue: Feminism & Psychology, 'DSM-5 and Beyond: A Critical Feminist Engagement with Psychodiagnosis' | Somatosphere," accessed October 11, 2014, http://somatosphere.net/2013/03/special-issue-feminism-psychology-dsm-5-and-beyond-a-critical-feminist-engagement-with-psychodiagnosis.html; Wendy Hollway et al., *Changing the Subject: Psychology, Social Regulation and Subjectivity* (Routledge, 2003).. This literature however is directed primarily toward psychologists. Far fewer feminist epistemologists think with psychology. A notable exception in Isabelle Stengers. Stengers engages with the question of what is science through the science of psychoanalysis. Isabelle Stengers, "Black Boxes, or Is Psychoanalysis a Science," in *Power and Invention: Situating Science* (U of Minnesota Press, 1997).

[68] Stacy Alaimo, *Bodily Natures: Science, Environment, and the Material Self* (Bloomington: Indiana University Press, 2010); Barad, *Meeting the Universe Halfway*; Grosz, "Darwin and Feminism"; Rosi Braidotti, *The Posthuman* (John Wiley & Sons, 2013).

substantial ways than other sciences. As early twentieth century philosophers of science argue, physics is the ultimate science where conjectures could be falsified through verifiable tests. This positivist ideal is implicitly upheld in current feminist scholarship that skews toward the authority of what our modern scientific histories deem most valid. Assumptions about disciplinary value are perpetuated by both early accounts of the social construction of the body and current accounts of the agency of matter. Both critiques of, and engagement with empirical evidence puts little pressure on the less than material sciences.

To combat this trend, this project thinks with materialist theories about a contested area of science: psychology. This study invests in the epistemological ambiguity inherent in 20th century psychology between observation and intervention, knower and known, and evidence and experience. Rather than critique these ambiguities, this project immerses itself in them to elide an ongoing separation in feminist scholarship between theories of mind and scientific evidence. Through an exploration of the material evidence of the facial expression of infants this project expands the recent feminist scholarship on materiality. It fills a gap in the literature that leaves the complex link between empirical evidence and human subjectivity to the side.

The cases of the dissertation are each drawn from non-traditional scientific infant researchers, who, nevertheless invoke explicitly empirical evidence in the Quinian sense. The chapters are organized around the archives of three different researchers (René Spitz, Ed Tronick, and Silvan Tomkins). Each chapter focuses on one researcher as a case through which to examine the negotiations of sensory evidence of infant facial expression within interdisciplinary alliances to psychoanalysis, developmental psychology, and evolutionary theory. These fields, have in fact, been crucial to feminist understanding of psychological knowledges.

Feminist engagement with psychology has traditionally come through psychoanalysis, conceived primarily as outside of the positivist tradition. Psychoanalysis, in contrast to the impoverished scientific ideals of American psychology, provide feminists a way to theorize behavior and gender outside of empiricism. Evelyn Fox Keller is instructive here. In an early essay on the ways that scientific ideology (including evolutionary theory) is foundationally biased, she uses psychoanalytic theory to diagnose scientific discourse. She writes that science that excludes conscious reflection and incorporation rather than exclusion of subjectivity is like the child. "The same questions I asked about the child I can also ask about science. Under what circumstances is scientific knowledge sought for the pleasures of knowing."[69] Fox-Keller invokes psychoanalysis to effectively unearth the unconscious of the scientific method, not as a scientific method in itself. Feminist empiricism helps us read these sideways empirical studies as both theoretical tools and scientific epistemology.

Jacqueline Rose, in an essay published in *Feminist Review* in 1980, names psychoanalysis as a fundamental challenge to the 'cult of empiricism' that feminists are so ardently opposed. For Rose, psychoanalysis provides a tool to theorize gender outside of the observational paradigm of 19th century positivism. This psychoanalytic trend in feminism stressed desire, signs, and ideology.[70] Rose, along with others, argues that Freud's separation from Charcot and the Salpêtrière is the defining moment for his refute of empiricism.[71] This is solidified by Freud's turn away from visual evidence and toward speaking. As Rose argues Freud made a dual intervention in 19th century psychiatry:

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[69] "Feminism and Science," 592.
[70] Teresa De Lauretis, *Alice Doesn't: Feminism, Semiotics, Cinema* (Indiana University Press, 1984).
[71] Sander L Gilman, *Difference and Pathology : Stereotypes of Sexuality, Race, and Madness / Sander L. Gilman.* (Ithaca: Cornell University Press, 1985); Lisa Cartwright, *Moral Spectatorship: Technologies of Voice and Affect in Postwar Representations of the Child* (Duke University Press, 2008).

> Firstly, he questioned the visible evidence of the disease—the idea that you could know a hysteric by looking at her body…Secondly (and this second move depended on the first), he rejected the idea that hysteria was an independent' clinical entity, by using what he uncovered in the treatment of the hysterical patient as the basis of his account of the unconscious and its universal presence in adult life.[72]

Aligned with the above mentioned constructionist critiques, Rose links bodily, empirical, visual evidence to the pathologicalization of human variability. Empirical evidence is the way diagnostic categories become separate types. Freud's repudiation of the "empirically self-evident" helps render the etiology of hysteria as universal. The unconscious desires that Freud would later expose as everyday slips of the tongue, dreams and jokes were the same as those behind the symptoms of his patients.[73] By inventing a new kind of evidence—language and speech, Freud dissolved the divisions between the sane and the insane.

The cult of empiricism or what Rose deems the "cult of common sense" is disrupted by Freud's discovery of the unconscious. "The self-evidence and banality of everyday life and language" is undercut by dreams, slips of the tongues, and other spontaneous outbursts of the unconscious. Psychoanalysis, then, is aligned with feminism in their concurrent projects to look beyond "what is obviously the case or in the nature of things."[74] Like psychoanalysis, feminism is often contested through this kind of empiricist thinking. As a result feminism and psychoanalysis are united in their fight against empirical evidence.

In this way, psychoanalysis is seen as directly opposed to positivist science. Part of the work then, of the new scholarship on materiality has been to demote psychoanalysis as a

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[72] Jacqueline Rose, "Femininity and Its Discontents," *Feminist Review* 14, no. 1 (July 1983): 13.
[73] Ibid., 17.
[74] Ibid., 15.

tool for understanding of human behavior. Humanities scholars more recently have combated what they see as a dogmatic paradigm of psychoanalysis with new work on biology, cognitive neuroscience, and quantum physics. This is particularly apparent in recent work in Affect Theory. Affect theorists draw from the neuroscience to "name an inherent dynamism of the body."[75] As Papoulias and Callard convincingly argue the biology that affect theorists are most interested in provides evidence for the creativity, dynamism, and interconnections of bodily experience. The epistemological problems inherent in the cognitive sciences is under examined or ignored. Discoveries may be incorporated whole sale without attention to the processes through which the brain, affect, motivation or cognition become objects in the first place.

This project seeks to incorporate "the complex circuits of contestation, argumentation, verification and authorization" that enable material scientific discoveries.[76] First, it looks at some of the empirical underpinnings of psychoanalysis. René Spitz, Silvan Tomkins, and Ed Tronick build from psychoanalytic theory to understand the bodily behavior of their subjects. Their negotiations around the edges of psychoanalysis put pressure on the flattened conceptions of what psychoanalysis and empiricism is in feminist theory. Next, I examine two research programs that have been central to affect theory, the affect theories of Silvan Tomkins, and the intersubjective theories of developmental

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[75] Constantina Papoulias and Felicity Callard, "Biology's Gift: Interrogating the Turn to Affect," *Body & Society* 16, no. 1 (March 1, 2010): 34.

[76] Lisa Blackman, "Affect and Automaticy: Towards an Analytics of Experimentation," *Subjectivity* 7, no. 4 (December 2014): 363; See also: Margaret Wetherell, "Affect and Discourse – What's the Problem? From Affect as Excess to Affective/discursive Practice," *Subjectivity* 6, no. 4 (December 2013): 349–68, doi:10.1057/sub.2013.13; By Ruth Leys, "The Turn to Affect: A Critique," *Critical Inquiry* 37, no. 3 (March 1, 2011): 434–72.

psychology.[77] Keeping the preceding critique at the forefront of my investigation, I approach these archives not as evidence for the productive aspects of biology, but as complications to a tendency to undermine how material, affective evidence is garnered.

This project deepens crucial work by feminists and other critical theorists on the historical and cultural construction of bodies by investigating the iterative processes of scientific knowledge making. It argues for a reading of the scientific archive as a text where the process of generating empirical evidence of human behavior is itself an innovative theory. The three researchers examined in this dissertation (René Spitz, Silvan Tomkins, Ed Tronick) do not identify as feminists, nor do they claim the status of theorist; they are scientists. Yet this study argues that the negotiations, contradictions, and manipulations enwrapped in their observations of infants adds to feminist theories of the body.

As such, each chapter is framed through a contradiction: common-sense of expert knowledge; visual evidence of psychoanalysis; biology of social meaning; cognitive theory of emotional connection. These contradictions are intrinsic to the empirical observations of infant facial behaviors. They also have particular salience for feminist theories of bodily difference. The first chapter returns to the recent past in feminist theory to argue that feminist empiricism can add to the current enthusiasm for science among feminists. Feminist empiricism provides a broadened theory of sensory evidence linking common-sense experience like smiling or blushing with expert knowledge in science. I employ feminist empiricism to flatten current knowledge hierarchies that uphold the brain and the genome as the err sites for understanding mind. The second chapter links visual evidence with interpretative psychoanalysis through the films of severely neglected infants created by René

[77] Papoulias and Callard, "Biology's Gift"; Leys, "The Turn to Affect" Offer thorough reviews of the types of biological evidence theories of affect draw from. These emblematically include Tomkins, and varying developmental theories.

Spitz (1887-1974). This chapter argues that recognizable empirical evidence drawn from the infant's face can actually contest reductive theories of pathology. The third chapter considers the link between innate biological reflex and social meaning. Through the infant facial research of Silvan Tomkins (1911-1991) this chapter argues that the self-evidence of the face demonstrates and refutes the separation between biological reflex and communication of internal emotional experience. The fourth and final chapter analyzes the cognitive developmental research of Ed Tronick (1949-Present). Through a close reading of Tronick's experiment on the effect of mothers' facial behaviors on their infants, this chapter shows that cognitive research, though often critiqued for being overly mechanical, can actually provide a site to glimpse the ambivalent and negative aspects of relationality. This chapter uses feminist and queer theory research on sentimentality and negativity to consider the productive possibilities of cognitive science.

This dissertation centralizes empiricism as a theory of evidence, or an epistemology, but also as a theory of experience attentive to the sensory, material, worldly practices of scientists (broadly construed). "Epistemology on this view, is not logically prior somehow to common sense or to the refined commons sense which is science; it is part rather of the overall scientific enterprise which Neurath has likened to that of rebuilding a ship while staying afloat in it."[78]

[78] W. V. O. Quine, *Epistemology Naturalized*, 73, accessed December 8, 2015,.

> There's been a very strong tradition in psychoanalysis to emphasize fantasy and to underplay the importance of real life events….I was working as a child psychiatrist in a child guidance clinic. There, of course, we were giving a great deal of attention to real life events…. I deliberately focused on separation and loss because those events can be well documented and unmistakable. In those days we had no means of doing any systematic research on parental behavior and parental attitudes to treatment of children, no videos, no tape recorders, no nothing. I'd recognized this was of enormous importance. I simply focused on separation and loss as something I could get my teeth into.[79]

Chapter Two

Expression of Context: René Spitz and the Paradox of Observational Psychoanalysis

The epigraph to this chapter comes from an interview with Attachment Theory founder, John Bowlby. Bowlby began his career as a psychoanalyst in the late 1940s, but became famous for his empirical research that purports to demonstrate the biological inevitability and importance of mother-infant bonding. Attachment research shows the evolutionary necessity of parental bonding and extends those observations to adult experiences of grief, love, and mourning. I open this chapter with attachment theory because it will likely be familiar to most readers. The evolutionary theory of attachment, though still vigorously debated, is standard in psychology textbooks, child-rearing columns, self-help books, and developmental psychology laboratories.[80] In this interview, published in 1991 at

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[79] J. Bowlby, "John Bowlby: An Interview. Interview by Virginia Hunter," *Psychoanalytic Review* 78, no. 2 (1991): 160.

[80] Inge Bretherton, "The Origins of Attachment Theory: John Bowlby and Mary Ainsworth," *Developmental Psychology* 28, no. 5 (1992): 759–75; C. P and René van der Veer,

the end of his career, Bowlby identifies a key reason for the ubiquity of his research: Separation and loss…can be well documented and unmistakable. Bowlby links the empirical veracity of infant despair to his biological theory of mother-infant bonding.

Feminists have been appropriately resistant to attachment research that makes maternal care a biological imperative. For example, Margaret Vicedo gives a thorough and detailed account of the popularity of attachment theory. She ultimately concludes that, "attachment theory built on and contributed to the biologizing of human nature and to a vision of human behavior as preprogrammed by evolution."[81] This condemnation is in line with traditional feminist work. Feminists show the ways attachment theory biologically affirms the mother as transcendental caregiver and gives scientific credibility to mother shaming and patriarchal discipline. In a special volume in *Feminism and Psychology* on Attachment Theory, Susan Fanzblau writes, "the notion that there is some inherent glue that unites mother and child, simplifies, depoliticizes and removes from historical review the exploitative and oppressive conditions under which most women reproduce and mother."[82] This feminist scholarship is primarily in a constructionist mode. That is, feminists like Vicedo and Franzblau expose the cultural and historical factors that enable the broad appeal of attachment theory. Changes in the work place, anxiety about the cold-war, and the historical and perpetual idealization of motherhood help give credibility to the problematic link between innate care-giving relationships and adult mental health. Yet, we are still left with the evidence for the "unmistakable" effects of mother loss. Is there a non-deterministic

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"The Ontogeny of an Idea: John Bowlby and Contemporaries on Mother–child Separation," *History of Psychology* 13, no. 1 (2010): 25–45.

[81] Marga Vicedo, *The Nature and Nurture of Love: From Imprinting to Attachment in Cold War America* (University of Chicago Press, 2013), 232.

[82] Susan H. Franzblau, "II. Historicizing Attachment Theory: Binding the Ties That Bind," *Feminism & Psychology* 9, no. 1 (February 1, 1999): 29.

way to understand the empirical evidence of infant despair? Does empirical evidence of infant grief inevitably minimize the influence of interpretation and environmental variability? This chapter considers these questions through the research of American psychoanalyst René Spitz (1887-1974). Between 1930 and1959, Spitz, together with colleague Katherine Wolf, documented the intensity of suffering among infants in institutional settings.[83] This research showed the effects of mother loss without propelling a deterministic view of pathology. While he examined similar problems and situations as Bowlby, Spitz subtly expanded the frame of evidence. Spitz found ways to visually show that environmental context is intrinsic to psychological development.

Spitz famously depicted neglected infants in a 1947 film he titled, *Grief a Peril in Infancy*. This film that documented institutional neglect of very young children was seen widely among researchers and medical personnel around the world. It continues to be referenced today as an empirical demonstration of what has come to be called hospitalism. Hospitalism, articulated by Spitz, describes the cluster of long term effects that result when an infant receives inadequate human interaction.[84] Though Spitz did not coin the term, he is most often associated with the word and carries a kind of foundational weight in theories of neglect and institutional care. Figure 1 shows a screenshot from this film. The infant's distress is impossible to avoid and hard to watch. As Bowlby describes, the effects of

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[83] Katherine Wolf (1907-1957) began her training in Vienna and immigrated, like Spitz, to the U.S. in 1940. They worked closely together for many years. Wolf appeared in almost all of Spitz's films and provided a more experimental psychological influence. She began independent research on infants at the Yale University Child Study Lab in 1950 and remained there until her death. Unfortunately, there is little biographical or other secondary material on Wolf (a classic issue for women in the history of science). Marilyn Bailey Ogilvie and Joy Dorothy Harvey, *The Biographical Dictionary of Women in Science: L-Z* (Taylor & Francis, 2000), 1393.

[84] Samuel R. Pinneau, "The Infantile Disorders of Hospitalism and Anaclitic Depression," *Psychological Bulletin* 52, no. 5 (1955): 429–52.

separation are "unmistakeable." Spitz's films are notably demonstrative. They require very little context to understand the situation of the infants depicted. As such they have remained largely unanalyzed by contemporary scholars beyond acknowledgement that they provide visual evidence for the importance of human contact in the first years of life.[85] This historical narrative minimizes the practices, theories, communities, and theoretical attachments that are enwrapped in these highly recognizable moments of suffering.

Figure 1: Screenshot from *Grief a Peril in Infancy*, "Close-up Scream." Spitz, 1947[86]

I argue that three aspects of Spitz's research allowed him to create empirical evidence that was both empirically evocative and non-deterministic. First, as I will explore in Section I, Spitz traversed the lines between interpretative psychoanalysis and experimental

[85] A notable exception is a 2004 article by Lisa Cartwright that gives a careful and detailed analysis of this film. She convincingly argues that these visual moments of extreme neglect traffic between disciplinary remove and a pull to intervene) Cartwright, "Emergencies of Survival'."

[86] René A Spitz et al., *Grief a peril in infancy* (University Park, PA: PennState Media Sales, 1947).

psychology. His contradictory goal to create empirical psychoanalysis lead him to find ways to visually show the role of environment in mental development without constraining his evidence to single recognizable markers. Section II details the role of the camera in Spitz's psychoanalytic evidence. The objective ideals of film allowed Spitz to introduce emotional attachment into his behavioral evidence. Behind the façade of scientific legitimacy Spitz produced extremely emotional and intimate films. In the third section I give a close reading of *Grief a Peril in Infancy,* Spitz's most well-known film. Through this example I show how Spitz positioned the researcher within the camera frame to expand the meaning of infant facial expression. The close-up shots of infants that characterize Spitz's film (Figure 1) are windows into the relational psychology that Spitz proposed. Behind the façade of scientific legitimacy, Spitz produced extremely emotional and intimate films. Ultimately this chapter shows how Spitz used the interventions of the researcher and the protection of the camera to introduce affective response into his objective evidence. Spitz's research exposes the role of affective attachment in our definitions of empirical fact.

Section I: The Paradox of Empirical Psychoanalysis

As Bowlby remarks in the epigraph to this chapter, Attachment Theory directly contradicts psychoanalytic theory by studying "real life" separations between mothers and infants. In this classic framing, psychoanalysis is positioned against empirical research. This section explores the supposed incommensurability between the talking cure and visual evidence. In many ways Spitz and Bowlby mirrored one another through their theories of development and their focus on early care-giving relationships. Both were psychoanalysts interested in observational and comparative methods. Both were especially focused on evolutionary explanations for development. However, in 1960, Spitz joined two other senior members of the psychoanalytic community, Anna Freud and Max Schurr, in a public and

critical response to Bowlby's research.[87] The public critiques of his work by leading psychoanalysts permanently marginalized attachment theory in the psychoanalytic milieu.[88]

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[87] Early in his career, Bowlby was determined to convince psychoanalysts of the magnitude of attachment theory, especially as it related to pathology. This effort came to the fore when he published a series of papers on "Grief and Mourning in Infancy and Early Childhood" in the *Psychoanalytic Study of the Child*. Upon his request the prestigious journal, run by Anna Freud, organized responses to Bowlby's paper. Anna Freud, Max Schurr, and René Spitz each wrote responses. All took issue with Bowlby's use of psychoanalytic language. But more importantly, all three argued that his evidence for mourning in infancy was both insufficient and not psychoanalytic. For Bowlby, observational evidence of pain demonstrates that loss of attachment triggers a pathologic reaction. He hypothesizes that babies past the age of six months who get separated from their mothers undergo mourning just as adults do at the loss of a love object. In this way, the empirical observation of infant despair is "an antecedant of…depressive and other psychiatric illnesses and that these conditions are best understood as sequelae of pathological mourning," ("Grief and Mourning in Infancy and Early Childhood," *Psychoanal. St. Child* 15 (1960): 11). Pain in response to loss is a manifestation of pathology in this model. Bowlby argues dually that infant mourning both leads to (a sequelae) and holds the place of (an antecedent) depressive and other adult psychiatric illnesses. By flattening manifest pain with dynamic processes, Bowlby causally links adult personality development with early attachment experiences. In his response to Bowlby, Spitz highlights the types of suffering, grief, and despair observed in infants separated for prolonged periods from their caregivers. That empirical description, however, does not inevitably link to adult forms of loss and mourning. Spitz argues that Bowlby incorrectly equates infant observation with complex psychological processes without considering the development of new skills such as language and affect regulation. That is, Bowlby focuses exorbitantly on the biological and reflexive interchanges between mother and infant. He relates most observable behaviors back to the attachment instinct. This de-emphasizes environmental context and psychological specificity. For Bowlby, the instinctual bond between mother and baby overshadows other interactions. The role of the external environment is minimized in Attachment Theory beyond the attachment to mother.

In contrast, Spitz focuses on the ways the biological foundations of parental bonding get extended into psychological dynamics. He agrees with Bowlby that there are some innate response patterns that promote mother-infant relationships, but these quickly extend beyond pure evolutionary patterns. Spitz argues in direct response to Bowlby,

> one might say that these innate response patterns (attachment behaviors)…. provide the child with experiences that partake at the same time of the physiological and of the psychological. They trigger the first psychological processes and thus endow object relations with psychological content and meaning… In the process of development they gradually and increasingly assume the nature of an interaction that is primarily of a psychological nature ("Discussion of Dr. Bowlby's Paper," *Bowlby's Paper. Psychoanal. St. Child* 15 (1960): 87).

In his response to Bowlby, Spitz proposes an explicit divide between biological behavior patterns and psychological processes. This was not an argument against the importance and usefulness of observing mother infant interactions. Rather, it re-focuses these observations

Unlike Bowlby who grew to see his training in psychoanalysis as fundamentally contradictory to his empirical research, Spitz created psychoanalytic empirical research. He immersed himself in the tensions between empirical evidence and psychoanalytic interpretation. By developing observational evidence along the fault lines of psychoanalytic interpretation and 'real life' loss, Spitz placed infant psychology within a diffuse array of interactions—mother-infant, infant-environment-, researcher-infant, and infant-stranger. Using the tools of experimental psychology, Spitz visually observed object relations as evidence for psychological processes.

The status of observational evidence is central to the identity of psychoanalysis. Historians have put major emphasis on Freud's departure from the Salpêtrière, and divergence from Charcot's methods.[89] Prior to the invention of psychoanalysis, the story goes, theories about hysteria located the nucleus of the disease in the body. Charcot's primary theory was one of heredity and bodily disease. Charcot used visual evidence in the form of photographs and live demonstrations to propel this theory of bodily disease. Freud, in contrast, introduced the 'talking cure' that displaced pathology from the body and propelled it into the mind. Freud's new method helped make the mind an object of medical

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on what they might indicate about psychological development. Spitz made a case for the ways visual observations could extend beyond ethological models.

This debate gets to the heart of Spitz's challenges as an observational researcher. He uses film to document and theorize the psychological development of babies. This required reimagining the behaviors of babies as signaling mental processes in addition to instinctual patterns. As Spitz noted in the above quote, psychological development builds from and with innate response patterns so that biological bonds gradually become imbued with "psychological processes." Bowlby, "Grief and Mourning in Infancy and Early Childhood"; Spitz, "Discussion of Dr. Bowlby's Paper"; Vicedo, *The Nature and Nurture of Love*, 121–44.

[88] Frank C. P. van der Horst, *John Bowlby - From Psychoanalysis to Ethology: Unravelling the Roots of Attachment Theory* (Wiley, 2011); Vicedo, *The Nature and Nurture of Love*; Cartwright, "Emergencies of Survival'."

[89] Gilman, *Difference and Pathology*; Rose, "Femininity and Its Discontents"; Cartwright, *Moral Spectatorship*.

investigation. This revolution from theories of bodily disturbance to theories of mental disturbance involved a shift in evidence. Freud focused on verbal and linguistic evidence in direct contrast to Charcot's behavioral and visual evidence. Visual evidence, then, is a switch point in the history of psychoanalysis.

Similarly, philosophers of science argue that the analytic session and patient generated verbal associations provide the primary evidence for psychoanalytic theory. Famously, Karl Popper uses psychoanalysis as a counterpoint to his theory of falsifiability. Unlike proper science, Popper argues, Freud's theories could be inevitably affirmed by his evidence. Freud's research takes place during the analytic session where evidence could be influenced by suggestion and interpretation.[90] Psychoanalysis, lacks falsifiability because its evidence is garnered from the clinical setting, and not by controlled experiments. Both philosophers of science and historians place the primary epistemological method of psychoanalysis within the therapeutic process.[91] It is these positions, in part, that help make psychoanalysis a key theory for feminists.[92] Feminists turn to psychoanalysis as tool for gender theory precisely because of its separation from positivism and experimentation (as discussed in the previous chapter with Jacquiline Rose). Psychoanalysis is defined by its distance from both visual evidence and scientific proof.

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[90] Karl Popper, *The Logic of Scientific Discovery* (Routledge, 2014).
[91] Nathan G. Hale Jr., *The Rise and Crisis of Psychoanalysis in the United States: Freud and the Americans, 1917–1985*, Freud in America, Vol. 2. (New York, NY, US: Oxford University Press, 1995); Carlo Strenger, *Between Hermeneutics and Science: An Essay on the Epistemology of Psychoanalysis*, vol. xv, Psychological Issues, Monograph 59. (Madison, CT, US: International Universities Press, Inc, 1991); Karl Popper, "Predicting Overt Behavior versus Predicting Hidden States," *Behavioral and Brain Sciences* 9, no. 2 (June 1986): 254–55. For two convincing counterpoints to the consensus on psychoanalysis and falsifiability see Wilson, *Neural Geographies*; Stengers, "Black Boxes, or Is Psychoanalysis a Science."
[92] Jacqueline Rose, *Sexuality in the Field of Vision* (London: Verso, n.d.).

Yet, historians, philosophers of science, and feminists miss a sticking point. They largely overlook the role that empirical data of young children play in psychoanalytic theories. This does a disservice to the complexities of psychoanalysis, but more importantly, it undervalues the diverse ways researchers create and frame empirical evidence. The talking cure relies heavily on the bodily evidence of infants. Psychoanalysts, beginning with Freud, draw from behavioral, and phenomenological descriptions of infants. While Freud primarily observed, and described his own children, later generations of analysts, most notably during and after World War II, borrowed from and developed scientific psychology's observational methods. Infant observation cut to the heart of psychoanalytic theory during the post war years.

Through the 1940s, Melanie Klein and Anna Freud conducted a field altering debate that brought the mental life of children to the fore.[93] The place of fantasy was a central issue in these discussions. Anna Freud, who remained a leading figure in the psychoanalytic community after her father's death, advocated for some recourse to empirical events within the developing mind. Her work with war-displaced babies and young children at the Hampstead War Nursery expanded the purview of psychoanalytic evidence from the consulting room to more sustained and systematic studies, especially with infants and children.[94] During and after World War II British and American psychoanalysts influenced social and political conversations about the welfare of children. They did so by drawing from

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[93] Pearl King and Riccardo Steiner, *The Freud-Klein Controversies, 1941-45* (Psychology Press, 1992); Meira Likierman, "The Debate between Anna Freud and Melanie Klein: An Historical Survey," *Journal of Child Psychotherapy* 21, no. 3 (1995): 313–25.

[94] Likierman, "The Debate between Anna Freud and Melanie Klein"; Nick Midgley, "Anna Freud: The Hampstead War Nurseries and the Role of the Direct Observation of Children for Psychoanalysis," *The International Journal of Psychoanalysis* 88, no. 4 (August 1, 2007): 939–59; Nick Midgley, *Reading Anna Freud* (Routledge, 2012); Anna Freud, "Some Remarks on Infant Observation," *The Psychoanalytic Study of the Child* 8 (1954): 9–19.

methods and data outside of the strict boundaries of the analytic couch. Infant research, then, was both marginal in relation to traditional psychoanalytic practice, and a way to gain relevancy in the war altered world.[95] I do not raise this history to set the feminist and philosophical record straight. Rather, I am interested in the ways psychoanalysts re-imagined the scientific and interpretative role of visual evidence. Spitz's empirical psychoanalytic methods show how empirical evidence circumvents the neat boundaries between theory and data, or between positivism and interpretation.

These boundaries were not traversed lightly. Spitz laid out his research program with two overarching aims. First, he aimed to clarify and develop psychoanalytic theory; and second, he developed the methods of experimental psychology in this task. Therefore, he spent time advocating for the possibilities of visual observation to the psychoanalytic community while also asserting the scientific validity of his psychoanalytic interpretations to experimental psychologists. To the analytic community, he argued for the necessity of systematic infant observation. He showed that psychoanalysis relied on the role of early life experiences, yet it had failed to test the validity of adult reconstructions.[96] Spitz argued that

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[95]Fascinating work has been done on the role World War II played in psychoanalytic research in Great Britain. On the whole, the war helped propel analysts out of the consulting room to intervene in social work settings and other institutions. Given the social structures and resources in Great Britain, this story of analysts in the nursery is largely contained to English analysts. See Cartwright, *Moral Spectatorship*; Cartwright, "Emergencies of Survival"'; Denise Riley, *War in the Nursery : Theories of the Child and Mother*, First Edition edition (London: Virago Press Ltd.., 1983); Michal Shapira, *The War inside : Psychoanalysis, Total War, and the Making of the Democratic Self in Postwar Britain* (New York: Cambridge University Press, 2013); Michal Shapira, "The Psychological Study of Anxiety in the Era of the Second World War," *Twentieth Century British History* 24, no. 1 (March 1, 2013): 31–57; Michal Shapira, "The War inside: Child Psychoanalysis and Remaking the Self in Britain, 1930--1960" (Ph.D., Rutgers The State University of New Jersey - New Brunswick, 2008), http://search.proquest.com.proxy.library.emory.edu/docview/304507640/ABF4C4F2850F45ADPQ/56?accountid=10747.

[96] René Spitz Archive, manuscript notes 1951, Box M2111, Folder 8, Archive for the History of American Psychology, The University of Akron. René Spitz A. Spitz, *The First*

it was imperative to develop systematic psychoanalytic methods to understand infant development. This required utilizing visual as well as tactile techniques of empirical research for studying the pre-verbal infant. Spitz advocated for the use of research that had previously been associated with experimental psychology and behaviorism.

Many psychoanalysts were hostile to this line of research and saw experimental psychology as incapable of adding to the study of unconscious psychological processes.[97] These debates centered on the relation between manifest, or externally observable behavior, and psychoanalytic dynamics. The undeniable despair that infants display when separated from their mothers consolidates this issue. Though no psychoanalyst disputed the reality of such despair, disputes arose over the relation between psychopathology and empirical observations of infant emotion. Sigmund Freud discussed the role of manifest infant behavior` in his discussion of separation anxiety. For Freud, separation anxiety results from intolerable aggression toward the lost object. Separation anxiety is a distinct dynamic from what Freud described as the "expression of [the infant's] face and its reaction of crying [that] indicate that it is feeling pain as well."[98] That is, the expression of pain, for Freud, is an addition to the psychoanalytic definition of separation anxiety. Freud concludes that the manifest pain, though empirically valid, does not in itself demonstrate the psychopathology of separation anxiety. Psychoanalytic dynamics have no direct relation to the manifest

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Year of Life: A Psychoanalytic Study of Normal and Deviant Development of Object Relations (Oxford, England: International Universities Press, I, 1965), 6–13.

[97] For Spitz's contemporaries see Freud, "Some Remarks on Infant Observation"; Siegfried Bernfeld, "The Facts of Observation in Psychoanalysis," *The Journal of Psychology* 12, no. 2 (October 1, 1941): 289–305. For more recent reviews of this debate see Joseph D. Lichtenberg, *Psychoanalysis and Infant Research* (Routledge, 2014); Joseph Sandler et al., *Clinical and Observational Psychoanalytic Research: Roots of a Controversy* (Karnac Books, 2000); Daniel N. Stern, *The Interpersonal World Of The Infant A View From Psychoanalysis And Developmental Psychology: A View from Psychoanalysis and Developmental Psychology* (Basic Books, 2000).

[98] Sigmund Freud, *Inhibitions, Symptoms and Anxiety* (Norton, 1977), 169.

"reaction of crying." Freud is clear on this point but it leaves open the question of what psychoanalytic interpretations are possible at the level of manifest reactions. Spitz brought externally observable infant reactions into his psychoanalytic theories of development by expanding the frame beyond individual observable behaviors. As I will show in what follows, Spitz's empirical evidence of psychoanalytic processes was located within a constellation of interactions, not just the manifest expression of pain. The expression of pain or joy provided evidence for the role of the larger environment. They were not indications of psychological processes in themselves. In this way Spitz sidestepped the debate over the link between manifest expression and psychoanalytic dynamics.

In parallel to these appeals to the psychoanalytic community, Spitz and Wolf made appeals to mainstream psychology. By the early 20th century experimental psychology in the US had become a discipline with established funding bodies, departments and labs dedicated to the scientific study of human behavior.[99] This growing field of scientific psychology followed the path of its founders, Stanley Hall and Wilhelm Wundt who advocated for strict experimental protocols as opposed to purely observational methods.[100] Increasingly academic psychology achieved legitimacy by creating its own set of scientific boundaries. John B. Watson's experiments on conditioning are the epitome of this period. Many of Watson's experiments were conducted on infants. In his most famous experiment Watson

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[99] For overviews of this period in American psychology see Urie Bronfenbrenner et al., "Toward a Critical Social History of Developmental Psychology: A Propaedeutic Discussion," *American Psychologist* 41, no. 11 (1986): 1218–30; Thomas H. Leahey, "The Mythical Revolutions of American Psychology," *American Psychologist* 47, no. 2 (1992): 308–18.(Bronfenbrenner et al. 1986; A. A 1952; Leahey 1992).

[100] Wilhelm Wundt, *Elements of Folk Psychology: Outlines of a Psychological History of the Development of Mankind* (George Allen and Unwin, 1916); G. Stanley Hall, "Experimental Psychology," *Mind* 10, no. 38 (April 1, 1885): 245–49.

demonstrated how a startle response could actually be learned by the infant.[101] John B. Watson's research marked the extreme of what would come to dominate American developmental psychology— the quantification and analysis of a single observable behavior.[102] Behaviorism all but eliminated the possibility of a scientific study of introspection.[103] Though not all subsequent American developmentalists ascribed to strict behaviorism, their claim to scientific rigor rested on similar standardizations of behaviors. For instance, a classic study in the early years of laboratory infant research involved the development of tool use overtime.[104] Researchers traced the early gripping reflex as it developed into the reaching and holding of a block. Though this research did not add to the theory of Behaviorism, it ascribed to similar methods by containing the hypothesis and observation to single, testable, and repeatable physical actions. Following this trend Spitz and Wolf honed their observational methods and behavioral evaluations. Additionally Katherine Wolf developed the primary testing tool utilized in their research program, the Hetzer Wolf test. This had 6 scales of measurements, sense reception, bodily movements, social behavior, intelligence, learning, manipulation of objects, and striving for goals. They portrayed their finding through tables and charts in order to show (and argue) statistical significance. They

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[101] John B. Watson, "The Place of the Conditioned-Reflex in Psychology," *Psychological Review* 23, no. 2 (1916): 89–116; John B. Watson and Rosalie Rayner, "Conditioned Emotional Reactions," *Journal of Experimental Psychology* 3, no. 1 (1920): 1–14.

[102] While other researchers of childhood development such as Piaget influenced American developmental psychology, Behaviorism dominated the landscape in the post war era and continues to structure histories of American psychology. As one author put, "to a great extent, the history of American psychology and the history of behaviorism were synonymous until the 1960s" (Miller 2009, 178).

[103] Patricia H. Miller, *Theories of Developmental Psychology*, Fifth Edition edition (New York: Worth Publishers, 2009), 180.

[104] Scott Curtis, "'Tangible as Tissue': Arnold Gesell, Infant Behavior, and Film Analysis," *Science in Context* 24, no. 3 (September 2011): 417–442; Esther Thelen and Karen E. Adolph, "Arnold L. Gesell: The Paradox of Nature and Nurture," *Developmental Psychology* 28, no. 3 (May 1992): 368–80.

too focused on outwardly observable behaviors of the infant through standard observational techniques, most notably film.

Spitz and Wolf used film and carefully chosen observable behaviors to bolster their scientific credibility while also propelling psychoanalytic theories of development. Their first major publication, "The Smiling Response: A Contribution to the Ontogenesis of Social Relations," (1946) detailed the smiling response of infants. The choice to concentrate on a single observable facial reaction, smiling, was effective for creating disciplinary legitimacy. They followed the trend in experimental psychology to focus on single observable behaviors as they introduced their psychoanalytic framework. The smile allowed them to observe a verifiable and physical behavior while also giving them a window into the role of primary relations and environmental context.

Spitz and Wolf open "The Smiling" article by differentiating their method from previous infant research. Other contemporary researchers, they argue, treat "the infant as a machine to be observed only in stimulus-response terms. This resulted in an atomization of the infant's whole personality into a multitude of small sectors…."[105] In contrast to this disjointed understanding of infant behavior, they see the smiling response within a system of factors including environment, caregiver, and developmental maturity. The smile, in Spitz and Wolf's manuscript, is both a biological reflex like grasping or flinching, as well as an expression of the importance of developmental context. This change in emphasis, from behavioral achievement to emotional interaction, positions Spitz squarely within psychoanalysis. In more psychoanalytic terms, Spitz and Wolf research the development of the smile as an expression of object relations.

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[105] René A. Spitz and Katherine M. Wolf, "Anaclitic Depression; an Inquiry into the Genesis of Psychiatric Conditions in Early Childhood, II," *The Psychoanalytic Study of the Child* 2 (1946): 65.

With masks, dolls, strangers, and faces in profile, Spitz and Wolf establish that the earliest smile is a response to a gestalt of the human face. The youngest babies in their studies do not merely mimic lips. They smile in response to a mask with basic human facial features (eyes, nose, mouth), (Figure 2). As babies grow they become more discerning. Gradually, infants refuse to smile at masks or strangers and respond positively only to caregivers. Through these observations Spitz and Wolf conclude that, "it is, however, hardly possible to avoid the assumption that this imitative behavior must take place by means of some sort of rudimentary identification."[106] They argue that the smile is a manifestation of the internal experience of the primary relationship. This identification with mother is not reflexive; it develops overtime through interaction experience. The smiling response is only significant as it points to relational processes. On the one hand, Spitz aligns himself with developmental psychology by noting the smile's comparison to other tests—its reflexive and stimulus-response patterns. And on the other hand, he ultimately propels a psychoanalytic theory of development by positioning early social relationships at the center of his understanding of mind. The emotional foundation of development is not an emotion in vacuo. It is a pathway that forms the foundation of all cognitive and emotional experiences.

[106] R.A. Spitz and K.M. Wolf, "The Smiling Response: A Contribution to the Ontogenesis of Social Relations," *Genetic Psychology Monographs* 34 (1946): 67.

Figure 2: Photograph of Spitz smile mask used for "The Smiling Response," 1946[107]

Though Spitz and Wolf use standard behavioral techniques, they adjust the frame to make relationality the object of their psychological observation. This fundamentally changes the boundaries of the evidence they use. Their observation is not contained to the individual facial reaction of the infant. The smile is only valuable as a signal for social and environmental response. Spitz argues,

> …no other behavior pattern shows as much perceptive discrimination or specificity as does the smiling response on beholding a human being. It is as if the infant had suddenly developed a behavior pattern far in advance of the rest of its behavior….We assume affects to be the prerequisite for perception as well as for all other mental activity. We find in studying the behavior of the child that affective

[107] René Spitz Papers, "The Smiling Response" 1946, Box M2111, Folder 11, Archive for the History of American Psychology, The University of Akron

> discrimination is the earliest of all and breaks the trail for all the rest of development…. [108]

Note that they do not mention the role of pleasure in the development of the smiling response. The early display of smiling demonstrates "affective discrimination," not emotional expression. Following Freud's lead that clearly argues for the separation of manifest expression and psychoanalytic dynamics, Spitz and Wolf delink smiling from its position as a mental expression. It demonstrates the primacy of relationships. Spitz and Wolf's empirical psychoanalysis uses the face of the infant to make relational dynamics intrinsic to all psychological processes.

While at first glance Spitz and Wolf study the development of a reflex, their primary object of observation is the relationship between infant and caregiver. Like other psychology researchers, they narrow in on a discreet and observable behavior. They diverge from the standards of the time by examining the smile as an expression of the psychological milieu of the infant, what they call the ecology of the infant. This divergence reflects their alliance with psychoanalytic theory. As Wolf writes in a grant application,

> we borrowed our observation technique partly from behaviorism we took the viewpoint for supplementing these research procedures from another psychological school, from psychoanalysis. Up to date, psychoanalysis is the only psychological school which tries to describe the human individual as a whole interacting with its environment, determined by its past.[109]

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[108] Spitz and Wolf, "The Smiling Response," 67.
[109] René Spitz Archives, 1947, Box M2112, Folder 2, Archives of the History of American Psychology, The University of Akron.

Spitz and Wolf do not shy away from the tensions between behavioral observation and psychoanalysis. They use behavioral techniques to create empirical evidence for a psychology formed by relationships, experience, and environmental context.

Like his academic contemporaries Spitz created standard experiments around quantifiable and observable behaviors. The behaviors he focused on, however, were not standard objects of research in experimental psychology of the time. Facial expression, in particular, provides Spitz an object that acts dually as a reflex and an expression of environmental engagement. This section has shown that this task seems paradoxical because psychoanalytic theories of mind rarely use bodily or observable behaviors. While Bowlby pulls psychology into the umbrella of his evolutionary and reflexive theory, Spitz creates a field of vision for psychological development. Spitz traces psychological development by expanding the plane of observation. The minute changes in babies' behaviors are not observed in a closed frame. This empirical evidence was characteristically garnered through film. Spitz's films visually document psychological content. Spitz maintains loyalty to the 'talking cure' with research on objects that could not yet talk, and with films that had no audio. Psychological development, in these films, is observed within a complex environment and especially through dynamic relationships. What techniques propel the visualization of relationality and past experience? In the next section I explore how Spitz uses the mechanics of film to travel these lines.

Section II: Techniques of Observation

In this section I trace the ways film was used to bolster scientific authority for developmental psychologists in the first half of the 20th century. I show how Spitz relied on these techniques while re-imagining the boundaries of empirical evidence. The films created by Spitz and Wolf between 1930-1945 are marked by visible moments of helplessness,

crying, and loneliness. This intense despair is shown primarily through focused and close-up shots of the faces of babies. Spitz and Wolf generated Over 60000 feet of 16 mm footage for their major research project, *The Psychoanalytic Project on Problems of Infancy*. For this project, Spitz recorded over 366 children for the purpose of "presenting the total unselected behavior of children."[110] These children were studied in American homes, a children's nursery in a women's prison outside of New York City, and what the researchers called a foundling home in Mexico. The same shots, and the same subjects are cut together in numerous combinations to form more than 25 films. Through examples of experiments, mothers feeding their infants, infants playing with one another, and birthing scenes the films each point toward the necessity of early emotional interaction. The footage of institutional care was screened widely as didactic films for medical personnel and social workers in the US and Europe. The films became part of a movement that changed institutional practices and propelled further inquiry into the early emotional experiences of infants. Conclusions advocating the imperative of a nurturing relationship would not surprise audiences of the mid 20th century.[111] It was the detailing of these disturbances through filmic evidence that made this research so probing and lasting.

Notwithstanding the didactic role the films played, some of Spitz's colleagues were skeptical of the validity of his scientific evidence. Researchers argued that Spitz's data was not reproducible because he had not disclosed the locations of the institutions and he failed to detail the training and background of the research staff. One critic concluded that "the

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[110] Spitz Archive, Psychoanalytic Project of Problems of Infancy Report, 1945, Box M2137, Folder 83, Archives for the History of American Psychology, The University of Akron.
[111] Many of Spitz's contemporaries were well known for emphasizing mother-love (Spock 1946; Gesell et al. 1943). Feminists have written widely about the heightening concern for mother-love in the postwar period (Apple 1987; Denise Riley 1983; Marga Vicedo 2013; Eyer 1994).

results of Spitz's studies cannot be accepted as scientific evidence."[112] Despite these critiques the films continue to be referenced today for their empirical demonstration of the effects of emotional neglect. The images are taken to point toward a single decipherable conclusion: infants deprived of human stimulation fail to develop. They seem intrinsically conclusive. Paradoxically, the films and resulting studies were both self-evident and bad science. Following Spitz's dual roles as a psychoanalyst and scientific researcher, the films simultaneously implore viewers to become involved in the situation of the infants while also maintaining ideals of removed observation.

Spitz makes clear that the camera provides the necessary distance for his distinctly emotional images. Filming infants was not singular to Spitz during this time. In fact, it was a galvanizing tool for the nascent field of developmental psychology. Psychological research was faced with the challenge of systemizing data of humans. Though there were innovative experimental protocols including comparison groups, blind studies etc., developmental psychologists relied heavily on observation. Film was a way to legitimize this less reliable non-experimental approach.[113] The earliest psychological films include John B. Watson's demonstration of fear conditioning of the infant Albert B in the film *Little Albert* (1920), Mary Fisher Langmuir's study of a preschool child (1942), Kurt Lewin's use of documentary film with children to develop his field theory (1931), and J.G. Lynn's 1940 footage of the

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[112] Pinneau, "The Infantile Disorders of Hospitalism and Anaclitic Depression," 435.
[113] For a comprehensive overview of psychology films before 1955 see: Anthony Michaelis, *Research Films in Biology, Anthropology, Psychology, and Medicine* (Elsevier, 2012). For a comprehensive analysis of the early history of film in medical and neurological research see Lisa Cartwright, *Screening the Body: Tracing Medicine's Visual Culture* (U of Minnesota Press, 1995). For a more recent analysis of film in experimental science see Scott Curtis, *The Shape of Spectatorship: Art, Science, and Early Cinema in Germany* (Columbia University Press, 2015).

stimulation of involuntary facial expression (1940).[114] Many developmental psychologists of this era saw film as an instrumental way around the problems associated with independent observation. As Watson remarked, "without instrumentation…. many of the phenomena of conduct cannot be brought under adequate scientific control."[115] While it was difficult to conduct experiments on human infants, film provided researchers a way to decrease bias and systematize observation. Documentary film gave researchers scientific authority.

Film theorists mark World War II as a key moment in shifting the way film documentation was viewed. Film, following an increase in news reals and mental health films during World War II began to be portrayed as a more straightforwardly mechanical record of the external world. Andre Bazin is emblematic of this view. During the war Bazin wrote his earliest essays on documentary films arguing that the medium and confinement of the camera made film an essentially realistic medium.[116] It could capture and contain the passage of time more accurately than the paintbrush or photographic camera. As film theorist and historian of psychology, Allison Winter, remarks, "the cinematic image, Bazin maintained, was the object itself, freed from conditions of time and place."[117] Film during this time became a key tool for documenting without intervening—a central ideal for proper scientific

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[114] J. G. Lynn, "An Apparatus and Method for Stimulating, Recording and Measuring Facial Expression," *Journal of Experimental Psychology* 27, no. 1 (July 1940): 81–88; Kurt Lewin, *The Child in the Field Forces*, n.d.; Kurt Lewin, *Das Kind Und Die Velt*, 1931; Mary Fisher Langmuir, *Four and Five Year Olds In School* (Vassar College, 1969); Mary Fisher Langmuir, *This Is Robert*, Documentary (New York University, 1942); Mel Van Elteren, "Kurt Lewin as Filmmaker and Methodologist," *Canadian Psychology/Psychologie Canadienne* 33, no. 3 (1992): 599–608; John B. Watson, *Little Albert*, n.d.; Watson and Rayner, "Conditioned Emotional Reactions."
[115] Watson, "The Place of the Conditioned-Reflex in Psychology," 26; Quoted in Curtis, "'Tangible as Tissue,'" 424.
[116] André Bazin, Dudley Andrew, and Jean Renoir, *What Is Cinema?: Volume I: 1*, trans. Hugh Gray, 1 edition (University of California Press, 2004).
[117] Alison Winter, "Film and the Construction of Memory in Psychoanalysis, 1940–1960," *Science in Context* 19, no. 1 (2006): 114.

observation. The mechanical structure of the camera and the predetermined frame allowed psychological researchers to contain and add authority to their otherwise intangible objects.

For instance, the leading American developmental lab during and immediately following the war, the Yale Child Study Group, created a film lab that attempted to remove all contact between researcher and subject. Lead by Arnold Gesell, this group of researchers used standardized tests to observe the maturation of cognitive and physical processes such as puzzle solving, grasping, sitting up, following directions, jumping, etc.[118] They gathered hundreds of hours of film footage from a custom-built film lab. This glass room, which the researchers referred to as the Observation Room, was designed to hide the observer from the subjects (mostly toddlers and their mothers). This Observation Room was imagined to create a natural environment within the laboratory setting where researchers were not coloring the behaviors of the children that came into the lab. The researchers used this dome-like structure to stimulate the home environment while minimizing the added variables of cameras and doctors.[119] As Scott Curtis convincingly argues in a 2011 article on the Gesell lab, film documentation provided researchers with a way to make developmental behaviors, "as tangible as tissue."[120] These researchers imagined that their observations were untarnished by researcher intervention. The notion that filmic evidence was neutral and tangible lent psychological investigation the authority of biological discoveries.

This kind of view-from-nowhere observational technique bolstered Spitz's project. During the 1940s, moving picture technology improved exponentially, making it possible for

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[118] A. Gesell et al., *Infant and Child in the Culture of Today: The Guidance of Development in Home and Nursery School*, vol. xii (Oxford, England: Harper, 1943); Thelen and Adolph, "Arnold L. Gesell." A recent article in Science in Context examines Gessell's films for their innovative making infant behavior tangible (Curtis 2011).
[119] Curtis, "'Tangible as Tissue,'" 438.
[120] Ibid., 441.

researchers to purchase relatively light and unobtrusive cameras. Spitz's films were all shot on 16mm film most likely with a handheld camera that included extension for film reels and a zoom lens.[121] The camera offered Spitz the possibility of "detailed repeated observation" that could be verified by other observers.[122] The camera lent Spitz a measure of legitimacy. It allowed him to contain these highly charged images of neglected infants within a mechanical medium. Like other psychologists, Spitz saw the camera as a tool that could make his observations objective. Yet, his cinematographic method was far from an invisible eye. With the authority of the camera he appeared scientifically rigorous while producing emotionally evocative footage.

Spitz's technique borrowed from the standards of experimental psychology but for a different purpose. While Gesell tests the complexity of crawling and reaching, Spitz considers these tasks only as they indicate the maturation of the infant's object relations. This created a different focus for Spitz's evidence. He is more concerned with the way the infant orients to the social environment during his observations than to the lab mimicking a natural setting. He argues that it is far more important to observe the infant in its familiar environment than pull the infant into a manufactured lab. The strangeness of a film lab, for Spitz, disrupts the infant more than allowing the infant to perceive the camera. In fact, part of Spitz's visual evidence of emotional interaction is created through the infant's knowledge and involvement with the camera. Rather than hide the camera from view so as not to

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[121] I have not been able to find documentation about the specific size or type of camera Spitz used. Based on film technology of the time and the fact that all of his films were silent and black and white I am guessing that the camera was rather unobtrusive and mobile. For more information regarding film technology at this time see Virgilio Tosi, *Cinema Before Cinema: The Origins of Scientific Cinematography* (British Universities Film & Video Council, 2005); L. F. Beck, "A Review of Sixteen-Millimeter Films in Psychology and Allied Sciences," *Psychological Bulletin* 35, no. 3 (March 1938): 127–69; Curtis, *The Shape of Spectatorship*.

[122] René Spitz Vassar College Lecture, 1946, Box M2111, Folder 14, René Spitz Papers, Archives of the History of American Psychology, The University of Akron Libraries.

disrupt the behavior of the infant, Spitz and Wolf allow the viewfinder to become part of the relationship they develop with the infant. The camera is placed within the visible stimulus range of the infants and Spitz and Wolf are the primary cinematographers.[123] The 'detailed repeated observation' is a tool that pulls the viewer's own reaction in as an object of study alongside the observable behavior of the infant.

The camera allows Spitz to mirror his experimental psychology contemporaries. He relies on the camera to increase the verifiability and level of control. At the same time, he uses it to extend the empirical frame to the emotions of the viewer, the researcher, and the infant. By extending the frame beyond the behaviors of the infant, Spitz traversed the line between psychoanalytic interpretation and observational evidence. In a speech to Vassar College in 1948, Spitz describes the benefits of film. He claims,

> It liberates one to a certain extent from the fear of harming the children, for when looking at film one is not forced to act, one can observe. While looking at film one is not emotionally involved…On the film we can observe ourselves and our reaction behavioristically, not introspectively. Observed emotions are difficult to render, to verbalize or to communicate, particularly emotions of the first year. In a film they can be shown. The object of the psychoanalytic approach are emotions. Therefore we use behavioristic methods applied from a psychoanalytic viewpoint.[124]

The camera provides Spitz the possibility of showing emotionally intense footage and still maintaining an air of scientific legitimacy. This quote highlights three scientific ideals that

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[123] Spitz and Wolf occasionally referred to a third cinematographer, Mr. Boehner, who participated in some of the scenes, or ran the equiptment. He does not appear to be present in the majority of the film production.

[124] Spitz archive, 1946, Box M211, Folder 14, Archives for the History of American Psychology, The University of Akron.

Spitz plays with in order to position psychological development within the relational milieu. First, film eliminates the need for verbal response. Verbal reflection is a key method of psychoanalysis. With the camera Spitz could examine what he called a psychoanalytic object—emotions. He could do this by using non-psychoanalytic methods—visual observation. Second, the camera enables systematic repetition. Spitz uses decreased speed, as well as zoomed in shots of the infant's face to solidify infant expression as an observable object. This mechanical tool appeared to heighten the objectivity of the research while at the same time drawing out the intensity of the emotions depicted. Finally, the camera protects the object from bias and interference from the researcher. Spitz relies on this seeming protection from emotional interference to allow his own emotional expressions to be depicted in the films. I argue that his own display of emotion on the film disrupts the scientific frame. This disruption propels a new focus on emotional context in the infant's psychological development. In what follows I analyze a representative film, *Grief a Peril in Infancy,* to show how the above proposed techniques enabled Spitz to expand his empirical evidence from individual behaviors to what he called "the psychological ecology." He used traditional disciplinary methods while disrupting those same ideals to introduce affective attachment into his scientific evidence.

Section III: Grief A Peril in Infancy

Grief a Peril in Infancy, released in 1947, is the best-known film from Spitz's collection.[125] It presents stark images comparing the experiences of a group of infants in an orphanage in Mexico with the more emotionally adequate care of a New York prison

[125] A portion of this film can be viewed on Youtube (https://www.youtube.com/watch?v=VvdOe10vrs4). Spitz et al., *Grief a peril in infancy*.

nursery.[126] The film is soundless and black and white. Sections of written explanations appear between each new scene. These words introduce the baby in the subsequent scene and describe brief background on the subject's care. In the prison nursery, the incarcerated mothers interacted regularly with their babies, while in the foundling home, babies were given only basic care by nurses. The differences between the two groups, the film demonstrates, were lasting, visible, and stark. The babies in the prison nursery developed 'normally'. They maintained easy relations with strangers and their mothers. They developed social groups as toddlers. In contrast, the orphans in the foundling home lost weight, became withdrawn, and stalled in growth, muscle, and cognitive development. Thirty-seven percent of them were dead by the age of two.

The first baby to appear on screen a minute and a half into the film is Jane. Jane is a black seven-month-old baby described on screen as having "outstandingly good relations with her mother." She lives in the prison with her mother and is cared for by multiple nurses.[127] The film opens with Jane looking curiously into the camera (Figure 3). The viewer

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[126] Spitz did not reveal the names and specific location of the respective institutions. Archival notes reveal the New York location was at the Westfield State Farm. The main location for women inmates in the state of New York. To my knowledge the location of the Mexico orphanage has not been revealed.

[127] The ways that race functions in this film and in developmental psychology more generally needs to be further interrogated. Jane's race and the reality of incarceration is never mentioned in Spitz's discussions or in the film itself. It appears to be a rather integrated research protocol and institution in general. Most discussions of racism in the history of psychology focuses on intelligence testing, and schizophrenia. There is much to be done regarding race and Developmental psychology. Graham Richards, *Race, Racism and Psychology: Towards a Reflexive History* (Routledge, 2003); *Defining Difference: Race and Racism in the History of Psychology*, vol. xi (Washington, DC, US: American Psychological Association, 2004); Bruce Western and Christopher Wildeman, "The Black Family and Mass Incarceration," *The ANNALS of the American Academy of Political and Social Science* 621, no. 1 (January 1, 2009): 221–42; Dorothy Roberts, *Killing the Black Body: Race, Reproduction, and the Meaning of Liberty* (Knopf Doubleday Publishing Group, 2014); Ji-Hye Shin, "Insanity on the Move: The 'alien Insane' in Modern America, 1882-1930" (Rutgers University - Graduate School - New Brunswick, 2013), https://rucore.libraries.rutgers.edu/rutgers-lib/41919/.

becomes aware of Spitz's presence before he appears on the screen as Jane turns her head and begins to crease her lips upward. Prior to beholding the face of the adult, the camera catches the white-coated arm as Jane recognizably responds to the off-screen face of the researcher. This opening scene establishes Jane as verifiably grounded in the external environment. Jane's facial expressions and gazes make sense in the context of the film, thereby verifying her healthy psychology.

Figure 3: Screenshot of 'Jane' from *Grief a Peril in Infancy,* 1947

The viewer's anticipation of the researcher's movements materializes through the introduction of the partial profile of the researcher on the outer edge of the screen (Figure 4). By centering Jane's face in a close-up as the initial indication of the researcher's presence, the viewer is poised to 'read' the meaning of her facial movement. Her face becomes a sign of her relationship to the researcher. Jane anticipates the entrance of the researcher and in so doing communicates information to the viewer. This first communication is not of depression or joy; it is more concrete than that. With her face, Jane tells the viewer about the

presence of someone she recognizes. She signals, as if to say, 'here comes someone'. While Jane begins to interact with the researcher she entices the viewer to understand her facial display as hints of what cannot be seen in the camera frame. Trust between the viewer and the baby, Spitz and the baby, and the viewer and Spitz is established as Jane's prediction is verified through the appearance of the white-coated arm and partial profile of the researcher's face. This opening scene showing Jane happily gazing up at her surroundings is meant to demonstrate Jane's healthy relationship with her mother. Jane's mother does not appear in the film. Rather, the film uses Jane's interactions with Spitz as evidence for the foundational role of the primary relationship. Importantly, the displacement of mother to researcher goes unexplained in the film. This works to extend the mother-infant interaction to the broader environment.

Figure 4: Screenshot of 'Jane' from *Grief a Peril in Infancy*, 1947

This initial scene broadens the location of empirical evidence for psychological processes. The baby's psyche is observed through the interactive environment (researcher,

toys, crib, previous care, camera) rather than through precise facial behaviors (smiles, gazes, tears, screams, etc.). The viewer continues to understand the scene through Jane's expression. She smiles, reaches, frowns, smiles again as the viewer imagines but does not fully see the researcher's playful facial movements. The healthy baby is established as a verifiable communicator at the level of the face. Shots of mostly Jane's face act as a window into the relationship she has with the researcher/mother/external environment.

The researcher's behaviors are just as crucial for creating empirical psychoanalytic evidence as the baby's reactions. As the film goes on, text explains that now Jane's mother has been taken away for three months. This time, as the researcher approaches, Jane begins to cry. Tears well in her eyes and she turns her head back and forth as the adult hand enters the frame to offer comfort to her (Figure 5). The strokes elicit increasingly violent cries and movements. Jane is inconsolable. The viewer is drawn into Jane through the reaching strokes of the researcher. This is a hard scene to watch because the pain and helplessness displayed by Jane becomes more vivid through the appearance of Spitz's futile attempts to console her. This scene points to the importance of mother-infant care, but also, the empirical display provides a window into the suffering and violence of the prison environment. We do not learn why Jane has lost her mother. We are left to imagine the reasons for her mother's imprisonment. We are given only the undeniable suffering of her daughter. The environmental context is made visible by Jane's lonely face on the screen. Rather than end the shot or zoom into Jane's wail as with others, the camera stays on the whole scene as we watch Spitz brush Jane's forehead to assuage the pain. Through this action Spitz disrupts the standard experimental frame that would maintain the infant as primary experimental object. This allows him to frame Jane at the nexus with her environment.

Figure 5: Screenshot of 'Jane' from *Grief a Peril in Infancy*, 1947

Subsequent scenes in the film continue to document infants before and after separations with mother. In one evocative shot, Spitz attempts to console a child (Figure 6). As the child wails, Spitz turns to the camera with an equally pained expression. Spitz's inability to console Jane or the other infants suffering make these scenes almost unbearable. In a 2004 article Lisa Cartwright considers the place of visuality in the reform of institutional practices aided through Spitz's films. Spitz, as Cartwright argues, relies on visual cues of looking touching and grasping to establish meaningful interpretations of the plight of the infants in institutionalized care. The visible suffering of the infants pulls Spitz in to touch and respond in ways that disrupts both the classic analytic stance as well as proper scientific remove. These disturbances of both psychoanalysis and objective observation are what make the films so effective for didactic purposes and reveal the researcher as, what Cartwright has called, a moral spectator. They document not only the deterioration of the infants, but also

the **"**intervention of the observer as moral agent in the process."[128] The films, for Cartwright, show the ways the observation of external suffering elicits a response in the observer; one that causes a split between witnessing at a distance and of intervening. The babies in the films evoke a visible pity response from the researchers. These responses implore the viewer of the film to feel empathy with the suffering of the infants and ultimately to intervene.

Figure 6: Screenshot from *Grief a Peril in Infancy*, 1947

Like Cartwright, I too see Spitz's engagement with the crying infants as a disruption of classic scientific remove. I argue however that this disruption shows more than the undeniable seriousness of the institutional setting. Spitz's involvement is not actually a disruption, but a key to Spitz's empirical psychoanalytic evidence. Spitz allows the

[128] Cartwright, "Emergencies of Survival'," 45.

researcher's response to be part of the object of observation. The researcher's displays of emotion, sometimes directly toward the camera, becomes Spitz's method of creating psychoanalytic data outside of the strict behavioral evidentiary frame. As with his work on the smiling response, Spitz's primary object remains the development of emotional relations. This requires him to depict his own response in the scene. Spitz's sometime exaggerated, sometimes spontaneous facial expression toward the camera are not disruptions of the ideals of observation they are a reinvention of them. It may appear that Spitz's emotion in the films are unintentional and drawn out because of the seriousness of the situation he is witnessing. This, however, is not the case. Spitz and Wolf appear on the screen as representatives of the environment of the infant. The baby's facial expression is meaningful only as an interaction. Spitz and Wolf use their own emotions to bring environmental context into the field of empirical evidence. Specifically, the infant's *reaction* to the situation is not the object of observation. The *interaction* between baby and environment is Spitz's empirical evidence for psychological development.

This becomes increasingly important as the film continues. In the second half of *Grief* we see footage from an orphanage where the infants are described as having adequate physical care with little to no human contact. The relatively recognizable suffering in the first section of the film is counter posed to the behaviors documented in the second section. The expressions shared between not only Jane and the researcher but also Jane and the audience, are distinguished from the opaque reactions of the babies from the foundling home shown in the second part of the film. The infants in this section have been without mothers for most of their lives. These babies remain nameless and genderless. Little individual context is provided beyond the initial description of the institution. Text informs the audience that the first infant in this group is eight months old but appears like a three-month-old. These age

ranges remain empty without the support of the visual evidence that follows. The section begins with a baby positioned in the center of the screen. As the baby lays flat on its back, the now familiar profile of Spitz frames the scene (Figure 7). Unlike with Jane where the viewer sees her see the researcher before the camera catches him, the researcher and his playful nods are intrinsic to the opening shot of the second section. As the researcher brings his face within five inches of the baby's face there is a visible disconnect. The researcher nods his head up and down and his mouth moves in exaggerated talking motions. The baby has little to no response and eventually turns its head away. This disturbing scene becomes unbearable as Spitz's elicitations toward the infant remain unmet. Spitz's presence in the shot is crucial to the evidence of emotional disturbance. The baby is not merely expressing displeasure. The facial expression of the researcher and that of the infant are in complete disarray. The infant's facial movements become meaningful through their utter disconnect from the researcher's expressions and movements.

Figure 7: Screenshot from *Grief a Peril in Infancy*, 1947

Along with the established authority of the researcher, by the second section the viewer of the film has begun to trust the baby's ability to share information about the environment with the camera. The baby's facial expressions are meant to indicate their knowledge of other adults in the scene. The babies in the second section, however, display disturbance through the absence of recognizable response (Figure 8). The disconnect between researcher and infant and infant and audience is the observable pathology. The direness of this situation is heightened by its relation to infants in the prison nursery. The interaction of the healthy baby with researchers has already established the psychological frame within the relational milieu of the infant.

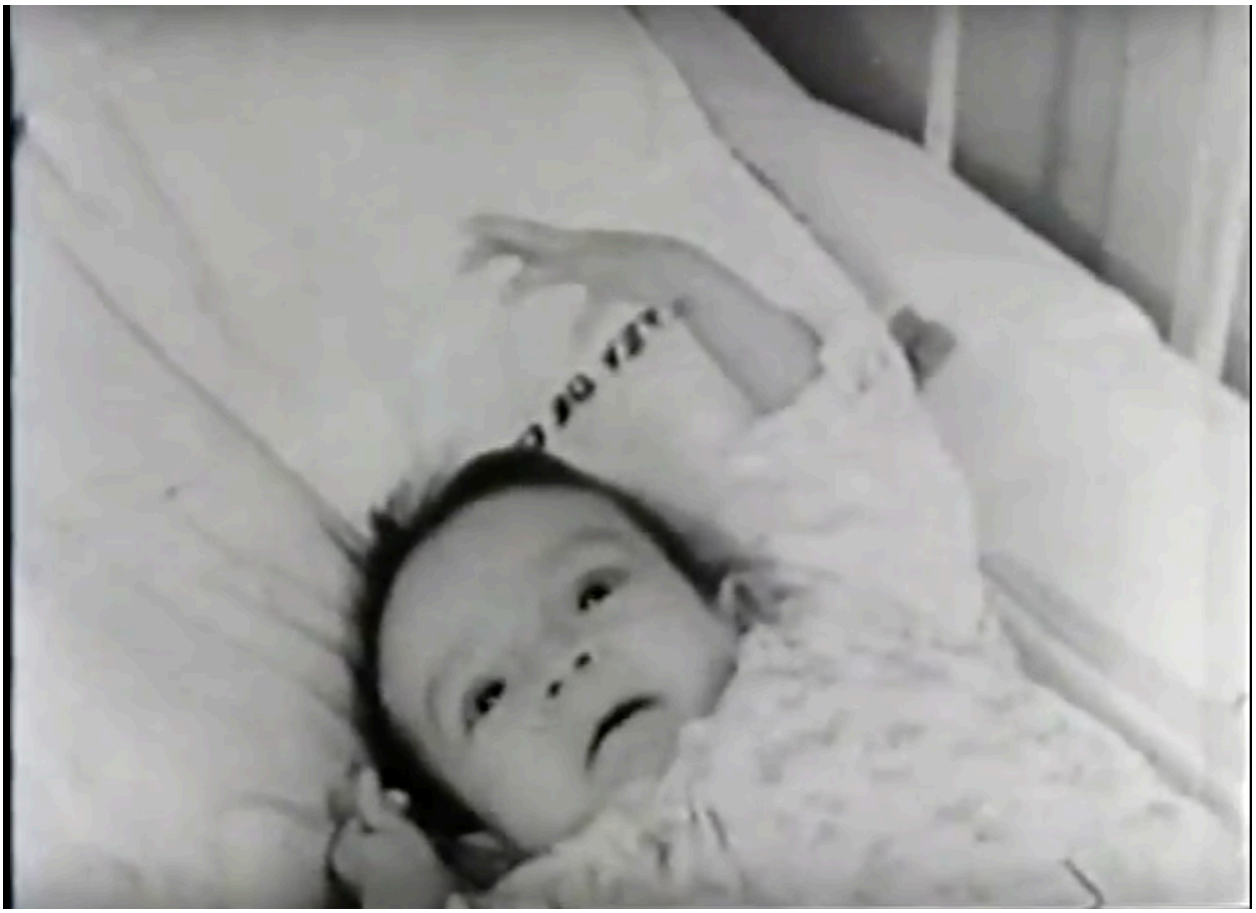

Figure 8: Screenshot from *Grief a Peril in Infancy*, 1947

Like Jane who demonstrates her emotional health by indicating her awareness of the presence of a known adult off-screen, the babies in the second section demonstrate their dire psychological situation by remaining unresponsive to the exaggerated expressions of the researcher. Just as normal psychological development is evidenced by recognizable interactions, pathological development is marked by an absence of interaction. Both place the empirical evidence for infant development within the dynamic interactions with environment, not within the individual infant.

Conclusion: Observable Behavior and Feeling

In many of the most indicative and evocative shots in Spitz's films a face of an infant expressing pain or pleasure engulfs the screen in a close-up. In one shot, a baby's face—large

and lonely—fills the screen (Figure 1). Though there is no sound, the movements evoke the feeling of a scream. The camera holds us there for longer than we would remain—longer than the viewer would watch without intervening in the presence of a wailing infant. The cut to darkness is a reprieve from the helplessness the close-up of the crying infant evokes. Paradoxically the close-up adds to the scientific feel of the films. As philosopher and psychologist, Hugo Munsterberg influentially argues in 1916, film helps objectify the inner workings of the mind. The close-up "objectifies our world of perception our mental act of attention."[129] It appears as both a choice made by the observer to draw out emotional reaction, and as a kind of mechanical observation.[130] As Spitz argues, "screen analysis offers frequent detailed repeated observation."[131] Film analysis can act as a microscope that zooms in to reveal the shapes not visible to the naked eye. In this case however, the mechanical prosthetic of zooming in adds to the affectivity of the scene. The close-up pulls the viewer in. The close-up that follows more holistic shots of researcher and baby ultimately demonstrates the direness of caregiver separations. Perhaps the first focus of a microscope reveals something because it elicits a response in the observer as well.[132] It forces viewers to see and even experience the global effects of neglect that Spitz would ultimately become

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[129] Cited in Winter, "Film and the Construction of Memory in Psychoanalysis, 1940–1960," 113.

[130] This is a phrase borrowed from Daston and Galison's *Objectivity*Lorraine J. Daston and Peter Louis Galison, *Objectivity* (Zone Books, 2007). They use mechanical observation to mean objectivity that is enabled and created by the systemization of measurement tools that create a supposed distance between researcher and object.

[131] René Spitz Papers, 1951, Box M2111, Folder 14, Archives for the History of American Psychology, The University of Akron.

[132] Isabelle Stengers argues that what separates hard from soft science is not falsifiability but the ability to surprise, to allow something unexpected to emerge Stengers, "Black Boxes, or Is Psychoanalysis a Science." The affective intensity of the close-up adds to the weight of the research. It does not take away from the scientificity. Perhaps, in Stengers frame, the film's ability to evoke an intense response make it more scientific?

known for. It traps the viewer with her own reaction as the visual distress of the infant overtakes the screen.

Even when the shots are almost devoid of environmental context or visual interaction, Spitz's empirical evidence is of an interaction. The baby looks directly into the camera, but behind the camera is Spitz or Wolf--both of whom, the infant knows and responds to.[133] Even in singular moments of infant facial expression, Spitz and Wolf effect the evidence. We can understand these close-ups on the infants' faces as interactions rather than displays of emotions in vacuo. Through the guise of the mechanical authority of the camera, Spitz pulls his own emotions and that of his audience into his research discoveries. As Spitz reflects on his method in a note to Vassar College he writes, "on the film we can observe ourselves and our reaction behavioristically, not introspectively."[134] The camera allows Spitz to have emotional reactions without explicitly invoking them as evidence. In this way, the visible emotions of the researcher become an asset to the scientific film rather than something that has to be separated out. Spitz's psychoanalytic empirical evidence relies on the intervention of the researchers not their imagined neutrality.

Spitz's challenge of creating objective evidence of emotional interaction coalesce around the emotional reaction of the researcher. As Daston and Gallison argue, photography and other imaging devices propelled the development of scientific objectivity of the 19th century. With the invention of the camera and similar imaging devises the specimen could leave its own trace on the film without the interference of a flawed human

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[E]ach infant was observed by Spitz or Wolf over 30 times over the course of the research.
[134] René Spitz Papers, 1951, Box M2111, Folder 14, Archives for the History of American Psychology, The University of Akron.

observer.[135] Spitz relied on this utility to introduce the reactions of the researcher and the audience as data for his theory. The camera allowed a seemingly objective protection against the highly emotionally charged images. Contrary to the epistemic virtue of removed observation, the camera in Spitz's work becomes an interactive tool. It is a medium that simultaneously creates and shows object-relations.

The supposed objectivity provided by video observation enables Spitz and Wolf to produce emotionally charged and volatile scientific evidence. I have argued that their involvement with the object of investigation, and loyalty to psychoanalysis enabled, rather than disrupted the possibility of empirical evidence. Throughout this chapter I have shown the ways Spitz's attempts to combine emotionally volatile objects with strict observational methods always necessitated the researchers involvement with the infant. Even as he attempts to contain his research to a single response at the level of the face, Spitz's goals for creating empirical psychoanalytic research causes him to re-imagine the evidentiary frame. His films and experiments found ways to introduce emotional attachment and environmental interaction into what appeared to be behavioral observation. The films' affective resonances can in no way be separated from Spitz's goals to develop scientific evidence for psychoanalysis. The scientific façade of the films created the evocative and disturbing mood they carry. Both come together through the empirical evidence of the face. The sensory evidence of the films extends from baby, baby's relationship to the institutional setting, researcher's sense of baby, and viewer's sense of the whole film. The empirical evidence of the face extends through these affective networks.

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[135] Daston and Galison, *Objectivity*; Lorraine Daston and Peter Galison, "The Image of Objectivity," *Representations*, no. 40 (October 1992): 81–128.

Chapter Three

Biology of Expression: Silvan Tomkins and the Evidence of Motivation

Beginning around two months of age, babies reliably smile at a particular stimuli, namely the face of a caregiver. This early display of cognitive and physiological development is a discreet, evocative, and consistently valuable piece of evidence. Since 1990 the word smile has appeared in the titles of over 600 articles in the top tier journal, *Infant Behavior and Development*. Not only is the smile used to understand sociality and emotional development in infancy, it is a marker of physiological growth. As one researcher remarked, "the smile is a paradigm shift in the infant's relationship to the external environment."[136] Infant facial expression is both a self-evident marker of a biological achievement, and also the gateway to study cultural learning and socialization. This chapter interrogates the fundamental contradictions in taking the face as evidence. Specifically, the facial expressions of infants are evidence for both a reflexive action and, as we saw in the previous chapter, a window into specific social interactions. How do researchers incorporate the social meaning of facial expressions as they propel biological theories of development?

In the previous chapter I showed how René Spitz uses the smiling response as a signal of environmental engagement. He uses the early appearance of the smile to incorporate object relations into his behavioral evidence. In this chapter I examine the infant research of Silvan Tomkins (1911-1991) who focuses on the biological significance of facial expressions. Unlike Spitz who was broadly uninterested in the biology of particular facial movements, Tomkins develops a biological theory of motivation around the actions of the face. *Affect, Imagery, Consciousness*, the 2000-plus page opus that spans over 30 years of

[136] Philippe Rochat, *The Infant's World*, Revised ed. edition (Cambridge, Mass.: Harvard University Press, 2004), 233.

Tomkins' life considers such empirically transparent behaviors as smiling, startling, blushing, turning away, laughing, turning toward, crying, and wincing.[137] Tomkins resists reading these physical, biological, and visible displays as communicative representations of mental or emotional processes. These innate responses are primarily motivating. This chapter analyzes the work of Tomkins and his inspiration, Charles Darwin, to think through the biological evidence of facial expression. How does the social and cultural significance of facial expression bear on theories interested in the biological foundation of behavior?

Though Tomkins examines all stages of life and thousands of scenarios, infants provide a central piece of evidence. Unlike Spitz who was primarily interested in development, Tomkins uses the evidence of infants for this broad theory of human motivation. Infants are important for Tomkins in three ways. First, they are invoked alongside empirical studies of dogs and monkeys as possible evidence for innate behavior. They are taken to be more reflexive and less culturally influenced. Second, simple facial expressions like crying, eye tracking, and smiling are used to demonstrate the motivational force of the affects. Finally, related to the two above, the developing relations between babies and caregivers provide data for the communal aspect of affects. It would seem then that babies are used in the service of an unremarkable theory that might be summarized thusly: Humans are innately expressive at the level of the face in order to survive infancy leading to a biologically determined communal society. Yet, this functionalist picture is far too homogenizing for Tomkins. The question is not how and why are humans social, but

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[137] Silvan Tomkins, *Affect Imagery Consciousness: Volume I: The Positive Affects*, 1 edition (New York: Springer Publishing Company, LLC., 1962); Silvan Tomkins, *Affect Imagery Consciousness: Volume II: The Negative Affects* (Springer Publishing Company, 1963); Silvan S. Tomkins, *Affect Imagery Consciousness: Volume III: The Negative Affects: Anger and Fear and Volume IV: Cognition: Duplication and Transformation of Information*, 1 edition (New York: Springer Publishing Company, 2008).

how and why are there so many possible ways of being social.[138] While Tomkins invokes babies as evidence for the biological origin of the affect system, he goes to great lengths to resist essentializing early caregiver relationships. The early social experience of infants in Tomkins work magnifies the tensions exposed by the face between social specificity and biological homogeny. Tomkins does not refute the social role of affects; he refuses to take the communicative function of facial expression as given. The muddling of biological and the psychological in Tomkins work is immensely productive. In this way, I argue that Tomkins conception of innate universal facial behavior exposes and refutes the stakes of psychological evidence in the 20th century.

I begin the chapter by detailing the contradictions of using facial expression as biological evidence. Through a discussion of two adjacent and more well-known facial researchers—Charles Darwin and Paul Ekman—I show how Tomkins, through Darwin, had a kind of sideways understanding of psychological evidence. Both Tomkins and Darwin looked to the side of the most salient aspect of facial expression, its visual and communicative meaning. In the next section I show how Tomkins builds from Darwin's understanding of facial expression. For Tomkins affects are primarily motivating. This decentralizes the visual salience of facial expression. I argue that this sideways approach to the visual evidence of the face enables Tomkins' utility for cultural theorists. In the third section I contend with some of the problems this understanding of facial expression might pose to humanities scholars. I consider the place of sociality and meaning in Tomkins theory of innate affects. Ultimately this chapter shows the paradoxical evidence of facial expression

[138] Tomkins' theory lends itself quite easily to a broad and accepting account human variability. For this reason some feminists and critical theorists advocate for the usefulness of his work. In a now canonical essay in affect theory, Sedgwick and Frank note this sampling of the possible. The perpetuation of the 'if…then' statements allows for a highly textile-like and phenomenological rich theory of experience (Sedgwick and Frank, 1995, p.2).

and how contending with the tension between biological and meaningful can enable empirical variability.

Section I: Darwin and the Trouble with Expression

In 2014 the Sunday Review of the *New York Times* featured an article over the questions that had consumed Charles Darwin more than 150-years prior: are facial expressions innate? The author, Lisa Feldman Barret, the director of the Interdisciplinary Laboratory of Affective Science at Northwestern University, argued that the face is not a transparent "emotional beacon."[139] Though Feldman Barret acknowledged the ability for humans to "read other people" she argued that this requires context, gesture, and other types of communication beyond a basic display of facial expression. Her target was one of the most recognized emotion researchers of the 21st century, Paul Ekman. Ekman worked with Tomkins and developed his research directly out of Tomkins' work. [140] Like Tomkins, Ekman theorized eight basic emotions that are universally expressed on the face.[141] In 1969, Ekman and colleagues published an article in the journal *Science* showing that people across

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[139] Lisa Feldman Barrett, "What Faces Can't Tell Us," *The New York Times*, February 28, 2014, http://www.nytimes.com/2014/03/02/opinion/sunday/what-faces-cant-tell-us.html.

[140] Ekman points to Tomkins as a seminal figure in his research trajectory. Cultural theorist Ruth Leys even considers their theories to comprise an Ekman-Tomkins paradigm of emotion. In a response to Leys, Adam Frank and Elizabeth Wilson highlight the important differences between Ekman and Tomkins. This response and their differences will be discussed in this chapter. Adam Frank and Elizabeth A. Wilson, "ILike-Minded," *Critical Inquiry* 38, no. 4 (2012): 870–77; Ruth Leys, "How Did Fear Become a Scientific Object and What Kind of Object Is It?," *Representations* 110, no. 1 (May 2010): 66–104.

[141] This study formed the seed for the patented Facial Action Coding System that deciphers 43 facial muscles to read emotions. This system is now being further developed by the US government and Apple to identify consumer's moods, or track the intent of airline passengers. For Ekman the universality of emotional expression provides the crux of his technological developments. Facial Recognition provides evidence for universal expression.Paul Ekman, *Emotions Revealed, Second Edition: Recognizing Faces and Feelings to Improve Communication and Emotional Life*, 2nd edition (New York: Holt Paperbacks, 2007), 3.

five cultures agreed on the emotions displayed by strangers in photographs.[142] If people, across cultures, can identify emotions based on facial expression, then these emotions must be innate. Ekman takes the recognizable psychological meaning facial expressions carry as evidence for universal facial behaviors. He directly refutes the idea that expressions and gestures are culturally specific.[143] Feldman Barret's recent refute of Ekman is emblematic of the core debates surrounding the evidence of facial expression. These debates center on the productive tensions enwrapped in the evidence of the face—reflexive universal behaviors converge with socially specific communication. These two ways of understanding emotional expression are at odds in current conversations.

This debate has been recapitulated in the humanities through recent discussion of the role of affect in cultural theory. Ruth Leys, a vocal critic of recent humanistic approaches to the science of emotion, has come down on the side of cognition and cultural specificity.[144] Leys analyzes Ekman's photographic evidence (Figure 9). She ultimately shows that Ekman's evidence is exaggerated and conventionalized, not authentic or natural. The photos that are the cornerstone of the basic emotion theory may be more indicative of the conventions of posing, performing, or responding to a supposed research agenda. They are

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[142] Paul Ekman, E. Richard Sorenson, and Wallace V. Friesen, "Pan-Cultural Elements in Facial Displays of Emotion," *Science* 164, no. 3875 (April 4, 1969): 86.

[143] Ekman cites Mead, Bateson, Hall, Birdwistell, Osgood as the cultural relativists he counterposes his theory of universal expression to. Margaret Mead, *Cooperation and Competition Among Primitive Peoples* (Transaction Publishers, 2002); Gregory Bateson, *Steps to an Ecology of Mind: Collected Essays in Anthropology, Psychiatry, Evolution, and Epistemology* (University of Chicago Press, 1972); Charles Egerton Osgood, William H. May, and Murray S. Miron, *Cross-Cultural Universals of Affective Meaning* (University of Illinois Press, 1975).

[144] Leys, "How Did Fear Become a Scientific Object and What Kind of Object Is It?" Leys expands on this earlier article in a critique directed toward the incorporation of scientific theories of emotion. Leys, "The Turn to Affect."

evidence for the relationship and mutual desires of researcher and subject rather than for innate universal emotions.[145]

Figure 9: Paul Ekman, *Emotions Revealed, Second Edition: Recognizing Faces and Feelings to Improve Communication and Emotional Life*, 2nd edition (New York: Holt Paperbacks, 2007), 17.

The central concern in this landscape is the role of sociality, communication and, what Leys calls, intention. For Leys, the problem with Ekman's theory is that it renders emotion separate from cognition and meaning. She points toward a theory of emotion that would conceptualize facial displays as strategic "highly plastic social and communicative signals."[146] Leys argues that gestural communication is fundamentally located within the social historical moment. The face as evidence carries with it the false dichotomy of this

[145] In another recent discussion of the visual evidence of Ekman and Tomkins, Sander Gilman argues that Ekman's work mistakenly takes the face as a transparent window into the mind. He asks whether or not physicians can and should see pain through the visual displays of the face. By working through some of the faults of Ekman's assumptions, Gilman concludes that visually evaluating pain through bodily displays is dangerous and misguided. Sander L. Gilman, *Illness and Image: Case Studies in the Medical Humanities*, 1 edition (New Brunswick (USA) ; London (U.K.): Transaction Publishers, 2014), Ch. 5.
[146] Leys, "How Did Fear Become a Scientific Object and What Kind of Object Is It?," 89.

debate: facial behavior is either automatic, reflexive, and meaningless or social, meaningful, and communicative. Facial expressions are both intrinsically significant and non-intentionally reactive. I begin with Ekman because his work sediments the tensions of using the face as evidence. Ekman perpetuates this opposition by pitting Darwinian theory against cultural relativism. In his *Science* article, Ekman concludes that facial expression is universal and that, "Darwin was right."[147] He aligns himself with Darwin and against anthropological theories of cultural specificity (Margaret Mead is a key strawman for Ekman). Ekman argues that Darwin provides the primary description and acknowledgement of the biological foundation of human facial expression. Yet as I will show in the remainder of this section, Darwin's own research on facial expression refuses the neat separation between biology and culture that Ekman promotes.

In his edited collection, *Darwin and Facial Expression: A century in Review*, Ekman argues that Tomkins was one of the few people taking *Expression* seriously in the 1960s. For Ekman, this is an unfortunate oversight, one he has worked hard to ameliorate.[148] He contends that *Expression* was overlooked for almost a century in psychology because of Darwin's tendency to anthropomorphize his subjects, his use of primarily anecdotal evidence, and his over-emphasis on the innate basis of emotional expression.[149] While these aspects of Darwin's work are arguably verifiable, and may indeed have turned psychologists

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[147] Ekman, Sorenson, and Friesen, "Pan-Cultural Elements in Facial Displays of Emotion," 86.

[148] In addition to editing what he has designated the authoritative publication of *Expression,* Ekman has a collection of essays on the contribution of *Expression* to psychology (Darwin et al., 1998; Ekman, 2006).

[149] Darwin, known for his rich descriptions and observations of plants and animals around the world had only two primary locations for his data collection: his voyage on the Beagle from 1831-36, and his home, Down's House, where he spent the later 40 years of his life. He gathered evidence for his theories from secondary literature, friends, one journey outside of England, and his children. Both Tomkins and Darwin rely on anecdotal empirical evidence.

away for many decades, I argue that *Expression* remained obscure because Darwin's orientation to emotions was profoundly foreign to 20th century disciplinary separations. Like Ekman, Tomkins points to Darwin's theory of the inheritance of expression. Unlike Ekman, Tomkins relies on Darwin's sideways approach to psychological evidence. Darwin's use of evidence cannot be mapped on to the contemporary separations between the biological, the psychological, and the cultural.

Darwin's theory of emotion is barely psychological. While this caused *Expression* to be overlooked by psychologists until recently, the short essay published at the end of his career, "Biographical Sketch of an Infant," is often cited as one of the earliest versions of modern developmental psychology. In 1877 in the journal *Mind*, Darwin compiles the observations he made 40 years earlier of his first-born son William. For many, Darwin's observations give "scientific value to childhood."[150] Though others argue that Darwin's influence on developmental psychology is overstated, he remains a kind of origin myth.[151] This reference is striking given the lack of psychological theorizing Darwin undertakes in this article or in his entire opus.[152] Darwin frames this essay as a supplement to an earlier essay by M. Taine about the "mental development" of infants. Yet, the word mental appears only one other time in the piece.[153] A narrative of progressive change overtime is surprisingly absent as well. Eight unsystematically titled sections ("Anger," "Fear," "Pleasurable Sensations," "Affection," "Association of Ideas, Reason, etc." "Moral Sense,"

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[150] W. Kessen, "The Child: Perspectives in Psychology," *New York*, 1965, 165.
[151] William R. Charlesworth, "Darwin and Developmental Psychology: Past and Present," *Developmental Psychology* 28, no. 1 (1992): 5–16.
[152] Indeed Darwin's most prominent texts *The Descent of Man* and *Selection in Relation to Sex* engage with humans quite thinly. Moreover, one group of scholars found that words referencing children appear only 62 times in a 243,178 word text. (Barrett, "What Faces Can't Tell Us"; Donald J. Weinshank and Charles Darwin, *A Concordance to Charles Darwin's Notebooks, 1836-1844* (Cornell University Press, 1990).)
[153] The word mind appears seven times.

"Unconscious Shyness," and "Means of Communication") organize the essay that does not amass toward a linear argument. Instead, each section-heading provides the only transitional signal for abrupt topic shifts. Darwin focuses on behaviors rather than developmental stages. For example, the section called "Pleasurable Sensations" begins without reference to the previous section titled "Fear." Darwin begins "Pleasurable Sensations" by noting,

> it may be presumed that infants feel pleasure whilst sucking, and the expression of their swimming eyes seems to show that this is the case. This infant smiled when 45 days old, a second infant when 46 days old….The smiles arose chiefly when looking at their mother, and were therefore probably of mental origin.[154]

Darwin fills the "Pleasurable Sensations" section with physical descriptions of facial actions. The cause, proof, or explanation of the link between the swimming eyes and the feeling of pleasure is not examined. Neither does he posit a theory for the relation between the previous topic of "Fear" and the current section. Darwin does not refer to a grand theory of mind. Though there is a separation between what he calls "mental origin" and the empirical evidence of pleasure (swimming eyes), neither seems more or less salient than the other. The separation between object and theory is difficult to unravel. Pleasure, smiling, affection toward mother, and swimming eyes spiral without conclusion or origin. Strikingly, this short essay is perhaps the most explicitly psychological piece Darwin wrote. Still, mental origin is a kind of afterthought to sucking, smiling, and swimming eyes.

We can understand Darwin's adjacent engagement with psychological theories in relation to his primary goal to dethrone man's exceptionalism.[155] Much of his research

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[154] Darwin, "A Biographical Sketch of an Infant," 288.

[155] Alan Fridlund convincingly argues that *Expression* was written to directly refute the theologism of Charles C. Bell who argued that god had created expressions in man in order to communicate the most intimate feelings. Bell's theory of communication propels the

focuses not on human behavior, but on observations of animals and plants, population theories, and geological data.[156] Rather than emphasize the unique ways humans communicate with their faces, Darwin tries to show the opposite. He argues that physiological facial behavior has no functional connection to human language or social communication. It is merely the chance of habit that links many facial behaviors with meaningful expression.[157] Ekman argues for a serious re-engagement with Darwin's discovery of the inheritance of emotion, but he misses a profound element. Darwin does not merely posit the universality of facial expression; he questions the biological function of visual communication through the empirical evidence of expression itself.

Therefore, Darwin reorients the evidence of facial expression. The emotions that

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exceptionalism of man that Darwin was so adamantly opposed to. Bell argued that facial communication and gesture were proof of human's divine place in the universe. Darwin sought to show the ways expression was biologically meaningless and served no larger communicative role. In this way he linked human faces with dogs and other animals to push against divine creation. (*Human Facial Expression* (San Diego: Academic Pr, 1994), 23.)

[156] Charlesworth, "Darwin and Developmental Psychology"; Howard E. Gruber and Paul H. Barrett, *Darwin on Man: A Psychological Study of Scientific Creativity*, vol. xxv (New York, NY, England: E. P. Dutton, 1974); Ernst Mayr, *The Growth of Biological Thought: Diversity, Evolution, and Inheritance* (Harvard University Press, 1982).

[157] Though some expressions like bared teeth do serve a survival purpose; others like smiling in pleasure are merely a result of the habit of doing so. Only those expressions that resemble their nonhuman animal counterpart are explicitly intentional in Darwin's work. Additionally, inherited traits did not have to evolve solely through reproductive survival of the species. Darwin outlined three principles through which expression evolved: 1) The principle of serviceable associated Habits- direct or indirect service under certain states of the mind in order to relieve or gratify certain sensations, desires etc. "Some actions ordinarily associated through habit with certain states of the mind may be partially repressed through the will, and in such cases the muscles which are least under the separate control of the will are the most liable still to act, causing movements which we recognize as expressive. In certain other cases the checking of one habitual movement requires other slight movements; and these are likewise expressive." expression seems to be involuntary here. 2) Principle of Antitheses- when a directly opposite state of mind is induced movements of a directly opposite nature are prompted. 3) The principle of actions due to the constitution of the Nervous System, independently of the Will, and independently to a certain extent of Habit" - direct action of the nervous system- when the sensorium is strongly excited nerve-force is generated in excess, and is transmitted in certain definite directions--effects are thus produced which we recognize as expressive. Darwin, *The Expression of the Emotions in Man and Animals*, 32.

comprise *Expression* (suffering, anxiety, joy, shame etc.) receive little attention in comparison to the physiological actions that become increasingly strange and unexplainable.[158] For example, Darwin begins his chapter, "The Special Expression of Man: On Suffering and Weeping," by describing the variety, yet universality of weeping among humans. The screaming infant is the primary piece of evidence in this section (Figure 10). Darwin does not theorize a functional link between screaming and pain. He theorizes the physical foundations of screaming. He writes that infants,

> whilst thus screaming their eyes are firmly closed, so that the skin round them is wrinkled, and the forehead contracted into a frown. The mouth is widely opened with the lips retracted in a peculiar manner, which causes it to assume a squarish form; the gums or teeth being more or less exposed. The breath is inhaled almost spasmodically.[159]

Darwin sticks close to the physiological description of the phenomena with little mention of the experience or communication of pain.

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[158] As Tomkins asserts, the word *Expression* is misleading in Darwin's text. It falsely implies that facial movements are, by definition, representative of internal states. Silvan S. Tomkins, E. Virginia Demos, and Brewster Smith, "Inverse Archaeology: Facial Affect and the Interfaces of Scripts within and between Persons," in *Exploring Affect*, Studies in Emotion and Social Interaction (Cambridge University Press, 1995).

[159] Darwin, *The Expression of the Emotions in Man and Animals*, 143.

Figure 10: Charles Darwin, *The Expression of the Emotions in Man and Animals*, Original edition (London: Penguin Classics, 2009), 149[160]

Darwin's work is counter-intuitive, or what I am calling sideways, in this respect. We

[160] Ibid., 149.

might assume that a theory of expression would point to the ways that particular expression, well, expresses something. In this case, we might think of a biological theory of infant crying that posits the way tears provoke sympathy from a caregiver. Certainly, many contemporary researchers do argue that the visual communication of tears is biologically adaptive.[161] Darwin resists this theory as part of his overall project to flatten species hierarchy. He argues instead that tears are not functionally adapted to provide information; they are merely a result of the habit of screaming. Prolonged screaming irritates the eyes. Tears are therefore secreted as a result of violently closed eyelids meant to protect the eye. Communication, Darwin demonstrates, is not synonymous with expression. The expression rather than the cause, feeling, or communication of suffering is Darwin's primary object of interest.

Though Darwin resists privileging the social properties of the face, its inherent expressiveness haunts him. Darwin concludes his extensive discussion of the physiological need for tears by linking back to suffering. He asks, if tears are merely acquired to protect the eyes during screaming, why then do they provide relief during suffering? "And by as much as the weeping is so violent or hysterical—by so much will the relief be greater."[162] As much as Darwin would argue that the biological mechanism of crying is in no way functionally or intentionally linked to suffering, he cannot ignore the intrinsic psychological meaning of the face. Tears serve the added function of relieving suffering. The descriptions of physical expression work in a circular way to leave the separation between suffering and

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[161] Chip Walter, *Thumbs, Toes, and Tears: And Other Traits That Make Us Human* (Bloomsbury Publishing USA, 2008); Oren Hasson, "Emotional Tears as Biological Signals," *Evolutionary Psychology* 7, no. 3 (July 1, 2009): 147470490900700300; Michael Trimble, *Why Humans Like to Cry: Tragedy, Evolution, and the Brain* (OUP Oxford, 2012); Ad Vingerhoets, *Why Only Humans Weep: Unravelling the Mysteries of Tears* (OUP Oxford, 2013).
[162] Darwin, *The Expression of the Emotions in Man and Animals*, 36.

the manifestation of tears unaddressed. The experience of suffering and the expression of tears feedback on each other in an indissoluble loop where neither is evidence for the other.

Darwin does not disavow the meaning expressions hold, he develops a theory of emotion to the side of social communication. This sideways approach to expression exposes the contradictions of behavioral evidence more generally. In broad strokes, modern conceptions of evidence (even when not explicitly empirical) rely on a foundational separation between the theoretical and describable. Evidence is always evidence of something. It exists only in its relation. Lorraine Daston historicizes this separation asking what knowledge looked like before the modern separation between facts and evidence. Daston argues that in our modern episteme facts are stubbornly resistant to interpretation. Facts become evidence "only when enlisted in the service of a claim or conjecture." Facts cannot carry meaning, they must remain opaque in order to be used, eventually, as evidence.[163] Yet, for Darwin, facial expression is evidence for his large claim about inheritance. He refuses to theorize the most obvious aspect of facial expression--its social significance. For this reason, Darwin's theory of expression disrupts standard ways of understanding evidence. The meaning of the behavior exists outside of the separation between fact and theory. While Darwin purports to separate the physical—or we might even go as far as to call it the biological—from the more global and amorphous emotional, his text cannot maintain this binary. Darwin's conception of the evidence of the face, especially demonstrated in his descriptions of infant behavior, is key to the tenuousness of this separation. The biology of facial expression carries with it a specter of communication.

[163] James K. Chandler, Arnold Ira Davidson, and Harry D. Harootunian, *Questions of Evidence: Proof, Practice, and Persuasion Across the Disciplines* (University of Chicago Press, 1994), 243.

Section II: Tomkins' Sparse Theory of Motivation

Tomkins continues this non-intuitive approach to the evidence of the face. Like Darwin, Tomkins locates his theory and his evidence on the face. Also like Darwin, he uses the universality of facial expression outside of a theory of emotional communication. The affect system is a biologically motivating system comprised of eight innate affects (shame, interest, joy, surprise, anger, fear, distress, and disgust).[164] Tomkins defines affects as, "sets of muscle and glandular responses located in the face and also widely distributed through the body which generate sensory feedback…These programs are innately endowed…."[165] The motivating sensations of the affects are one and the same as the transparent facial displays that comprise them. The key feature of the face, for Tomkins, is its motivating force. Following Darwin, Tomkins advocates for the biological necessity of the affects by side-stepping the social significance of facial expression. Instead he argues that facial expressions are innately motivating.

The power of Tomkins' work comes from this insistence on the need for a *broadly* motivating biological system. This broad scope has made it attractive to cultural theorists otherwise uninterested in behavioral research. In a 1995 article, Eve Sedgwick and Adam Frank emblematically introduce Tomkins to cultural theorists as an alternative to the standard ways of doing theory.[166] They argue that Tomkins' work challenges reflexive tendencies toward anti-biologism, binary thinking, and over privileging of language in the current theoretical landscape. For Sedgwick and Frank, Tomkins' general theory of motivation is useful because it details an infinite number of non-hierarchical scenarios. They

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[164] In the third volume of *Affect Imagery Consciousness* Tomkins adds the affect of contempt. I mention only eight here because the third volume was published in 1991 outside of the historical scope of this dissertation.
[165] Tomkins, *Affect Imagery Consciousness*, 1962, 243.
[166] "Shame in the Cybernetic Fold."

contend that part of the productivity of Tomkins' writing is constituted by the abundance of "epistemically modal non-affective utterances of the form 'it is possible that…', if… may….,'…sentences not exemplifying a general principle but sampling—listing the possible."[167] Following Sedgwick and Frank, cultural theorists have generally found value in the abundance of phenomenological possibilities the theory generates. I make the case that it is the sparseness of Tomkins' theory that allows for this proliferation of nonhierarchical variety in his work. Building from the first chapter of this dissertation that discusses Quine,, I use sparse to mean that Tomkins sought to explain the widest possible behaviors with the simplest possible theory.[168] Variations emerge only through Tomkins' strict adherence to his underlying claim—the affects are innately motivating.

Tomkins proposes the affects as an alternative to the two dominant theories of motivation in 20th century psychology—behaviorism and psychoanalysis.[169] Each of these paradigms posit an overly narrow theory of motivation. Behaviorism places too much emphasis on the link between motivation and the meaning of a stimulus (e.g. fear linked to a

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[167] Sedgwick, Frank, and Alexander, *Shame and Its Sisters*, 3.

[168] Tomkins did his first post-doc with Quine. Hi theories, though it is not explicitly stated, are influenced by Quine's empiricism. This is apparent in the serious scientific attention Tomkins gives to anecdotal and experiential evidence. Common-sense observations are key forms of evidence in Tomkins' work.

[169] Psychoanalysis and Behaviorism can be binarized through theories of internal experience/external behaviors. Both however were theories of motivation that linked back to biological survival. While Freud was specifically interested in instincts, and Watson was interested in reflexes, each took inborn, biological mechanisms as a starting place. Behaviorism is often characterized as a purely environmental theory. Any response could be learned through interactions with the environment. As B.F. Skinner argues this is evolutionarily adaptive. Skinner writes, "…certain mechanisms have evolved by virtue of which the individual acquires behavior appropriate to a novel environment…The conditioned reflex is a relatively simple example," B. F. Skinner, *About Behaviorism* (Knopf Doubleday Publishing Group, 2011), 42. Rather than see each behavior as an inborn trait, Skinner argues that the ability to learn from environmental contingencies is itself the baseline. Freud, especially when interpreted by American analysts, can be read as linking all human action back to the pleasure principle, which is a biological instinct.

white rabbit). It eliminates the intrinsic significance of fear and places it in the environment. Psychoanalysis, on the other hand, theorizes the opposite by tracing all motivation to the psychological meaning of the biological drives.[170] Drives are meant to achieve specific behaviors such as eating, drinking, and procreative sex. Drives are limited in their motivating power by their functional specificity. Both the drive system and the affect system insure the duplication of the individual in space and time. Affects, however, are motivating beyond strict response-stimulus connections. For instance the hunger drive is linked functionally with eating in Tomkins summary of drive theory. The affect system is not opposed to or less biological than the drives. Affects are "other neglected biological roots which are the primary motivating sources."[171] They are fundamentally defined by their freedom and generalizability.

Freedom here means that affects can be stimulated internally and externally by an infinite number of possible scenarios and they can provoke infinitely variable responses. For instance, the cry of a hungry infant carries no communication beyond a basic display of sadness. A hungry baby can be comforted for a time through rocking or distraction even if the specific hunger need is not met. Here, "the affect was an independent response."[172] In this way, crying works with the hunger drive to increase motivation in both child and mother to solve the problem. Tomkins de-emphasizes the communicative aspect of tears to make the case that the cry is not universally linked to the need for food. He argues that affects are activated by infinitely variable stimuli. Thus, affects motivate an equally variable array of

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[170] Tomkins understanding of the psychoanalytic drives is quite simplistic. He seems to take this concept of the drives from American Psychoanalyst Heinz Hartmann who was the most well-known American analyst at the time. Hartmann emphasized the biological and adaptive foundations of psychoanalytic dynamics. It's important to note that the concept of the drive has been richly debated by psychoanalysts for some time. Tomkins confines himself to the biological drives for the purpose of his argument, largely simplifying this field. Heinz Hartmann, *Ego Psychology and the Problem of Adaptation* (International Universities Press, 1958).
[171] *Affect Imagery Consciousness*, 1962, 33.
[172] Ibid.

behaviors. These motivating forces are fundamentally defined against narrow links between biological need, environmental stimulus, and behavior.

To maintain the sparseness of this theory, and as a result its explanatory power, Tomkins de-emphasizes and sometimes even troubles the social significance of facial expressions. The face is the primary site of the affects not because of its expressiveness, but because it is "more rapid and more complex than any stimulation of which the slower moving visceral organs are capable."[173] The early display of the smiling response provides the evidence for the complexity of the face. Infants smile far in advance of the rest of development—at two months of age. Long before the infant has response control of its limbs or trunk, the mouth and eyes can be observed reacting sensitively to subtle stimuli in the environment. This shows that the face as a sensory organ is highly responsive and motivating. The response sensitivity of the face furthers Tomkins claim for the freedom of the affects. The freedom of the affects then requires this sideways approach to the visual meaning of the smile. That is, Tomkins displaces a theory of facial communication to account for a greater number of diverse scenarios and potential behaviors. The face is significant because of its sensitivity not its visuality.

Infants, however, pose a unique problem for the freedom of the affects. Specifically, infants, as I noted at the opening of this chapter, reliably smile at a particular visual stimuli—the familiar face of the mother. This would seem to disrupt the freedom of the affects by showing that the affect of joy is innately linked to the face of the caregiver. In the chapter "Enjoyment-Joy," Tomkins weighs the evidence for and against the seemingly irrefutable connection between the joy of the baby and the smile of the mother. He asks what other explanations might account for the inevitable link between joy and the face of the caregiver.

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[173] Ibid., 122.

In this way, Tomkins sets up the assumption of social significance as a foil for his central argument for the freedom of the affects. He argues,

> ….even if the face is a sufficient condition for activating the smile, it is certainly not a necessary condition.....The fact that the human face and smile do most frequently stimulate the smile in the infant has been established beyond doubt. We are calling into question only whether this is the consequence of an innate releaser. We are not questioning the innateness of the response itself.[174]

Here, Tomkins disentangles the innate affect of joy from a presumed link to social interaction. He does not refute the empirical veracity of the claim; he merely questions the biological foundation of this inevitable scenario. Tomkins distinguishes between frequency, even inevitable frequency, and evidence for an innate trait. In so doing he puts into question the centrality of communication.

Ultimately Tomkins concludes that enjoyment is activated by the reduction of density in stimulation and what Tomkins calls neural firing. Any reduction in stimulation can cause joy. This means that joy proceeds from both negative and positive stimulation. For example, enjoyment may follow the sedation of pain or hunger, just as it may follow the reduction of excitement or interest. He writes that, "the mother's face is one of the few objects in the environment with sufficient variation in appearance and disappearance to produce both excitement at its sudden appearance and the smile at the sudden reduction of this excitement when the face is recognized as a familiar one."[175] The early display of a smile does not spring directly from an innate link between the mother and enjoyment, but from a decrease in stimulation density. Here we see the subtle epistemological intervention of

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[174] Ibid., 209.
[175] Ibid., 205.

Tomkins theory. The evidence for social significance of the face becomes secondary to the freedom of the affects. Facial expression is not only externally expressive, but internally motivating as well. The fact that the earliest smile invariably appears in response to a caregiver, does not subsume the evidence for the freedom of the affects.

The smiling response of the infant exemplifies the difficulty of keeping a general theory of motivation at the fore, especially when dealing with the undeniably visible and social effects of the face. Though sociality is an inevitable outcome of the affect system, it is not the primary function. The reduction of interest is more explanative than the more obvious conclusion that the face of another is the releaser of joy. Tomkins seeks to explain all possible outcomes throughout the life cycle—possible objects of enjoyment, and ways the smile of another causes affects other than that of joy. He avoids the most tempting conclusion, a biological link between infant joy and caregiver expression. This allows him to account for the widest variety of behavior in his theory of motivation. Motivation, at its most broadly conceived, remains the heart of the theory.

This generalizability, the foundation of the theory, is only possible through Tomkins' reframing of the visual evidence of the face. The visual meaning facial expression carries is secondary to what Tomkins call their motivating power. By delinking communication from facial behavior, Tomkins produces an anecdotally rich and empirically varied theory. This feature has propelled him to a central location in cultural theory. As Sedgwick and Frank argue, the difference between the drive system and the affect system is "between biologically based systems that are less and more capable of generating complexity or degrees of freedom."[176] The affect system accounts for variability, even unknowable possibilities of

[176] Sedgwick and Frank, *Touching Feeling*, 8.

experiences, reasoning, and behavior. Tomkins develops a sparse theory of motivation by contesting the link between facial expression and social communication.

Section III: The Problem of Expression

While for many following Sedgwick and Frank, this decoupling of the evidence of the face from theories of social communication is helpful, others have taken issue with Tomkins' focus on the innate aspect of facial expression. Unfortunately, much literature on facial expression is framed through the dichotomous logic introduced in the first section of this chapter. The face is either instinctually reflexive or socially specific. I hypothesize that this is due to an under-appreciation of the contradictions inherent in all behavioral evidence. Even at its most legible, human behavior carries meaning in excess of the claim it acts as evidence for. Lynn Hankinson Nelson calls this excess slack and find feminist possibility within this mismatch. In what follows I return to Ruth Leys' discussion of affect theory in order to think through the assumptions about behavioral evidence at the heart of this oppositional logic. Leys diagnoses recent humanist approaches to the science of emotion with an overemphasis on nonintentional, reflexive, force theories of emotion. She argues that the two areas of thought on affect that seem to be discreet, Tomkins-Ekman inspired work and Massumi inspired work, are linked in their disregard for ideology and meaning. In the recent scholarship on affects, Leys contends, "action and behavior are held to be determined by affective dispositions that are independent of consciousness and the mind's control."[177] She pinpoints an overemphasis on nonconscious processes on new scholarship on the affects. She divides the current work on affect from earlier scholarship on the emotions, calling them anti-intentionalist and intentionalist respectively.

[177] Leys, "The Turn to Affect," 443.

Leys advocates for a more cognitive approach to emotion that could theorize beliefs and desires across time. For Leys psychoanalysis and "cognitivist" approaches to emotion "makes questions of meaning and belief of fundamental importance. Freud's theories of anxiety receive sustained attention in Ley's argument. She retells the story of "Little Hans," the five year old Freud treated who had developed a phobia of horses. Leys argues that the precipitating experience of the phobia, when Hans saw a horse fall down, is important only because of the "meaning the horse has for Hans, especially the meaning it has as a substitute object for his conflictual desires, wishes, and belief…."[178] For Leys, the case of Little Hans demonstrates her theory of intentionality. Freud's theory of Han's phobia links "fear, the phobic object, identification, guilt, anxiety, and the subject in a single explanatory complex."[179] Unlike Tomkins, Freud centralizes meaning and belief in his psychological theory.

Tomkins's theory of affect, on the other hand, is nonintentional because it "displaces considerations of intentionality and meaning" to produce a theory of emotions that are "fundamentally corporeal in nature." Importantly, for this project Leys positions meaning and psychoanalysis against universal and instinctual behavior outlined by Tomkins. As Leys characterizes, "to Tomkins the affects have no inherent knowledge of or relation to, the objects that trigger them."[180] Problematically, the objects of emotions are voided of their meaning and become merely a trigger for "an involuntary hardwired response."[181] As I've detailed throughout this chapter, however, the role of meaning, communication, and sociality, haunts Darwin and Tomkins universal theories of facial expression.

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[178] Leys, "How Did Fear Become a Scientific Object and What Kind of Object Is It?," 68.
[179] Ibid., 69.
[180] Ibid., 68.
[181] Ibid., 69.

Visual salience of the face poses a trenchant problem for Tomkins' theory of motivation. Not only is the face sensitive, complex, and linked to other viscera, it is singularly visible. Unlike other motivating systems, such as the drives or cognition, affects can be seen on the faces of others. Though Tomkins is primarily concerned with the motivating power of the face, he still must contend with its visual significance. As Tomkins writes of the face, "there is no single object in the world which is better known and in connection with we achieve such perceptual skill as the human face—whether it is the face of the self or of others."[182] Even though Tomkins primarily focuses on the ability for affects to orient us to infinite possible stimuli, he acknowledges some intrinsic affective significance of the faces of others. The affective potency of the face disrupts the freedom of the affects that is the cornerstone Tomkins' biological theory.

This tension is most apparent in Tomkins' discussion of shame because shame is the most visibly significant of all the affects. Shame decreases communication with others and is the innate feedback of eyes down and head down or a general turning inwards. He argues, "that the awareness of the face is more salient in shame than in other affects; that the shame response itself heightens the visibility of the face."[183] Shame is experienced early on and is activated by social interaction. Tomkins claims that shame is first observed at about seven months of age when the infant is able to perceive the difference between the caregiver's face and the mother's face. He writes, "under any schedule of socialization which is conceivable, the infant will sooner or later respond with shame."[184] For Tomkins the first appearance of shame will be in response to a stranger that is mistakenly perceived to be the familiar caregiver. The presence of shame is dependent on a developmental skill-- recognizing

[182] Tomkins, *Affect Imagery Consciousness*, 1962, 127.
[183] Tomkins, *Affect Imagery Consciousness*, 1963, 143.
[184] Ibid., 142.

strangers. Shame develops through visual recognition of sameness and difference. Furthermore, shame is primarily related to communication with others in that shame is marked by the downward turn of the eyes and head. What Tomkins describes this as an ambivalent halting of communication. Therefore, shame is in a unique position with relation to sociality.

While Tomkins works hard to untangle the motivation of the affects from their social significance, his theory circles back to the visuality of the face. His theory necessarily relies on the visual meaning faces carry. This inevitably causes this innate theory of motivation to circle back on a theory of socialization. The relationship between shame and socialization rests on the key attributes of shame, particularly "that the awareness of the face is more salient in shame than in other affects; that the shame response itself heightens the visibility of the face."[185] In this quote Tomkins illuminates the definitional bond between shame and socialization through the visibility of the face. Tomkins, like Darwin cannot maintain a complete disavowal of the communicative properties of the affects. For this reason, I argue that Tomkins takes a sideways approach to the visuality of the face. This is fundamentally non-oppositional way to foster biological evidence.

The evidence of manifest behavior propels this circular theory. The separation of social meaning and biological reflex cannot be maintained. Just as sociality haunts Darwin and Tomkins 'nonintentionalist' theory of emotion, so too does biology haunt Freud's intentionalist theory. While Leys posits that Hans demonstrates the ways emotions such as fear are constituted through meaning, identification, unconscious wishes etc., I argue that universal and reflexive fears underline Freud's "intentionalist" theory of Hans's phobia. In 1927 Freud returns to the Hans case to revisit the question of anxiety. Just like Darwin and

[185] Ibid., 143.

Tomkins asked about the face, Freud asks if anxiety is something to be understood and treated in itself, or if it is primarily a sign or communication of deeper unconscious processes. In this essay Freud posits anxiety as a signal of a danger situation that in turn sparks repression. The debate that Freud works through in this essay is over whether anxiety is a symptom of neurosis or the thing which leads to symptom formation. Here Freud returns to two recognizable cases, the case of Little Hans and the case of the Wolf Man. While both Little Hans and the Wolf Man have manifest animal phobias, Freud notes that they represent a kind of antithesis where Little Hans has repressed his *jealous anger* toward his father through a phobia of horses, while the Wolf Man has repressed his *erotic love* for his father through a nightmarish phobia of wolves. Freud asks the question that every reader of the DSM and every therapist is confronted with, "How is it that, in spite of these differences in the two cases, almost amounting to an antithesis, the final outcome—a phobia—was approximately the same?."[186] To put it another way, how to contend with the observation of similar behaviors, while also accounting for the variability of experience and meaning. What meaning do the behaviors carry?

Through the retelling of the Little Hans case Freud questions the status of a symptom. Freud reminds the reader of Hans's phobia of walking into the street due to his fear of horses. He asks 17 years after the original publication, "which part of it [the phobia] constituted the symptom?" The fear, the choice of the horse as an object of fear, his refusal to move? As he asks of the case, which aspect of Hans's narrative is the most salient, the most in need of relieving? What is the relation between the manifest symptom of a fear of horses and its underlying meaning? For Freud the outward expression of Hans's phobia is less important than the conflicts through which it originated. Freud argues that Hans's fear

[186] Freud, *Inhibitions, Symptoms and Anxiety*, 107.

of horses was in fact a result of his ambivalent feelings for his father and his fear of the retribution that would strike due to his hostile wishes. By revisiting the Little Hans case Freud argues that the symptom is not the outwardly observable phobia of horses but the replacement of Hans's aggression toward his father by a fear of horses. As Freud argues, "What made it a neurosis was one thing alone: the replacement of his father by a horse. It is this displacement, then, which has a claim to be called a symptom."[187] Here Freud defines the symptom as the means through which an overwhelming feeling is kept at bay. Both the outward appearance as well as its underlying defense mechanism comprise the symptom in this essay. Though the phobia may appear indistinguishable from other animal phobias Freud moves to include the underlying conflict of the phobia to allow the particularities of Hans to emerge with the manifest fear as the definition of a symptom.

Through a circular move Freud brings the Wolf Man and Little Hans back together. The motive force behind the repression was the same in both cases- the fear of castration. Though castration anxiety represents a kind of switch point in Freud's theorizing and both cases share a version of this conflict in common, on this particular occasion it is the bodily experience of unpleasurable anxiety which Freud goes on to theorize. The anxiety that preempted the symptomatic repression is the defining feature of the retelling of these two cases, not the overlap of the particular Oedipus conflict. As Freud writes, "the anxiety belonging to the animal phobia was an untransformed fear of castration. It was therefore a realistic fear, a fear of a danger which was actually impending or was judged to be a real one. It was anxiety which produced repression and not, as I formerly believed, repression which produced anxiety."[188] While the repressed affects, anger and erotic desire, in the two

[187] Ibid., 109.
[188] Ibid., 108–9.

phobias remain importantly distinct, the phenomenological experience that sparked the repression that led to the phobias has the same root. A Darwinian inflected root, the perception of actual danger. Freud emphasizes realistic and actual here, a reference to a particular type of evidence. Freud points to sensory or empirical evidence as a lynch pin for his case. The experience of anxiety as evidence makes the fantasy of the situation of the Oedipus complex 'actual'. Freud contends in this essay that anxiety and symptom formation are related through the third element of the actual danger situation. He creates a circular play between a universal perception of anxiety as signal of a danger situation, and the specific minute differences of what represents a danger situation for a given individual. Freud relies on the evidence of a universal fear in order to think through psychological meaning that Leys is so concerned with. Tomkins, the non-intentional theorist, cannot ignore meaning when theorizing the face, and Freud, the intentional theorist, reaffirms a reflexive fear response as he's theorizing unconscious meaning.

Conclusion:

But why argue for a return to ideology and meaning in the first place? For Leys this a basic feminist tenet. The cultural situatedness of biological knowledge has been a canonical project for feminists. In terms of infant research the cultural mores of motherhood are never far off from biological conclusions.[189] The tension between cultural meaning and biological origins, I argue, is not elided by infant researchers. It is inherent in the way they theorize behavioral evidence. In this chapter I have shown how the separations between mind,

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[189] This is reviewed extensively in the first chapter. For classics see: Burman, *Deconstructing Developmental Psychology*; Aurélie Athan and Heather L Reel, "Maternal Psychology: Reflections on the 20th Anniversary of Deconstructing Developmental Psychology," *Feminism & Psychology* 25, no. 3 (August 1, 2015): 311–25; Karín Lesnik-Oberstein, "Motherhood, Evolutionary Psychology and Mirror Neurons or: 'Grammar Is Politics by Other Means,'" *Feminist Theory*, May 21, 2015, 1464700115586514.

biological reflex, and social specificity play out in the paradoxical evidence of the facial expression of infants. The relational and biological aspects of facial expression make it a productive site to reconsider the complexities of empirical evidence for feminists interested in the psychological sciences. Tomkins and Darwin, I argue, take a sideways approach to the social and cultural meaning of facial expression.[190] They refuse to use the self-evident communicative privilege of the face as a biological explanation, nor do they explain socialization through the biology of facial expression. In this way, they step to the side of traditional biological, psychological, and cultural theories of behavior. This has been a problem for many scholars. As Leys argues of the benefits of centralizing cultural meaning,

> the moment one abandons the basic emotions approach in favor of some kind of intentionalist interpretation of the kind associated with Freud and appraisal theorists, one finds oneself forced to provide thick descriptions of life experiences of the kind that are familiar to anthropologists and indeed novelists but are widely held to be inimical to science.[191]

Tomkins on the other hand is accused of flattening the complexity of everyday life. By eliding social communication some fear we miss the empirical variability of behavior. However, anyone who has encountered *Affect, Imagery, Consciousness* will be immediately struck by the vastness of descriptions, and everyday details. This is due to Tomkins's theory of evidence.

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[190] This notion of sideways comes from Queer Theorist Eve Sedgwick and later Catherine Bond Stockton who picks it up. Sedgwick advocates for stepping to "the side of anti-essentialism" by attending to the textures and particulars of language through non-oppositional thinking. I argue in this chapter that Tomkins and Darwin step to the side of the separation between reflex and culture. Sedgwick and Frank, *Touching Feeling*, 6; Kathryn Bond Stockton, *The Queer Child, or Growing Sideways in the Twentieth Century* (Durham: Duke University Press Books, 2009).

[191] Leys, "The Turn to Affect," 465.

Tomkins' epistemology mirrors Quine's empiricism. In fact Tomkins worked under Quine in his post-doc at Harvard. Lynn Hankinson Nelson described Quine's theory of evidence as sparse. For her that was the utility of it. Quine attempted to strip epistemology to its barest form. It seems strange to describe Tomkins's stuffed four volume theory as sparse, but I think the underlying ethic of it is best understood in that way. The art of matching the infinite diversity of empirical possibilities with a single theory was Tomkins task as a scientist, as well as the task of the affect system in general. His search for a grand theory of human motivation, that continued until his death, switches between highly impersonal, computational language like "responser" and lists of what seem at times like anecdotal divergences into his past, or a story he heard from another researcher. The sparseness of his theory brings to life infinite vastness of empirical experience. What Leys might even call "meaning."

Like Quine, Tomkins, seeks to "smash boundaries." For Tomkins, the most pervasive boundaries seem to be in reductive dichotomies between biology and psychology, cause and effect, and most importantly learning and innate. Science, for Tomkins was meant to provide a general explanation for a vast number of possibilities. "So, doing science, basically, as I see it, is a matter of achieving in the informational domain what the concept of mechanical advantage achieved in the physical domain. In the phenomenon of the lever, you can use small force to move large force. In the concept of the valve in a water distribution system, you can use small force to move large quantities of water."[192] For Tomkins, the best explanations were not the most obvious but the most general. He was taken by the anomalies, the alternate explanations, and the slight possibilities. For him, the large quantities of water, was a metaphor for the vast empirical possibilities of human behavior and

[192] Tomkins, Demos, and Smith, "Inverse Archaeology."

experience. The lever that could move such large quantities would need to be sparse in its specificity and dense in its scope. This means, additionally that empirical evidence and theoretical ingenuity are not at odds in his work. "Science is not magical, but it does involve two conjoined things going on at the same time: tremendous compression of information which is capable of extraordinary expansion.….We cannot have science which does not correspond to reality. We cannot have science which does not achieve a coherent corpus of propositions. And we cannot do any of this without invention. These are not to be opposed to each other, so that to invent is to be arbitrary."[193]

[193] Ibid.

Chapter Four

Contending with Two Faces: Feeling for the Cognition of the 'still-face'

Neglect is one of the most irrefutably damaging scenarios for babies and young children. As I argued in Chapter One, extreme neglect is overwhelmingly recognizable in the behaviors and even physical health of infants. But what about subtler disconnects in the emotional life of infants? Edward Tronick (a Boston based psychological and psychoanalytic researcher) began such research in the late 70s and has continued to international recognition today.

In a 1983 study, Tronick, along with colleague Jeffrey Cohn observed the coping methods of babies when faced with emotional stressors. In order to simulate stress, they asked mothers to "act the way they do on the days they feel blue" by flattening their voices and facial expressions, moving slowly, and sitting away from the infant.[194] This became known as the still face experiment. The study was preliminary research for a larger investigation of the effect of depression on mother-infant pairs. And indeed, it showed relatively lasting effects of brief periods of *simulated* depression. When mothers were asked to return to normal, infants remained in "cycles of negative affects" for the remainder of the experiment.[195] Subsequent studies of clinically depressed mothers and their infants supported the hypothesis that depression of the mother affects the overall affective valence

[194] Edward Tronick, *The Neurobehavioral and Social-Emotional Development of Infants and Children* (W. W. Norton & Company, 2007), 159.
[195] Jeffrey F. Cohn and Edward Z. Tronick, "Three-Month-Old Infants' Reaction to Simulated Maternal Depression," *Child Development* 54, no. 1 (1983): 181.

of infant behavior. Infants of depressed mothers spent less time in "play," and even maintained less focus on inanimate objects.[196]

While the findings on clinical depression and infant care are significant, I would like to focus instead on the familiarity of the depressive state. In an aside in this experimental protocol the researchers remarked, "normal mothers had no trouble following these instructions."[197] The simulated protocol was far from inauthentic. Non-depressed mothers were actually quite comfortable acting depressed. Additionally, three minutes of flattened engagement from mother caused the baby to have a noticeably dynamic and negative reaction; a series of behaviors that we could guess were very familiar to the baby. The researchers use this controlled period of heightened "negative cycling and distress" as evidence for normal mother-infant interacting.[198] Relational failure is common in infant life.

Yet, researchers who focus on the empirical observation of mother-infant pairs tend to highlight relational connections over "negative cycling." These connections are described in either cognitive or sentimental terms. The intersubjective emotional life of babies, charted by a large body of research, is laced with words like "reciprocity," attunement," and "coherence."[199] Linking reciprocity with mother-infant relations is unflinchingly sentimental.

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[196] Geraldine Downey and James C. Coyne, "Children of Depressed Parents: An Integrative Review," *Psychological Bulletin* 108, no. 1 (1990): 50–76; Edward Tronick and Corrina Reck, "Infants of Depressed Mothers," *Harvard Review of Psychiatry* 17, no. 2 (January 1, 2009): 147–56; Valerie E. Whiffen and Ian H. Gotlib, "Infants of Postpartum Depressed Mothers: Temperament and Cognitive Status," *Journal of Abnormal Psychology* 98, no. 3 (1989): 274–79; Edward Z. Tronick, "Emotions and Emotional Communication in Infants," *American Psychologist* 44, no. 2 (1989): 112-119; Downey and Coyne, "Children of Depressed Parents."
[197] Tronick, *The Neurobehavioral and Social-Emotional Development of Infants and Children*, 160.
[198] Edward Tronick, *The Neurobehavioral and Social-Emotional Development of Infants and Children* (W. W. Norton & Company, 2007), 159.
[199] Heidelise Als, Edward Tronick, and T Berry Brazelton, "Affective Reciprocity and the Development of Autonomy: The Study of a Blind Infant," *Journal of the American Academy of Child Psychiatry* 19, no. 1 (December 1, 1980): 22–40; Jay Belsky, Dawn G. Taylor, and Michael Rovine, "The Pennsylvania Infant and Family Development Project, II: The

I use the word sentimental here to highlight the ways models of motherhood inflects this research.[200] Specifically, this research can propel an idealized picture of motherhood and femininity. The alternative to these sentimental observations is not chaotic or negative, but mechanical—for instance, "matching," "synchrony," "mutual regulation," and "repair." These words are unflinchingly cognitive. I use the word cognitive to highlight the ways

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Development of Reciprocal Interaction in the Mother-Infant Dyad," *Child Development* 55, no. 3 (1984): 706–17; D. Salter, Silvia M. Bell, and Donelda J. Stayton, "Infant-Mother Attachment and Social Development: 'Socialisation' as a Product of Reciprocal Responsiveness to Signals," in *Becoming a Person*, ed. M. Woodhead, R. Carr, and P. Light, Child Development in Social Context, Vol. 1. (Florence, KY, US: Taylor & Frances/Routledge, 1991), 30–55; T. Berry, Barbara Koslowski, and Mary Main, "The Origins of Reciprocity: The Early Mother-Infant Interaction," in *The Effect of the Infant on Its Caregiver* (Oxford, England: Wiley-Interscience, 1974), xxiv, 264; Tiffany Field et al., "Behavior-State Matching and Synchrony in Mother-Infant Interactions of Nondepressed versus Depressed Dyads," *Developmental Psychology* 26, no. 1 (1990): 7–14; Ruth Feldman and Charles W. Greenbaum, "Affect Regulation and Synchrony in Mother—infant Play as Precursors to the Development of Symbolic Competence," *Infant Mental Health Journal* 18, no. 1 (March 1, 1997): 4–23; Beatrice Beebe Ph.D and Phyllis Sloate Ph.D, "Assesment and Treatment of Difficulties in Mother-infant Attunement in the First Three Years of Life: A Case History," *Psychoanalytic Inquiry* 1, no. 4 (January 1, 1982): 601–23, doi:10.1080/07351698209533422; Maria Legerstee, David W. Haley, and Marc H. Bornstein, *The Infant Mind: Origins of the Social Brain* (Guilford Press, 2013).

[200] Lauren Berlant's "National Sentimentality Project" represents the leading scholarship on sentimentality. I will draw heavily from Berlant in the final section of this chapter. Sentimentality brings together the negative valence of femininity and emotionality. As Eve Sedgwick writes in her discussion of suffering and the gay male body, "there isn't a difference to be made between sentimentality and its denunciation" *Epistemology of the Closet*, Updated with a New Preface edition (Berkeley, Calif.; London: University of California Press, 2008), 153. Sentimentality in general can be encapsulated by debates about 19th century women's fiction. For an overview of this literature see June Howard, "What Is Sentimentality?," *American Literary History* 11, no. 1 (March 20, 1999): 63–81. Ann Douglas argues that popular novels published by women in the 19th century fall to debased mass consumer culture *The Feminization of American Culture* (New York: Farrar, Straus and Giroux, 1998). In contrast, Jane Tompkins argues that these books represent the beginnings of grassroots politics (June Howard 1999) *Sensational Designs: The Cultural Work of American Fiction, 1790-1860*, 1 edition (New York: Oxford University Press, 1986). Sentimentality in feminist discussions is either dangerously conventional or the beginnings of women centered politics. Importantly for this project the long standing conversation about sentimentality in literature brings emotion and feminism together. I will return to the overlap of emotion, women, and sentimentality throughout this chapter as I move the discussion outside the bounds of literary history.

systamiticity, and computer models characterize the disciplinary context of this research within the late 20th century. As I will explore in the first section, the cognitive revolution that emphasizes thought and learning, sometimes in direct contrast to emotion, overlaps with the early years of the still-face experiment (1960-1980). This makes Tronick's research legible and even palatable to contemporary moment where cognitive models of mind are ubiquitous across the behavioral sciences.

Researchers understand the familiar distress, failures, and neglect of mother-infant interactions through both sentimental understandings of motherhood and cognitive systems of communication and goals. The sentimental and the cognitive represent two conflicting epistemologies of emotion. However, these are not contradictory in the empirical evidence of early-care-giver relationships. Through a close reading of the still-face paradigm developed by Tronick in the late 70s I ask how researchers manage the central role of failure, distress, and negativity in their evidence of mutuality? By bringing the epistemologies of cognitive science to bear on feminist conversations about sentimentality, this case sheds new light on historical and ongoing debates about relationality in feminist and queer theory.

The chapter is separated into three sections. In the first two sections I focus on the specifics of the still-face experiment within the shifting landscape of psychiatry and academic psychology. The still-face experiment emerged against a backdrop of transformation in the psy sciences: American psychiatry had dethroned psychoanalysis in favor of less etiological theories, strict behaviorism was on the wane in most psychology departments as computer and cognitive theories gained momentum, and feminism gained institutional legs as women entered the academy in higher numbers and began to amend the dominant disciplines. [201]

[201] The term psy science was popularized by Nicolas Rose to encapsulate institutionalized psychological knowledge production including self-help, experimental psychology, psychiatry

These contexts give some insight into the mechanical yet dramatic tone of the still-face experiment. In Section One I expand the claim that this research is explicitly cognitive. I give some historical context to the meanings and boundaries of what we now call "cognitive science." Yet, as I will explore in Section Two, the still-face experiment also brings into focus new concerns raised by feminism and psychoanalysis. A new awareness of the importance of the earliest relationships also gives this research a sentimental tone. In the final section, I argue that the cognitive and sentimental come together in this research through the exageration of relational failure. What is the play between the cognitive and emotional at the level of empirical evidence? What is the empirical evidence of relationality?

Section I: Still-Face and the Beginning of the Cognitive Era

The journal article that introduced the still-face paradigm has been cited over 1200 times since it was first published in 1977. Yet, the conclusions are remarkably humble, perhaps even mundane on first glance. The abstract reads:

> The normal feedback infants receive from their mother's face-face interaction was distorted by having mothers face their infants and remain unresponsive. The infants studied acted with intense wariness and eventual withdrawal, demonstrating

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etc.. I have hesitated to use it throughout this dissertation though at times it would have been a clear shorthand. Part of the work of this dissertation has been to trace the boundaries and distinctiveness of psychological knowledges rather than homogenize them as a single normalizing force in the modern era. I use the term in this context to highlight the central argument of the preceding paragraphs; namely that American psychology and psychiatry were changing in overlapping ways that led eventually to the cognitive and biological focus that dominates both mental health care and academic psychology in the United States today. In this case the psy sciences, as a whole, were slipping more toward observable and mapable cognitive questions and brain-based explanations.

> interactional reciprocity and the ability for infants to regulate their emotional displays.[202]

The summary of the article is neither quantitatively stark nor emotionally evocative. The conclusion that infants and mothers mutually regulate their emotions is vague and mechanical. This systematized language draws readers away from empirical detail. "Intense wariness," the most descriptive element, is devoid of emotional charge. Wariness involves a careful, thoughtful consideration, a prudence, rather than an immediate reaction of fear, anger, or sadness. These words are carefully chosen to satisfy both the scientific tone of the psychiatric journal, while also gesturing toward the dynamic empirical findings. "Distortion," "wariness," and "withdrawal" point to what becomes a highly variable and precise milieu of emotion in the remainder of the seminal article.[203] How did a relatively humble experiment that exposed the ordinariness of relational failure gain so much traction in a dominantly cognitive field?

Of all three cases comprising this dissertation Tronick's is the most squarely disciplinary. He is well known and respected in most if not all developmental labs. His work is approachable to lay audiences, and it also holds up to peer-review scrutiny. His experimental methods, publications, and conclusions are emblematic of late 20th century developmental research. They are recognizably cognitive.

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[202] Edward Tronick et al., "The Infant's Response to Entrapment between Contradictory Messages in Face-to-Face Interaction," *Journal of the American Academy of Child Psychiatry Winter 1978* 17, no. 1 (1978): 1.

[203] Other studies demonstrate the effect of brief separations see: Tiffany Field et al., "Maternal Unavailability Effects on Very Young Infants in Homecare vs. Daycare," *Infant Mental Health Journal* 7, no. 4 (1986): 274–80. Yet, As Adamson and Frick argue the still-face paradigm is more dramatic and disturbing for infants than other disruptions to social interaction including brief separations. The still-face experiment stands out because it is "richly textured" and "revealing" (Lauren B. Adamson and Janet E. Frick, "The Still Face: A History of a Shared Experimental Paradigm," *Infancy* 4, no. 4 (October 1, 2003): 460.).

Cognitive science evokes many associations. While interest in cognitive processes has a long history, especially in developmental psychology, a new interdisciplinary field combining theories of cognition, biopsychology, and artificial intelligence quickly gained prominence starting in the mid 1960s. This era through the 1980s has been deemed the cognitive revolution.[204] In 1961, founding researchers George Miller and Jerome Bruner started a new lab at Harvard called the Cognitive Studies Center.[205] Cognitive, for Miller and Bruner, referred to perception, language, memory, and problem solving. The term addressed thought, sometimes in direct contrast to motivation, biology, or emotion.[206] Early advocates of cognition were responding to the overly behavioral and automatic framework of behaviorism popular in the 30s through the 50s. Later it became a way to link thought and mind with artificial intelligence and computer models.[207] In this chapter I use cognitive science to indicate psychological theories that take computers and machines as metaphor for minds. I am especially using it to highlight the emotionally sterile underpinnings of cognitive

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[204] Roger W. Sperry, "The Impact and Promise of the Cognitive Revolution," *American Psychologist* 48, no. 8 (1993): 878–85; William N. Dember, "Motivation and the Cognitive Revolution," *American Psychologist* 29, no. 3 (1974): 161–68; George A. Miller, "The Cognitive Revolution: A Historical Perspective," *Trends in Cognitive Sciences* 7, no. 3 (March 1, 2003): 141–44; Howard Gardner, *The Mind's New Science: A History Of The Cognitive Revolution* (Basic Books, 2008).

[205] Margaret Ann Boden, *Mind as Machine: A History of Cognitive Science* (Clarendon Press, 2006), 7.

[206] Ibid., 10.

[207] It wasn't until 1973 that cognitive science was compared explicitly with artificial intelligence-based psychology. The focus on rational thought pre-dated the reliance on computer models (Margaret Ann Boden, *Mind as Machine: A History of Cognitive Science* (Clarendon Press, 2006)). For a feminist discussion about the emotional and interpersonal foundations of artificial intelligence see Elizabeth A. Wilson, *Affect and Artificial Intelligence* (Seattle: University of Washington Press, 2010).

theories. Cognition in the context of this revolution is defined by its distance from emotion and biological motivation.[208]

By placing the still-face experiment within the changing field of cognitive psychology I argue that this paradigm became foundational because of its palatability. The language used to theorize the experiment (regulation, goals, communication, systems, rules, information, phases) reflect its easy location within the cognitively oriented field of developmental psychology and the growing dominance of cognitive science in psychology more generally. The cognitive revolution helped to legitimize and highlight American developmental psychology that had long been dominated by Piaget's theories of mental development. Attention, learning, language and reasoning, long standards for developmental psychologists, became hot-topics as behaviorism gave way to cognitive science during the 1970s. On one level, the still-face experiment is emblematic of the growing trend toward cognition and systems in all areas of psychology at this time.

The schematics of the experimental setup are systematized, and repeatable. An infant rests, propped up in a baby seat. Two straps hold it in place. A seat is placed facing the infant where the mother will sit when she enters. Two tripods are positioned on opposite sides of the setup—one camera directed toward the mother's face, a second camera aimed at the baby's face. Curtains surround all four sides of the room. Baby is placed in the seat to wait as mother enters the room. She has been instructed to look straight at her child maintaining a neutral motionless face. The mother maintains this still-face for three minutes. She then goes behind the curtain and returns. This time she plays normally. The recordings of mother's and baby's face are compiled on a single split screen with digital time displayed

[208] Importantly for this project, the new orientation toward cognition as opposed to behaviors shifted the standards of empirical evidence. Thought and learning rather than action became objects for evidence.

below (Figure 11). From this split screen, trained researchers categorize and score the behaviors at 1 second intervals. The film is slowed to 1/7 of its normal speed in order to increase precision. In a parsing of screen, individual behavior, and time, the interaction is scored and categorized. The infant is rated on vocalizations, directions of gaze, head and body position, facial expression, and movement. Mother is coded for voice, head position, body position, direction of gaze, facial expression, and handling.

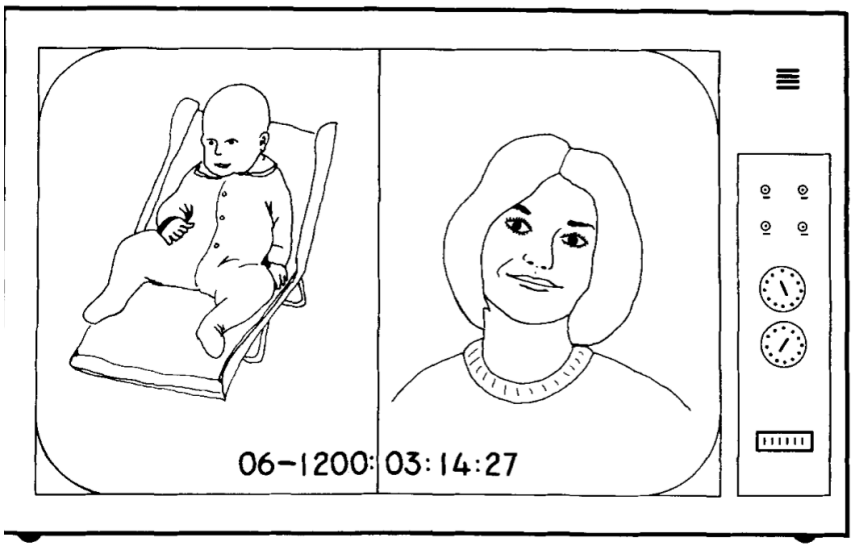

Figure 11: "Schema of Picture on T.V. Monitor," from original still-face article, 1978.[209]

The experiment is straight-forward and efficient making it easily repeatable and adaptable. It was easy to show parents how to enact the variables and equally simple for researchers to code their observations. The effect could be systematically replicated by measuring a small number of easily observable behaviors. In a well-researched review article one of the initial authors of the early study, Lauren Adamson, along with colleague Janet Frick discuss the traction of the still-face paradigm. They write that the effect was so easy to code that "a pithy set of variables related to gaze aversion, positive affect, and less often

[209] Edward Tronick et al., "The Infant's Response to Entrapment between Contradictory Messages in Face-to-Face Interaction," *Journal of the American Academy of Child Psychiatry Winter 1978* 17, no. 1 (1978): 3.

negative affect could be derived."[210] That is, placed within the experimental apparatus, mothers and infants become exemplary cognitive and mechanical subjects *and* as a result, empirical objects.

The still-face experiment is a systematic way to break the rules of normal interaction thereby demonstrating the infant's role in a reciprocal relationship.[211] For Tronick, mother-infant interaction is a rule-governed organization.[212] Mother's and infants are constantly working toward a hierarchy of interactional phases.[213] These goals are achieved by mutual regulation where both participants "reciprocally modify their actions based on the feedback they receive from their partner."[214] Here I borrow the researchers' language to give the reader a sense of the abstracted and mechanized tone that remains almost vacant of emotion, or empirical description.[215] The specificity of the pair seems to be subsumed under the weight of the goal directed model.

The mechanical and systematic elements of the experiment are further exaggerated by a diagram published in the original article (Figure 12). Circles, squares, and squiggles dehumanize the highly personal 6 minutes documented between mother-infant pairs over

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[210] Lauren B. Adamson and Janet E. Frick, "The Still Face: A History of a Shared Experimental Paradigm," *Infancy* 4, no. 4 (October 1, 2003): 461.

[211] The still-face, Tronick writes, is designed to "experimentally distort the feedback which the infant normally receives from the mother."Tronick, *The Neurobehavioral and Social-Emotional Development of Infants and Children*, 3.

[212] The empirical display of the experiment, in contrast is distressing evocative and complex. Rules, however are comprised of emotion, culture, and character—more humanistic terms. The infant understands the rules through the "meaning of their own expressive behaviors, the characteristics of people who are important… and information which allows them to fit in to their culture" (1). That is rules are expression, meaning, character and culture, all things that are traditionally outside the bounds of cognitive science.

[213] These phases are initiation, mutual orientation, greetings, cyclical exchange of affective information as in play dialogues and mutual disengagement.

[214] Tronick, *The Neurobehavioral and Social-Emotional Development of Infants and Children*, 2.

[215] This tone is maintained throughout the decades of repetition this experiment has undergone. The summaries of the experiment written in 2008 are equally mechanical.

the course of the experiment. The diagram is reminiscent of a circuit model drawn for a physics experiments. This schematic picture highlights the replicability and systematicity of the experiment. While Tronick et. al. could have easily described the set-up; the diagram places the experiment within the tropes of cognitive psychology. On this scale, the experiment appears linear, mechanical, and controlled. While many diagrams in cognitive psychology are used to abstract mental processes, this one, showing the layout of the experiment, serves to abstract the emotionality of the situation. Like a network of switches and circuits, mothers and infants become a predictable controllable system. Their interactions flow like currents through a circuit.

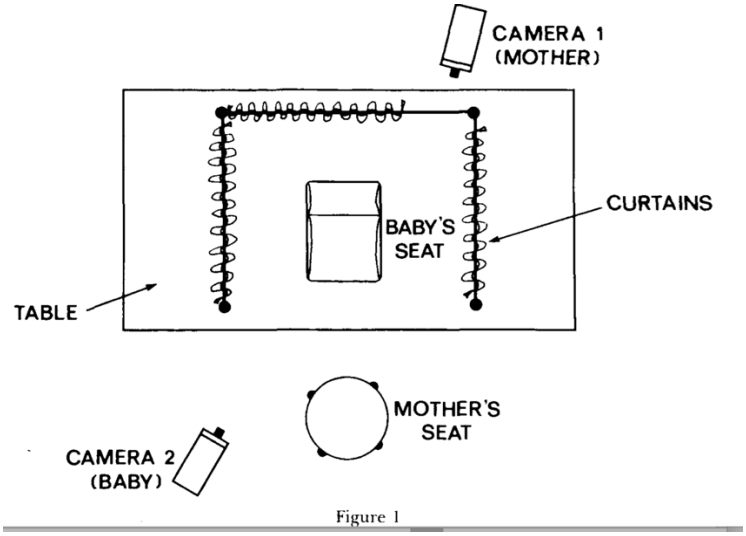

Figure 12: "Schema of laboratory during mother-infant interaction," from original still-face article, 1978.[216]

The cognitive veneer of the experiment serves the dual purpose of lending scientific authority and shielding the researchers from the intensity of the negative scenes. The key element of the experiment, the still-face variable, becomes especially sterilized through the schematized setup. The unresponsive mother and the confused distressed infant are merely a

[216] Tronick et al., "The Infant's Response to Entrapment between Contradictory Messages in Face-to-Face Interaction," 2.

"distortion" of a rule bound feedback loop. The language of nurturing, suffering or even pleasure and aggression are completely foreign to this initial setup. These systematic, rational, and emotionally sterile elements make this research approachable and conventional to the growing trends toward cognitive processes.

An initial reading might argue that the schematic and cognitive foundations of the paradigm mask the intensity and specific emotional interactions of each individual pair. Indeed, it has been easy in this section to link the machine-like elements of the still-face experiment with abstract and empirically vacant models.[217] However, the experiment is rich in description, metaphor and extra-cognitive data. Despite the linearity and easy coding of the subjects' behaviors, the empirical detail of the experiment is quite dynamic. That is, the cognitive tone of the still-face experiment is necessary for the landscape Tronick found himself in. It does not cancel out or contrast the highly individual and empirically grounded results. In fact, as I will argue the cognitive tone of the experiment actually enables the charged and emotionally negative empirical evidence.

The emotion of the experiment is as explicit as the cognitive elements. By strange inversion, the still-face is palatable because of its emotionality. I argue that the emotional tone and cognitive foundations are not dichotomous, rather they work in similar ways in relation to the still-face variable at the heart of the experiment.

Despite the systematized foundation of the experiment the initial publication seeps with emotion. The methods section includes a table showing the coding system researchers

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[217] While cognitive science since the 1990s has been recognizing the importance of "lower" processes such as emotions in the development of thought, memory, and perception, the experimental methods tend to follow mechanical descriptions as a way to highlight the scientificity of the research. That is, even as the field affirms the foundational role of non-cortical processes, they maintain ties to mechanics, abstract setups without much description or empirical detail.

use to quantify the interactions between mother and baby. The coding reaches beyond the surface of observable behaviors. For example, the category of infant vocalization has seven subcategories (1. None, 2. Isolated sound, 3. Grunt 4. Coo 5. Cry 6. Fuss, 7. Laugh). These are coding categories meant to mechanize and breakdown the diverse sounds emitted by the infant. They also carry emotional valence. That is cry, fuss, coo, and laugh are intrinsically meaningful. Fuss is descriptive of sound and points to a feeling state of discomfort or annoyance. The sounds carry affective charge. Subjective feelings are indistinguishable from observable infant sounds. What appears to be a system of categorization breaking down and abstracting behavior, actually describes emotional meaning and intense feelings.

Furthermore, the results section of the experiment does not even compile the carefully laid out system of numbers and time measurements. The organized coding system is scantly used to quantify data. Instead, the results section is an extended description of a single two-month-old baby participating in the experiment. The circuit diagram of the experimental layout is brought to life by four pages of descriptions as well as six screenshots taken during different time points within the experiment. The description foregoes reference to any of the cognitive elements discussed in the previous section. Researchers do not reference the split screen displays, the time measurements, or the numbered categories once they are introduced in the methods section.

The results are textually descriptive of the emotional interaction. The language is markedly colorful. For example, the researchers write:

> the baby sits completely quiet, back in his baby seat, face serious, cheeks droopy, mouth half open, corners down, but there is an expectant look in his eyes as if he

> were waiting…As his mother comes in, saying, 'hello' in a high pitched but gentle voice.[218]

Not only is the description thorough and evocative it uses simile to give depth to the meaning of the infant's behaviors. "As if" is a common phrase in the description. The researchers use it to temper any tendency to attribute unwarranted feeling to the infant. Simultaneously this tempered language makes the description more literary. It highlights the difficulty of describing the complex scene. Similarly, the mother's behavior is more than just sounds and movements along a circuit. Her "high-pitched but gentle voice" is described/interpreted with feminized and nurturing language. What appeared to be schematized and flattened becomes a dynamic and rich, almost soothing, description of a positive mother-baby interaction. The descriptive and empirical display gives a very optimistic and thorough picture of attachment. Commonly, experimental studies are punctuated throughout by tables, graphs, or models. This study, with its long paragraphs of descriptive observation is an anomaly. Though schematic diagrams are used to introduce the method, this mechanic structure does not dominate the results. The empirical evidence and emotional description thwarts the cognitive façade.

So far I have placed the cognitive experiment in tension with an alternative emotional experiment about relational dynamics. I argue, however, that the emotional tone of this research must be understood through Tronick's use of the mother. In the following section I show how the rise of feminism and a new focus on motherhood influenced Tronick's research. Underlying this simple dichotomy between emotion and cognition is the sentimentality of this research. Ultimately, the cognitive aspects of the experiment works

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[218] Tronick et al., "The Infant's Response to Entrapment between Contradictory Messages in Face-to-Face Interaction," 5.

with the sentimentality of motherhood to make the underlying negativity of the experiment bearable.

Section II: The Sentimentality of Motherhood

It is no accident that mother-infant interaction is an early site where emotion could be brought into the purview of stimulus perception, and language acquisition. Indeed, one of the primary methodological interventions of the experiment was its new emphasis on the singular role of the mother's behavior. In 1972 Tronick, then a post- doctoral researcher, proposed using mother's deliberate facial expression as an experimental paradigm. Though prior studies had experimentally tested stimulus-response patterns during face-face interaction, none had considered the face as a site of emotional communication. Earlier studies considered the human face as a stimulus on the same plane as color perception, following object movements, or turning toward sounds.[219] The still-face experiment, in contrast, was developed in a lab specializing in questions of communication, Bruner's Center for Cognitive Studies at Harvard.[220] In addition, this lab played with mixed methods of

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[219] While there were other studies that considered the development of infants facial perception, they still placed facial recognition on the same plane as other stimuli responses. Aronson and Rosenbloom studied the babies response when the voice is displaced from the mother's face ("Space Perception in Early Infancy: Perception within a Common Auditory-Visual Space," *Science* 172, no. 3988 (June 11, 1971): 1161–63.). Others examined visual tracking of film displays of women (Barbara Morgan Wilcox and Frances L. Clayton, "Infant Visual Fixation on Motion Pictures of the Human Face," *Journal of Experimental Child Psychology* 6, no. 1 (March 1968): 22–32.). Multiple studies looked at the isolation of different stimuli, ie facial expression with and without touches, and reactions to varying stimuli such as the mother's face, a mannequine, and a pot (Louise M. Brossard and Thérèse Gouin Dècarie, "Comparative Reinforcing Effect of Eight Stimulations on the Smiling Response of Infants*," *Journal of Child Psychology and Psychiatry* 9, no. 1 (October 1, 1968): 51–59; Genevieve C. Carpenter, "Visual Regard of Moving and Stationary Faces in Early Infancy," *Merrill-Palmer Quarterly of Behavior and Development* 20, no. 3 (1974): 181–94.). Tronick stands out from the scholarly landscape at the time for his argument care-giving interaction represents a special environmental stimulation.

[220] Tronick completed a post-doc at the Bruner's Center for Cognitive Studies at Harvard in a collaboration that included Barry Brazelton, Hanus Papousek and Colwyn Trevarthern.

ethological observation and experimental protocols. The evidence of social communication in this new lab was fundamentally different than stimulus-response models of learning. It required seeing interactions as separate and primary in relation to other environmental engagement. Rather than see the face as merely a stimulus (albeit a complex one), the team at the Bruner's Center developed experiments that showed the singular ways infants and mothers communicated needs to one another.

I contend that this relational perspective is indebted to the morphing field of psychoanalysis at that time. Specifically, the rise of feminist psychoanalysis in the 1980s brought new attention to motherhood for developmental theories. Since his early publications Tronick has become a kind of liminal researcher, situated between empirical developmental psychology and American psychoanalysis. Psychoanalysis, as discussed in Chapter Two, centralizes primary object relations. It is also distinct from mainstream experimental psychology because it draws from and points toward therapeutic and clinical conclusions. Even this initial publication of the still-face appeared in a psychiatric journal, *The Journal of the Academy of the American Psychiatry*. Although the hypothesis was centered around normal cognitive development, Tronick's research is consistently linked to clinical and therapeutic knowledge.[221] Furthermore, the still-face experiment inaugurated a new lab run by Tronick and Brazelton that was housed in the Pediatric Unit at Mass General rather than in a university laboratory. From the beginning, then, Tronick bridged clinical knowledge and experimental psychology. In this way, he is positioned between more

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The lab relied largely on filmic observation to study the social and communication development of infants.

[221] Currently he is a member of the Boston Psychoanalytic Society, a past member of The Boston Process of Change Group, and he co-founded a post-graduate certificate program in infant-parent mental health. It is apparent through his later publications that long term mental health and therapies guide his research.

explicitly psychoanalytic developmental psychologists such as Jessica Benjamin and Daniel Stern, and more mainstream cognitively oriented developmentalists such as Jerome Bruner.[222] In addition, Tronick's introduction of mother-infant interaction into cognitive developmental research mirrors the changing trend in psychoanalysis. For both fields the role of the mother was gaining new weight.

For psychoanalysis, the 1980 publication of the DSM-III institutionally marked the culmination of a thirty-year decline of psychoanalytic research and methods in mainstream American psychiatry. Specifically, the DSM-III shifted research toward descriptive diagnosis and ultimately what is now known as the medical model.[223] It narrowed the focus of psychiatry to observable behaviors that constituted clusters of symptoms rather than etiological explanations of disease. This shift was an answer to both anti-psychiatrists and biological psychiatrists who were critical of the psychoanalytic influence on psychiatry. This new era transferred funding to laboratory research rather than clinical research and from etiological questions to observable behaviors.[224] Through the subsequent years the field of psychiatry switched from clinical focus, dominated largely by psychoanalysis, to medical

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[222] Tronick was trained in the inaugural cognitive psychology lab founded researcher by Jerome Bruner whose 1956 book, *A Study of Thinking*, remains foundational for the development of the field. On the other side of the aisle, Tronick worked with interpersonal psychoanalysts Jessica Benjamin and Daniel Stern who are seminal to the now vibrant overlap between mother-infant research and clinical psychoanalysis.

[223] A survey of psychiatrists from the time designated it the most important psychiatric publication between 1970-1980. The DSM-III and the board that pushed it through unyieldingly created a document that included recognizable symptoms rather than functional or conflictual deficits. Psychoanalysts perceived the changing landscape and fought to keep neurosis in the manual to no success. A note was ultimately included that explained neurosis as an etiological description and therefore absent from the descriptive DSM-III. The DSMIII is said to switch the power from clinicians to biomedical researchers.

[224] NIMH decreased funding 5% a year between 1965-1972. While in the 60s Federal Employees Health Benefits Program reimbursed mental health treatment dollar for dollar by 1970 Aetna only covered 20 outpatient visits and 40 inpatient hospital days per year. Wilson, "DSM-III and the Transformation of American Psychiatry," 404.

focus where researchers became the most influential voice in the field. As psychoanalysis became unmoored from the pathologizing and disciplinary baggage of the past, a new generation of feminist psychoanalysts emerged who sought to reaffirm the role of the mother in subject formation.[225] This notably brought psychoanalysis closer to the empirical research of developmental psychology, especially infant development, at a time when it was losing ground in psychiatry.

The mother was drastically reconceived through the nexus of feminism, developmental psychology, and psychoanalysis. I hypothesize this was due, in part, to the changing demographics of the work place and the growing prominence of feminism. Indeed, it was at this time that Women's Studies began to gain institutional standing. Currently, empirical and theoretical work that centralizes the mother-infant relationship is a robust and dominant strain in American psychoanalysis.[226] I would like to mark that changes in psychiatry, the rise of cognitive science, and the development of feminist theory were not unrelated during this time period. In this case, feminist psychoanalysis brought new attention to the mother and perhaps propelled Tronick's relational research.

In the United States, three of the most influential books on feminist psychoanalysis published in this time period take mother-infant relations as central to gender development as well as crucial to a feminist intervention into psychoanalysis. Jean Baker Miller's *Toward a*

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[225] A group of psychoanalysts who dubbed themselves "the Baby Watchers" began to coalesce. This includes Daniel Stern, Beatrice Beebe, Frank Lachman, and Jessica Benjamin. These baby watchers observed and documented mother infant interactions. These researcher, apart from Benjamin, are not explicitly feminist theorists, though the new focus on the mother came directly out of strong earlier feminist voices such Chodorow and Dinnerstein.Nancy J. Chodorow, *Feminism and Psychoanalytic Theory* (Yale University Press, n.d.); Jessica Benjamin, *The Bonds of Love : Psychoanalysis, Feminism, and the Problem of Domination* (New York: Pantheon Books, 1988); Cynthia Willett, *Maternal Ethics and Other Slave Moralities* (Routledge, 2013).

New Psychology of Women (1976), Nancy Chodorow's *The Reproduction of Mothering* (1978), and Carol Gilligan's *In a Different Voice* (1982), each redirected psychoanalysis toward social factors that influence gender identity and directed feminism to psychological gender development. Each focus on developmental models and the role of mother-infant relations on gender identity. The earliest of these was Miller. She argued that current models of gender development needed a deeper understanding of what she called relatedness. I would like to highlight two aspects from this early wave of feminist psychoanalysis. First, these books demonstrate a new awareness of the importance of the mother in subject formation. This new emphasis changed the ways scholars were thinking about gender identity as well. Second, they each argue for greater focus on relational models of subject formation rather than single person psychology. The still-face experiment in many ways mirrors these two interventions.

In fact, the primary hypothesis of early still-face study was directed toward interaction. Rather than see infants or mothers as separate individuals that react, respond, learn, or adapt, the still-face experiment made the caregiving relationship its object. Foundationally, the Bruner's Center established that infants interact differently with people than with objects, and that reciprocal exchanges were primarily positive for infants.[227] This was proposed against several researchers who understood mothers as experts in "acting as if the young infant was an active participant" (458).[228] Research on early social interaction and theories of the "competent infant" were hot emerging topics when the still-face experiment was developed.[229] Tronick developed the still-face paradigm to demonstrate that infants and mothers engage in mutual positive interactions on a moment to moment basis. Just as the

[227] Adamson Frick 2003 458
[228] See Kaye 1979.
[229] L. Joseph Stone, *Competent Infant*, First edition (New York: Basic Books, 1974).

still-face experiment is decidedly in the realm of cognitive science, so too does it echo many concerns from early feminist psychoanalysts.[230]

I argue that the mother and the emotional tone of the article are entangled. By introducing empirical research on motherhood, feminism brought emotionality into cognitive developmental research. I show that the paradigm's focus on the mother-infant pair, combined with the emotional drama of the experimental setup make the experiment both cognitive and sentimental. The sentimentality of the research underlies this simple dichotomy.

The tension between emotion and cognition needs to read through the sentimentality of motherhood. As the Results Section continues, the cognitive strictures continue to fade into the background. The description goes on, "the grunting vocalizations and smiles as well as the cycling activity of his arms and legs come and go in 2 second bursts—moving up small cycles of movement and attention toward her. She contains his hip with her hands as if to contain the peaks of his excitement."[231] The researchers describe the whole body of the infant. Vocalizations, arms and legs, are on an equal plane with smiles and gazes. All of these colorful and variegated movements comprise what had appeared to be a well-defined cognitive construct. Attention—a standard rational cognitive term—becomes full bodied peaks and valleys of excitement. This is not focused attention but "small cycles

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[230] Readers familiar with this literature may wonder about the role of attachment theory on both feminists and developmental psychology. While Bowlby and Ainsworth played a large role in changing the questions of infant development, both Tronick and the early relational analyst are slightly adjacent to the attachment literature. Tronick notes that attachment theory is on a broader scale than his research. That is, he is engaged in the moment-by-moment relational dynamics, whereas attachment theory considers long-term patterns of relating. Similarly, feminist psychoanalysts are less invested in the attachment literature than one might expect. I theorize that this has to do with what I discussed in chapter Two: Attachment theory was never seen as properly psychoanalytic.

[231] Tronick et al., "The Infant's Response to Entrapment between Contradictory Messages in Face-to-Face Interaction," 5.

of attention. A duet of attention" between mother and infant.[232] Her engagement with his body regulates the flows of his emotional energy. This prolonged two-page description is meant to illustrate a pattern of normal face-to-face interaction. It is meant to show the homogenous and predictable ways mothers and infants engage with one another—the ways they direct their attention. Yet the underlying sentimental foundations of mother-infant pair changes the tone of the description. It reads more like a literary description of a positive meeting between a loving pair. More precisely it describes a rhythmic reciprocal dance between the caregiver and baby.

Reciprocity is key to the conclusions of the still-face and research on mother-infant relations in general. As the original abstract states the still-face experiment demonstrates, "interactional reciprocity and the ability for infants to regulate their emotional displays."[233] The cognitive construct, regulation of emotion is paired with an idealized word for love. Reciprocity has been linked since the late 19th century with idealized romantic love. As Lauren Berlant shows in her book on sentimentality and "women's culture," reciprocity emerged in the American and English Victorian periods as "a morally laden, actuarial, and at the same time lovely, fantasy-based concept of what mutuality in love might actually be like."[234] Reciprocity, and mutuality, replace learning, response, and needs as the interaction between mother and infant get pulled into the more cognitive field of developmental psychology.[235] The empirical description of mother-baby interaction in the still-face experiment gives a conventional and idealized picture of reciprocity in love.

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[232] Ibid.
[233] Ibid., 1.
[234] Lauren Berlant, *The Female Complaint: The Unfinished Business of Sentimentality in American Culture* (Duke University Press, 2008), 16.
[235] The early pilot study of the still-face experiment inaugurated Brazelton and Tronick's Child Development Unit at the Children's Hospital Medical Center in Boston. This gives

This overlap between relationality, motherhood, and emotion is sentimental. To be sure, describing developmental psychology, or anything for that matter, as sentimental is a decided condemnation.[236] In particular it is a kind of empiricist condemnation. The moral philosopher and feminist Mary Midgley notes that sentimentality skews and misrepresents reality. Being sentimental is "intentionally misrepresenting the world in order to indulge our feelings."[237] Sentimentality is meant to highlight a kind of overly emotional coloring on reality; perhaps even a lack of empirical grounding. It demarks silliness and naivety. In early literary usage sentimentality marked a kind of "disease of feeling."[238] Not to mention its devalued tie to femininity. Yet for my purposes it is a way to get at what is disavowed or forgotten in the neat split between cognition and emotion I have laid out thus far.

Not only is sentimentality said to color reality, it designates a belief in an overly optimistic and hopeful picture of the future. Sentimentality generates a world that emphasizes "such things as the sweetness, dearness, littleness, blamelessness, and vulnerability…The qualities that sentimentality imposes on its objects are the qualities of innocence."[239] For example, the empirical description and the conclusions of the still-face experiment tend to highlight the ways interaction between mother and baby, even when it is failing leads to a better life for baby. As one review article notes, the paradigm continues to be used widely and has even grown in yearly citations not only because it is exemplarily replicable and experimental "but perhaps most importantly, the still-face paradigm continues

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further evidence to the importance of this paradigm and the changing landscape of the field in the late 70s.

[236] Mark Jefferson, "What Is Wrong With Sentimentality?," *Mind* 92, no. 368 (1983): 590.
[237] Mary Midgley, "Brutality and Sentimentality," *Philosophy* 54, no. 209 (1979): 385.
[238] Jefferson, "What Is Wrong With Sentimentality?," 591.
[239] Ibid., 527.

to spotlight young infants' amazing social, emotional, and cognitive capacities."[240] This explanation is decidedly optimistic. Importantly, these "amazing…capacities" are demonstrated through systematic and coordinated relational failures. The experiment exposes something deeper than the abilities of young infants. Though the still-face experiment is developed around an exaggerated missed connection, the researchers land on the power of reciprocity.

As such, sentimentality is not merely condemnation.[241] Sentimentality and the dramatization of optimism is always ambivalent. Sentimental scenes carry an explicit refusal of failure. Just as the cognitive tone made the article palatable across the field of Developmental Psychology and the growing paradigm of cognitive science, so does the emotional description affirm a sentimental picture of motherhood. Emotion in the form of sentimentality does similar work as experimental sterility in the form of cognitive diagrams and models—each make the experiment bearable.

Section III: Negativity

In the final section I consider the ways that cognitive and sentimental elements of the still-face experiment enable viewers to glimpse the foundational ambivalence and negativity of mother-infant interaction. Predictable machine-like systems come together with the trenchant sentimentality of motherhood as palatable shields against the drama of

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[240] Adamson and Frick, "The Still Face," 468.

[241] Sentimentality has been taken up for some time in literary studies. Scholars have long argued against seeing sentimental literature as merely conventional, upholding the political status quo. Women's literature and sentimental genres have long been a foundational piece in forming bonds and political community. See Berlant, *The Female Complaint*; Shirley Samuels, ed., *The Culture of Sentiment: Race, Gender, and Sentimentality in 19th-Century America*, 1 edition (New York: Oxford University Press, 1992); Douglas, *The Feminization of American Culture*; Tompkins, *Sensational Designs*.

relational failure underlying the experiment. Cognition and emotion are aligned through the ways they enable the revelation negativity.

In the context of the still-face experiment negativity functions on two levels. First Tronick uses the word "negative" as a descriptor. This description is carried over to the abstraction of infant behavior. The table coding infant behavior is broken up into negative, neutral, and positive. Negative signals toward mother are fussing or crying. Negative, then is a categorical description meant to make sense of and contain the emotions revealed in the experiment. Second, I understand the whole constellation of the experiment, to be a negative scene. The experiment as an aesthetic object brings researchers and other viewers in to proximity with negativity at the foundation of intimate relationships.

Along with the sentimental descriptions of connection and reciprocity, the publication includes a series of screenshots from various time points within the experiment (Figure 13). The images are separated into "phases" meant to show similar patterns across all babies and mothers. We see each baby smiling in the greeting phase, pausing in the realization phase, attempting to bring mother back, and finally withdrawing and turning away. Individual differences between mother-infant pairs can also be observed. The still faces of the mothers are not all the same in their neutrality. One mother sits up straight looking alert but still. Another looks down and seems to hold her mouth in a slight grimace, almost in pain. Similarly, the first infant seems less reluctant to turn completely away from mother and does not loose postural control in the final phase. These pictures superficially demonstrate the schematic elements of the paradigm while fundamentally highlighting individual differences. They show the very personal and distressing three minutes of unrequited communication. They are included in the publication to show the quick and subtle moments of failed reciprocity. The images, more than any other element, highlight the

negativity of infant mother attachment.[242] Negativity then is not merely a way to taxonomize the observations of the experiment. It characterizes the relational dynamic that the whole experiment contends with. In this way, the individual reactions of each infant, though coded as negative, positive and neutral, actually empirically show the fundamental failure at the heart of relationality. In what follows, I think further about the ways the camera and the experimental drama create an object through which researches and viewers can contend with ordinary rupture and failure.

[242] Psychoanalysis has contributed significantly to understanding and acknowledgement of the negative aspects of relationality. During this time period feminist psychoanalysts argued that aggression and destructiveness appeared long before the recognition of the father and the Oedipus complex. This meant theorizing the negative, frightful, anti-social experiences that had been the bounds of the father back to the mother. For example, Jessica Benjamin argues that contrary to Freud's conception of authority that comes purely from the father, the child develops through recognition and individuation in its earliest reciprocal relationships with mother (Jessica Benjamin, *The Bonds of Love : Psychoanalysis, Feminism, and the Problem of Domination* (New York: Pantheon Books, 1988). American feminists brought mother-baby relations into the conversation about aggression and destructiveness. For some, aggression points to the death drive. The death drive has been at the center of post-Freudian debates especially in the fields of feminist and queer theory. These have not only been split along continental lines (Europe and North America) but diverge along theories of empirical evidence. For Lacan the death drive is purely a force toward aggression, destruction, and utter anti-sociality. French feminist Julia Kristeva points to the maternal as a site of violence that threatens the social. American psychoanalysts have been less concerned with the dissolution of the symbolic and the death drive in general. In the remainder of this section the death drive and theories therein float in the background. The American and empirical foundations of this research make it difficult to engage directly with psychoanalytic or critical theory debates about the death drive.

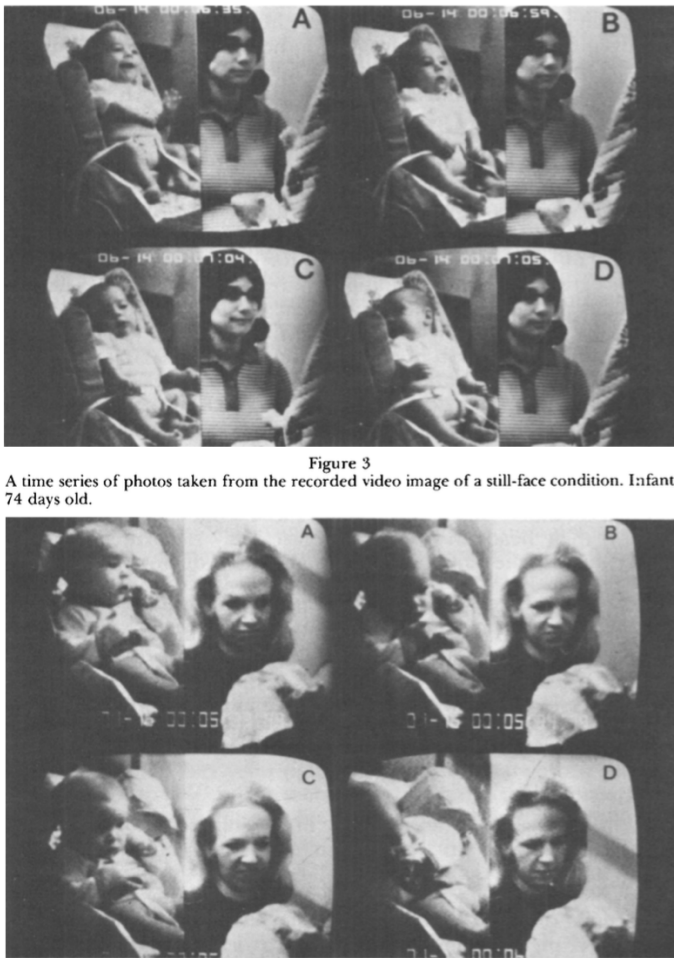

Figure 3
A time series of photos taken from the recorded video image of a still-face condition. Infant 74 days old.

Figure 12: A time series of photos taken from the recorded video image of a still-face condition." Edward Tronick et al., 1978

The still-face experiment empirically reveals the disappointments, breaches and ambivalences enwrapped in relationships. The destructive aspects of relationality as propelled thinking in queer theory since the early 2000s. Lauren Berlant and Lee Edelman recently published about the unbearable in sex. Throughout they discuss why primary negativity remains unthought. They theorize which kinds of objects might reveal relationality with primary negativity.[243] Berlant and Edelman's underlying question is whether or not it is

[243] Lauren Berlant and Lee Edelman, *Sex, or the Unbearable* (Durham: Duke University Press, 2013).

possible to see and think about negativity or anti-sociality.[244] Does knowledge inevitably deny or sublimate foundational antisociality? Both agree that there is an element of incoherence, or dissolution that is part of relationality. Berlant concisely defines negativity as being "affectively undone by being in relation."[245] For Edelman negativity is fundamentally destructive and unthinkable, it destroys symbolism.[246] Unlike Edelman, Berlant argues that the incoherenance of subjectivity or the incoherence of the world rarely shocks the subject. The discontinuity of relationality and or subjectivity may interest, excite, or exhaust. Part of Berlant's project then, is to "dedramatize" the intensity through which we seek attachment. Indeed, Berlant's key point of divergence from Edelman is her reference to the ordinary. By rendering attachment dramas ordinary, Berlant combats paranoia around abnormal forms of attachment. She argues that the dramatization of attachment is a mechanism that perpetuates paranoia around the ideals of the 'good life'. She theorizes loss and failure in relationality as ordinary to combat this rigid ideal. Ordinariness de-escalates paranoia. For Berlant, dedramatizing attachment widens cultural standards of intimacy, relationality, and sexuality. I draw from Berlant's project of dedramatization to highlight the importance of the ordinariness of the still-face effect. Ultimately, the still-face experiment dedramatizes attachment, de-escalating the paranoia around motherhood.

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[244] Berlant and Edelman are most explicitly engaging with an ongoing debate in Queer Theory about the politics of optimism and the aggression and negativity that destroys connection. As recognized in the title, *Sex or the Unbearable*, their conversation is about sex. They do however formulate an expanded version of sex, never fully landing on a precise definition. I do not mean to use sex and relationality interchangeably but I am thinking of mother-infant relationships as often imagined places to understand adult sexual and romantic love. This link is implied yet not fully flushed out in this chapter.

[245] Lauren Berlant and Lee Edelman, *Sex, or the Unbearable* (Durham: Duke University Press, 2013), 2.

[246] For him, negativity represents the utter "shock of discontinuity" (6). Negativity, aligned with the death drive is utterly destructive. In this chapter I focus on Berlant's contribution to this conversation because Edelman is more adamant about the impossibility of thinking negativity. This, I think makes Edelman incompatible with my line of argument.

For Berlant and Edelman, it is often in places of cinematic exaggeration, lack of emotional depth, or the aesthetically palatable where we can encounter and think about forms of negativity, if only in their apparent negation. In their search for aesthetic objects that might be able to hold sex with negativity, they both stumble upon objects that they describe as adorable. They argue, following Sianne Ngai that the emotional shallowness of the adoreable holds encounters, though partially negated ones, with forms of negativity. [247] They term this the archive of "the queer adorable." Edelman writes, that if the adorable invokes "the reassuring privilege of a blandly harmonious normativity whose essence lies in its distance from the exceptionality of beauty or ugliness, then it also denotes what's expendable….what refuses the burden of depth or emotional experience."[248] For Edelman, the adorable "anesthetizes feeling" and protects against over intensity.[249] It enables an attachment that can endure failure.

The adorable is not only relevant to this project because babies are cute. This "blandly harmonious normativity" might be an apt description of the stated conclusions of the still-face experiment. By focusing on the sentimental and cognitive tone of the experiment I too have framed Tronick's empirical evidence as an aesthetic object. I have theorized the experiment through its sensory and emotional value. The conventionally cognitive language and sentimental affirmation of the importance of motherhood might actually protect against the over intensity of the relational failure demonstrated by the experiment. In this way the experiment is also a kind of emotional shelter. The still-face experiment is an explicit cinematic magnification of the normal failures of relationality. The

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[247] Sianne Ngai, *Our Aesthetic Categories: Zany, Cute, Interesting* (Cambridge, Mass: Harvard University Press, 2012).
[248] Berlant and Edelman, *Sex, or the Unbearable*, 17.
[249] Ibid.

experimental paradigm is designed to exaggerate the effects of relational failure. Normal interaction is compared to a quite drastic moment of failure. This exaggeration by way of scientific authority serves to dedramatize normal failures of mother-infant relationality. Amplifying relational failure through cognitive experimental methods and the sentimentality of motherhood allows an encounter with the stark ambivalence and dissolution present in normal relationships.

The description of the still-face portion of the experiment is significantly shorter and less colorful than the previous discussed 'normal' interaction. As the baby sees the unchanging face of the mother "he looks away quickly to one side and remains quiet, his facial expression serious. He remains this way for 20 seconds… Arm movements are jerky, his mouth curves downward, his eyes partially lid."[250] This second section is characterized by looks away or toward, grimaces, yawns and devolution of the infant's posture (Figure 14). The researcher resists reading any "as if" moments between baby and mother. When faced with this disturbing scene the researcher does not attribute thoughts or goals to the infant's behavior. Movements and facial patterns are described with very little theorizing about feeling and meaning. The most internal words used are "wary," "helpless," "withdrawn," and "sober." They come at the very end of the description. It's as if the researchers cannot fully attend to the painful melodrama they have setup.

[250] Tronick et al., "The Infant's Response to Entrapment between Contradictory Messages in Face-to-Face Interaction," 8.

Figure 14: Screenshot at 2.00 min from the publically available didactic film of the still-face experiment.[251]

Similarly, the conclusions that Tronick draws from this emotionally evocative situation are quite humble and cognitive. He ultimately concludes that the situation is so disturbing for the infants because they can't make sense of the mother's intent. The face in this model is conceived as primarily "message carrying." During the still-face, the infant cannot understand the goals of its partner. Tronick avoids the intensity of the relational failure by positing a highly cognitive theory of goals, messages, and intentions. These conclusions, as I have shown through out is not in opposition to the empirical evidence of relational failure. Rather, the aesthetic value of the still-face as a glimpse of negativity, depends on the palatable shield of Tronick's cognitive theory. It is this cognitive shield, along with the sentimentality of motherhood that enable the force of this research.

Up to this point I have argued that the still-face experiment is broadly conventional. However, its predictable foundation is offset by the empirical evidence of the still-face. The cognitive conclusions of the experiment seem to hold less weight than the scenes created by the experimental structure. The experiment has been vigorously repeated for almost 50

[251] UMass Boston, *Still Face Experiment: Dr. Edward Tronick*, accessed February 10, 2017, https://www.youtube.com/watch?v=apzXGEbZht0.

years. Viewers and researchers cannot stay away. High quality didactic films like the one in Figure 14 circulate broadly. The youtube video of the still-face experiment has over 4.4 million views as of February, 2017. It draws viewers in. This experiment has remained so magnetic to viewers and researchers because it shows a disavowed aspect of relationality through a palatable object.

The scene of a mother deliberately disappointing the infant creates a caricature of a bad mother. This caricature does important work to dedramatize relational failure allowing us to think with it. Berlant turns to a similar film scene in a moment of frustration with the process of collaboration. The scene from *Bigger than Life* shows a father bullying his son. The scene caricatures the father through explicit techniques that highlight the filmic medium. The film demonstrates pure masculine brutality at the hand of the father. It demonstrates the cinematic elements explicitly by showing the encounter as shadow puppets behind a screen. The exaggeration of bullying provides the grounds for repair between the two authors. This moment of repair helps summarize Berlant's argument. She argues that "making a world for what doesn't work changes the consequences of those failures in a way that produces new potentials for the relations" (125). The caricature of bullying provides new grounds for collaboration. In a similar way, the experimental setup is a kind of caricature of normal infant-mother interaction. The exageration of failure that the empirical medium foster might also create new potentials for relations.

Conclusion

The story cannot end there. Berlant resists ending on a note of repair or optimism. Failure cannot be fully resolved with "an optimistic inversion, comic displacement or neat

vignette."[252] Negativity cannot be simply counter-posed to optimism, reparation, or sociality. In this way, the relation between negativity and optimism continues to baffle and trouble both authors. This relation is signified most clearly by the undecidability of the rejoinder "or" in the title of the book, Sex, or the unbearable. "Or" draws two divergent relationships. It may refer to two alternative terms for the same thing. Conversely, "or" may refer to two alternative and contrasting options. Readers are not offered a choice between sex or the unbearable, nor should they think of sex and the unbearable as two words for the same phenomena. The "or" between sex and the unbearable, or optimism and negativity, marks a continual problem. Relationality, sex, and collaboration shift, impact, fail, and alienate the subject in unknowable ways, like walking in "wetsand."[253]

Throughout the still-face experiment and subsequent literature, researchers slip between optimistic conclusions about the achievement of developmental goals, and stark descriptions of the empirical demonstration. In a final effort to make sense of the still-face Tronick draws an analogy to animal drives. When two primates meet, they initiate eye-to-eye contact with a motionless face. After a time, the subordinate partner turns partly away in an appeasing role. Tronick concludes that, "with the first partner's continued nonreciprocal reactions, the still face becomes an aggressive signal."[254] By bringing in the aggression of primates in the final lines of the article Tronick changes the stakes of the previous neutral and goal-directed communication system. The optimism, cognitivism, and negativity do not undo, resolve, or cancel each other out. They interact in dynamic ways throughout Tronick's work.

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[252] Ibid., 125.
[253] Ibid.
[254] Tronick et al., "The Infant's Response to Entrapment between Contradictory Messages in Face-to-Face Interaction," 12.

Thinking with conventionality, palatability, and emotional simplicity may bring new ways to understand the play between the cognitive and the emotional. Like the unabashedly constructed puppet screen of bullying, the still-face experiment is an encounter with negativity; one that leaves the "or" in sentimental or cognitive, or rational or affective similarly problematized. It brings the centrality and ordinariness of negativity into the language and realm of cognitive science. The experiment itself holds disavowed negativity that audiences and researchers return to in order to know and glimpse it, if only through the palatable, simple, and dedramatized life of an infant.

This case provides a new and interesting way to think about how we come to know and understand relationality especially in the trenchant space of the family. The still-face experiment unintentionally promotes a queer feminist possibility. By exaggerating relational failure at the heart of mother-infant interaction, the experiment may actually diffuse paranoia around motherhood. Its palatability, enabled by cognitive science and the sentimentality of motherhood, allows viewers to encounter disavowed relational failure. It promotes thought about failure. As Berlant claims, dedramatizing attachment loosens the rigid ideals of the "the good life." The still-face experiment, then, may work to dedramatize mother-infant attachment and loosen the ideals of the good mother. It does this feminist work through its cognitive and sentimental foundation, not despite it.

> You, reader, are alive today, reading this, because someone once adequately policed your mouth exploring. In the face of this fact, Winnicott holds the relatively unsentimental position that we don't owe these people (often women, but by no means always) anything. But we do owe *ourselves* 'an intellectual recognition of the fact that at first we were (psychologically) absolutely dependent, and that absolutely means absolutely. Luckily we were met with ordinary devotion'.[255]

Conclusion: Babies as Objects and the Problem of Feminism

This dissertation started with the problem or strangeness of empirical evidence for mental processes. It seemed almost by accident that I landed on the facial expression of infants. The more I delved into this case, however, the more it seemed that both facial expression and mother-infant interaction were important topics in themselves. So, through a larger question of evidence in feminist praxis and psychology emerged a very thorny and complex question of how to talk with and about mostly male researchers extracting theories of human development from mother and baby facial displays. This, it turns out, was both revealing about the boundaries of science and non-science, but more interestingly about how mothers and babies test the boundaries of knowledge.

Babies are difficult objects because they are too empirical. They seem to resist an epistemology of interpretation because their needs are easily discernable. Throughout this dissertation I have talked about this with words like "self-evident," "undeniable," "salient," "readable,„" "common-sense," and "evocative." Conversely, their behaviors are filled with gaps that allow for over-interpretation. Too much meaning can be attributed to their actions.

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[255] Maggie Nelson, *The Argonauts*, Reprint edition (Minneapolis, Minnesota: Graywolf Press, 2016), 21.

Each chapter in varying ways deals with the self-evidence of infant behavior and their sponginess for fantasies about family, humanness, and sociality. Importantly, these concerns also occupy the infant researchers. As such, I read each researcher in this dissertation as both a scientist, but also a theorist contending with the difficulty of creating reliable evidence for mental development. Their discoveries are less important than the way they contend with the contradictions of their objects—babies and their caregivers. Each of these cases, then, reveals the incongruences in our attachments to proper domains of knowledge.

The case of the infant is especially relevant for feminist attachments. The starting place of this project was one such attachment: the growing enthusiasm for the sciences among feminists looking to chart a new path through cultural theory. I turned to infants as a way to refocus feminist attention from the promises of the biological sciences and neurosciences, and toward a more thorough account of the sensory underpinnings of knowledge. I was especially attentive to the ways feminists chose to analyze the most authoritative sciences (physics, molecular biology). The infant was at first just a case for tracking the productive ambiguities of psychological knowledge. As the project developed, I realized that infant research not only challenges the boundaries of biological and psychological knowledge, it raises uniquely feminist questions. What constitutes an intimate relationship? How does the environment influence identity? Why are some behaviors proper and not others? How do differences materialize? The infant sits at the nexus of intimate relationships, biological origins, and socialization; not to mention that mothers and motherhood are never far off. The project, then, thinks about the ways behavioral sciences contend with these feminist problems through their negotiations with the empirical evidence of infants.

This project is not a plea to incorporate behavioral science or supplant our literary, post-structural ways of understanding the power relations covered over by the most superficial of behavioral observations. It humbly shows how the same questions that animate feminist philosophies of knowledge are enacted and grappled with at the level of empirical practice. The researchers here are not feminists but through their careful consideration of empirical sensory evidence gathered from babies and their caregivers they challenge entrenched boundaries between socialization, biology, and mind.

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The project begins with the contention that experimental psychology is deliciously ambiguous and messy. This ambiguity has tended to either provoke eye rolling or forceful debunking on the part of feminists. I argue in Chapter One that observable sensory evidence is still largely disregarded in feminist theory, despite new interest in the sciences. I return to Lynn Hankinson Nelson's Feminist Empiricism to think about ways to study and use sensory evidence. Hankinson Nelson creates a feminist path through Willard Van Orman Quine with the ambiguity of psychological evidence. In Quine's empiricism a meager sensory input is exceeded torrentially by thoughts, beliefs and claims that result from them.[256] Nelson calls this excess slack. She uses this idea of slack to make room for the possibility of cultural specificity and social learning within empiricism. Like Nelson's feminist empiricism, this project is interested in the productive mismatches between nonphysical entities like emotion, thought, relationality, and sociality and a reliance on strict physical and empirical evidence like reflex, and instrumental behavior. Feminists have tended to avoid such a troubling mismatch by writing it off or beginning with it as the starting place for a theory of

[256] Nelson, *Who Knows*, 27.

power dynamics at work within observational or empirical theories of human behavior. I show however, that these mismatches and contradictions are generative and revealing.

In the next chapter I analyze the films and research psychoanalyst René Spitz as a case for thinking about the ways environmental context matters for behavioral research. Chapter Two considers the relation between visual displays of suffering in infants and adult mental pathology. Feminists have been justifiably reluctant to embrace work that points toward the importance of early care. This logic has been used to keep women in the home, pathologize non-normative family structures, and blame mothers for the problems of their children, even as adults. In many ways it is difficult to engage with the reality of intense suffering among orphaned or otherwise neglected infants without naturalizing motherhood, or offering a deterministic and overly linear model of pathology. And yet, unabashed despair and helplessness is a primary object of interest for developmental psychologists, evolutionary biologists, and psychoanalysts. This chapter focuses on René Spitz's irrefutable assertion that infants undergo a period of despair if separated from their mothers.

By engaging with critics of Spitz, I show how his research was both empirically self-evident and bad science. In fact, it seems that the intensity of the scenes created a mood that was beyond scientific systematicity and objectivity. Spitz combats this by using the camera to give his findings mechanical structure. In this way, he shows highly emotional charged scenes within the safety and technological authority of the mechanical medium of the camera. It gave him a level of control while also producing a response from audiences and even allowing him to visibly respond on film. He notes for instance that "emotions can be shown" with the moving image. This allows observational methods that resemble his contemporaries in experimental psychology but through a psychoanalytic viewpoint. Through discussions about the camera in grant applications Spitz and his colleague

Katherine Wolff identify what they consider adequate scientific objectivity created by the camera. First the camera allows for systematic repetition and verifiable control of particular variables. Second it prevents the observer from directly intervening in the object being studied. Third, the visual medium, for Spitz could speak for itself. That is, he hoped that it would eliminate the need for verbal reflection. I show the way Spitz reoriented his evidentiary frame to account for the reality of infant dependency and allow for variations on motherhood and normal development.

Similarly, Silvan Tomkins, explored in Chapter Three, reorients the evidence of facial expression. Tomkins refuses the functional link between biological facial expression and social communication. By seeing facial expression as primarily motivating, Tomkins leaves room for cultural and social variability within his theory of innate affect. This helps get around an impasse between the hermeneutic method of psychoanalysis and the new emphasis in affect theory on pre-cognitive behavior by attending to the ways psychologists negotiate bodily behavior. By closely examining Tomkins' descriptions of the smiling response and the shame response in the early days of life, I offer a way to reformulate debates animating affect theory in terms of psychological evidence. Tomkins' discussion of mother-infant behavior demonstrates and collapses a separation between innate behavior and social function. He develops biological innate emotion as a psychological theory. He does this by abolishing a before/after, or surface/depth logic with the evidence of facial expression. This allows for the communicative significance of facial expression to be a problem for Tomkins rather than an explanation for his claim for the biological necessity of the affect system. Expression as evidence is a paradox that puts pressure on the ubiquitous separation between the physical and the psychological. Tomkins offers a way around this paradox through his philosophy of science. Like Quine who acknowledges the play between

empirical fact and idea, Tomkins' theory of biological motivation enables play that ultimately fosters a non-hierarchical understanding of difference.

Spitz and Tomkins both rethink the relation between mother and infant in order to propel their larger claims; though I do not deal explicitly with how ideas of motherhood influence developmental research until the final chapter. In Chapter Four I think through the overlap of feminism, psychoanalysis, and developmental psychology through the ways mothers were reconceived in the 1970s. In many ways, this chapter makes explicit an underlying tension of the entire project. I land on the language of the cognitive and the sentimental as a way to get at how motherhood inflects the evidence of baby's faces. Mother-infant relationships are either regarded in sentimental or cognitive terms. The last chapter makes the argument that the mother-infant relationship is difficult to examine because it is charged with societal pressures and feminist warnings. The play between the sentimental and the cognitive make the mother-infant relationship graspable or legible in important ways. The still-face experiment allows for the ambivalence of the mother-infant interaction to be tolerated and acknowledged. Both sentimentality and the cognitive science underpinnings of the still-face experiment help "dedramatize the intensity through which we seek attachment."[257] Both the idealization of motherhood and the mechanical tone of cognitive science helps diffuse and depathologize abnormal relations.

Each of these chapters addresses the question of how to study and account for the central role of the mother-infant relationship in cognitive and biological development. These researchers do not identify as feminists, nor do they claim the status of theorist; they are scientists. Yet this study argues that the negotiations, contradictions, and manipulations enwrapped in their observations of infants adds to feminist theories of the body.

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[257] Berlant and Edelman, *Sex, or the Unbearable*, 130.

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In the background of this research has been the trouble of my own attachment to a feminist project. As I conclude the dissertation I am still unsure of where precisely the edge of feminism lies. We have found since the late 1990s that there might be feminist possibilities within molecular biology, theoretical physics, and neurology, all places that previous colleagues might have avoided. But can that same curiosity be extended when scientists study objects so near to our own concerns- mothers, families, intimacy, human difference? I have found over the course of this project that the answer is far from resolved. For me, Silvan Tomkins' work to account for the broadest possible differences is an easy bedfellow with feminist empiricism. Likewise, René Spitz's dual project of taking seriously extreme neglect while allowing adult pathology to be multi-determined mirrors feminist work on difference. Ed Tronick's empirical demonstration of relational failure can be read with debates in queer theory relationality. But perhaps these affinities are only important because I happen to be cozy with both the richness of psychological research and feminist politics? Can I be a feminist scholar and care about mostly male scientists who study mothers as crucial vehicles for healthy development? I want the answer to be yes. So, below I identify three basic feminist tenets that I would like not to have given up over the course of my deep interest and respect for the researchers that I have examined here:

1) Scientists and their objects are embedded in society. A society that is fundamentally patriarchal and white supremacist.
2) Mothers, historically and today, are fetishized and despised at once. Mothers have been studied mainly by experts and rarely seen as experts or authoritative witnesses.
3) Bodily difference does not carry intrinsic meaning. We come to see identity groups as natural and ahistorical through naming and active iteration of such differences.

These three tenets are crucial and blindingly righteous. Written this way may be unfair or overly rigid. Yet, when we hear research on mothers and infants these three ideas in varying forms often spring to mind. I know of very little feminist scholarship that attempts to think about the mother-infant pair with (not opposed to) the terms that researchers who touch and test babies follow. Is examining mothers and infants through the terms of experimental psychology fundamentally opposed to a politics that is concerned with the oppression of women?

A useful guide on these questions is Anne Fausto-Sterling. Fausto-Sterling, a feminist developmental biologist, has recently turned her attention to the question of the development of gender differences among infants. Fausto-Sterling uses the evidence of infant behavior to show the ways body/behavior differences develop through dynamic systems of interaction. She shows, for instance, that the development of walking, though it might be legible as a biological benchmark, emerges through a process of interactions with the social and physical environment. Fausto-Sterling is informative here because she uses her feminist attachments to reorient the evidence of infant behavior. Her project is feminist because of its object—gender differences—but also because of its method—reorienting the evidence.

I have not tried to argue against feminist psychologists or others who are rightfully skeptical and even dismissive of work on developmental psychology. I have taken a different path. My argument is not about developmental psychology as a field. I have employed literary methods on relatively small cases. These cases have not single-handedly determined a field, nor are they representative. They are anomalous. They are rich because each researcher struggles with their object. They reveal important tensions at the heart of observing infant behavior. I have read their research for its challenges and failures, not its discoveries.

Therefore, I do not advocate for some feminist lesson embedded in the field of developmental psychology. I don't think that there is. I do think that Ed Tronick, Silvan Tomkins, and René Spitz face tensions and contradictions through their encounter with the empirical development of emotion and relationality that feminists would be quite familiar with. I have learned about the ways universal behaviors can be questioned as explanations even as they are upheld as empirically relevant. I have struggled with Spitz over identifying extreme suffering and creating a nondeterministic theory of infant care. And I have wondered about the place of failure in our theories of infant behaviors. The question is not what feminist lessons do developmental psychologists give us, but what assumptions about our proper methods and objects have we made in the course of failing to engage with a discipline that as it turns out shares many difficulties with feminists. By attending to the details of individual researchers—their practices and reflections on what they see as psychological evidence--I have tried to offer a richer account of the sensory experiences we call evidence.

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