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Seeing the Infant: Audiovisual Technologies and the Mind Sciences of the Child

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SEEING THE INFANT

AUDIOVISUAL TECHNOLOGIES AND THE MIND SCIENCES OF THE CHILD

Felix E. Rietmann

A DISSERTATION

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Abstract

This dissertation explores epistemic, social, and cultural dimensions of the use of audiovisual technologies in infant psychology and psychiatry in the USA and Western Europe from the mid-twentieth century to the present. It argues that the successive introduction of cinematography, video, computational assessment methods, and digital interfaces in research and clinical practice has contributed to a fundamental change in the scientific understanding and medical treatment of young children: The focus in pediatrics, developmental psychology, and infant psychiatry has shifted from the biological and psychological characteristics of the individual infant to the temporal dynamics of infant-caregiver interaction. Observational technologies have played a pivotal role in making these dynamics analyzable for researchers, visible for practitioners, and accessible for therapists. They have made possible the rise of infant mental health as a distinct field of medical expertise and are constitutive of its observational, diagnostic, and therapeutic practices.

Chapter One examines how, in the USA in the post-World-War-II period, psychoanalytic practitioners used ethnographic and documentary film to draw public and professional attention to the emotional life of infants, making infancy a site for observational research and mental health intervention. *Chapter Two* looks at the revival of cinematographic microanalysis in infant research in the 1960s and 70s, exploring how it contributed to the localization of pathology in infancy on an interactional level. *Chapter Three* argues that the introduction of video technology into research and clinical practice in the 1970s and 80s enabled infant mental health to consolidate as a field. *Chapter Four* explores how, in the 1990s and 2000s, digital and

computational technologies contributed to the international spread and domestication of the interactive vision of infancy.

The study draws on a rich array of archival and primary source material, including research films and videos, personal manuscripts and correspondences, scientific and medical publications, parenting advice literature, architectural layouts, oral history interviews, and participant observations. Through its focus on the role of audiovisual technologies in infant psychology and psychiatry, it contributes to the history of science and medicine, while also speaking to scholarship in film and media studies and the history of childhood.

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Introduction

I began wondering about the role of video in medical practice when I was a resident in a pediatric hospital in Switzerland in the early 2010s. The hospital kept an extensive video archive of syndromes and disorders in early childhood. During morning reports and training sessions, we were asked to sharpen our observational skills in viewing and reviewing the visible signs of respiratory distress, dehydration, febrile seizures, and cardiovascular decompensation. In young children, symptoms can be discrete, and infants and toddlers are unable to express their complaints verbally. Careful clinical observation is key. Video provided an interface for training our clinical perception.

A few years later, I worked in a child psychiatric outpatient clinic in a small town in the Swiss countryside. The clinic had a small team of four medical doctors and two clinical psychologists. During my first visit, I was shown the room for video observation. It was a specially furnished consultation room that had a fixed video installation in the ceiling, chairs for interviews with patients, and an area for play sessions. I learnt that such a room was a standard equipment of child psychiatric units. I began using the room a week later, when I was seeing a four-year-old girl who had difficulties integrating herself into primary school. The recording allowed me to discuss the case with my colleagues, to examine the interactions of the child with her parents and me, and to develop hypotheses about the origins of the problem. It also served as an example in our biweekly seminar on the psychopathology of childhood. The objective of the seminar was to learn performing a clinical evaluation and formulating a diagnostic hypothesis solely on the basis of a viewing of video-recordings. As in the pediatric hospital, video provided a basis for the training of clinical observation. But it did more. It was also part of the clinical evaluation and the

diagnostic workup. It provided a window into the behavior of young children and their interactions with caregivers and during play.

In 2016, I got research access to "databrary," a newly founded "web-based video library" that enables "sharing and reuse of research videos among developmental scientists." The library is hosted at New York University and funded by the National Science Foundation and the National Institutes of Health. Its justification stems to a considerable extent from the opportunities that video offers as "a uniquely rich form of behavioral data," as the director of the library, the psychologist Karen Adolph, put it. "Video is largely self-documenting" and "merely viewing a research video provides vast amounts of information about who the participants were, where they were, what they were doing, and how the data was collected." This, Adolph argues, is especially important when we consider the "rich, complex, and fascinating" but "transient" character of children's behavior. Quoting the American child study scholar Arnold Gesell, she elaborates that visual recording allows making "reaction patterns of infant and child […] almost as tangible as tissue." It also extends the radius of scientific inquiry. While Adolph's lab focuses, for example, on the collection of "videos of infants at play to examine the quantity and quality of natural locomotion, […] other developmental researchers could use the same videos of infants at play to study infant-caregiver social interaction, maternal responsiveness, linguistic input to infants, or object manipulation."[1]

These three examples - the use of video in pediatric training, its role in child psychiatric evaluation, and its scientific value in developmental psychology - testify the extent to which video has become ingrained in the clinical and scientific landscape of early childhood. It has become a scientific tool for visualizing infant development, a clinical tool for diagnosing normal

[1] Karen Adolph, "Video as Data: From Transient Behavior to Tangible Recording," *Association for Psychological Science* 29, no. 3 (2016): 23–25.

and pathological behavior in young children, and a pedagogical tool for training the perceptual apparatus of clinicians and researchers. At the beginning of this dissertation stands then the question of how to understand this ubiquity of video in scientific and clinical practice from a historical and epistemic point of view? How did it come to occupy such a prominent position? What does its use mean for the practice of medicine, the production of knowledge, and the clinical and scientific landscape of early childhood?

Seeing the Infant addresses these questions in exploring the use of audiovisual technologies in developmental psychology and infant psychiatry in the USA and Western Europe from the mid-twentieth century to the present. I argue that, during that period, the successive introduction of cinematography, video, computational assessment methods, and digital interfaces in research and clinical practice has contributed to a fundamental change in the scientific understanding and medical treatment of young children: The focus in pediatrics, developmental psychology, and the nascent field of infant psychiatry has shifted from the biological and psychological characteristics of the individual infant to the temporal dynamics of infant-caregiver interaction. Observational technologies have played a pivotal role in making these dynamics analyzable for researchers, visible for practitioners, and accessible for therapists. They have made possible the rise of infant mental health as a distinct field of medical expertise and are constitutive of the observational, diagnostic, and therapeutic practices that presently demarcate the field.

Infant Research until World War II

Before I further explain my argument, it is important to consider the longer history of which this dissertation is part. The use of audiovisual technologies in the study of young children is a

chapter in a longer quest of, in the words of the *World Organization for Infant Mental Health*, how to adopt "the baby's perspective," how to speak for a human being who cannot yet speak for him- or herself.[2] We may think with the philosopher Giorgio Agamben, who posits infancy, approaching it from the point of view of language theory, as a site for thinking through "the limits of language" by inquiring into an original experience that language cannot recover.[3] From this perspective, the question of infancy becomes intimately linked to problems of epistemic access, representation, and mediation.

The very possibility of raising the question presupposes infancy as a space of epistemic and anthropological interest. Since Philippe Ariès provocative thesis that childhood, as a cultural phenomenon, was only discovered in the 17th and 18th centuries, a small but substantial body of scholarship has shown how early childhood emerged as a site of scientific interest in the USA and Western Europe during the 19th century.[4] Especially in the second half of the century, young children moved in the focus of unprecedented observation and analysis, culminating in the final decade in the foundation of the child study movements, which united psychologists, educators, writers, and parents in a study of the mind of the child.[5] While child observation was not

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[2] World Association for Infant Mental Health, "WAIMH Position Paper on the Rights of Infants," 2016, accessed on July 18, 2018, https://www.waimh.org/i4a/pages/index.cfm?pageID=3361.

[3] For Agamben, the question of infancy is ultimately not a psychological but a philosophical question. It points to man's "historico-transcendental dimension," an original experience that marks the limits of both language and subjectivity. Giorgio Agamben, *Infancy and History: The Destruction of Experience* (London: Verso, 1993), esp. 3-10 and 44-53, 4, 53. See also Davide Giuriato's contribution in Felix Rietmann et al., "Knowledge of Childhood: Materiality, Text, and the History of Science – an Interdisciplinary Round Table Discussion," *The British Journal for the History of Science* 50, no. 1 (2017): 111–41, 126-128.

[4] Philippe Ariès, *Centuries of Childhood* (New York, NY: Knopf, 1962). For recent scholarship challenging Ariès' thesis: Albrecht Classen, ed., *Childhood in the Middle Ages and the Renaissance: The Results of a Paradigm Shift in the History of Mentality* (Berlin: De Gruyter, 2005).

[5] Sally Shuttleworth, *The Mind of the Child: Child Development in Literature, Science, and Medicine, 1840-1900* (Oxford: Oxford University Press, 2010); Carolyn Steedman, *Strange Dislocations: Childhood and the Idea of Human Interiority, 1780-1930* (London: Virago Press, 1995); Elisabeth Wiesbauer, *Das Kind Als Objekt Der Wissenschaft: Medizinische Und Psychologische Kinderforschung an Der Wiener Universität 1800-1914* (Wien: Löcker Verlag, 1982); Alice Boardman Smuts, *Science in*

necessarily considered problematic, it gave rise to a rich epistemic culture: the development of the faculties of babies was meticulously noted in diaries and on observational sheets;[6] children drawings turned from objects non grata to cultural productions of significant scientific and medical interest; play became a primary site for psychological investigation.[7]

The rise of cinema coincided with the child study movements and a few recent studies have shown how the moving pictures participated in the exploration of the young child. Notably, the film scholar Vicky Lebeau has argued that the booming Victorian genre of 'child life' moved children to the center of a soaring visual culture: "throughout the 1890s and 1900s, the new phenomenon of the moving pictures *moved in on* the child and the infant."[8] The infant as a public spectacle met the infant as an object of cinematographic study in developmental psychology in the first decades of the twentieth century. To mention just a few famous but still understudied examples: Film provided a lasting substrate for one of the founding documents of John Watson's behaviorism, the *Little Albert Experiment* in 1920;[9] cinematographic studies allowed the German psychologist Kurt Lewin to explore *The World of the Child* (1931) in the interwar period;[10] and

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the Service of Children, 1893-1935 (New Haven, CT: Yale University Press, 2006).

[6] On diaries and child observation see: Shuttleworth, *The Mind of the Child*; Smuts, *Science in the Service of Children, 1893-1935*; Marjorie Lorch and Paula Hellal, "Darwin's 'Natural Science of Babies,'" *Journal of the History of the Neurosciences* 19 (2010): 140–57; Christine von Oertzen, "Science in the Cradle: Milicent Shinn and Her Home-Based Network of Baby Observers, 1890–1910," *Centaurus* 55, no. 2 (2013): 175–95.

[7] On drawings and play: Barbara Wittmann, "Bedeutungsvolle Kritzeleien. Die Kinderzeichnung Als Instrument Der Humanwissenschaften, 1880-1950" (*Habilitation*, Bauhaus-University, 2012),

[8] Vicky Lebeau, *Childhood and Cinema* (London: Reaktion, 2008), 7-8.

[9] To my knowledge, there is no in-depth study of John Watson's research film on little Albert. The film can be found in the moving image collection of the Cummings Center for the History of Psychology at the University of Akron. For the discursive importance of the little Albert experiment see Ben Harris, "Letting Go of Little Albert: Disciplinary Memory, History, and the Uses of Myth," *Journal of the History of the Behavioral Sciences* 47, no. 1 (2011): 1–17; Ben Harris, "Whatever Happened to Little Albert?" *American Psychologist* 34, no. 2 (February 1979): 151–60.

[10] A historical study of Lewin's film is also still lacking. See Kurt Lewin, *Der Lebensraum Des Kindes*, 1931, accessed on July 31, 2018, https://www.fernuni-hagen.de/videostreaming/zmi/video/1988/88-06_76699/. On the importance of Lewin's cinematographic work more generally: Roland Innerhofer and Katja Rothe, "Regulierung Des Verhaltens Zwischen Den Weltkriegen: Robert Musil Und Kurt Lewin,"

"cinemanalysis" attained fame in the USA with Arnold Gesell's stage analysis of infant development in the 1930s and 40s.[11]

One important background for *Seeing the Infant* is thus the continuous role of methods and technologies of observation for inquiring into the mind of the young child and defining normal and pathological development in infancy. In this context, it is important to note that infant research did not become a major scientific activity until the post-World War II period. In the USA, Arnold Gesell was an exception. As the historian Alice Smuts has pointed out, child study experienced a lasting institutionalization and professionalization in the interwar period: in 1918, there were only three psychologists and two psychiatrists specialized in childhood, in 1930, there were more than six hundred such specialists.[12] However, the scientific focus concentrated on children from two years on.[13] Similarly, psychiatric services, such as the child guidance clinics, focused on school children and adolescents and not on babies.[14] Infant-welfare clinics, pediatric services, and sociological studies included infants, but their concerns were with growth, mortality, nutrition, and physical development, not with psychological issues. Moreover, when researchers, such as Arnold Gesell, studied early childhood, they were interested in establishing norms of biological and psychological development, such as growth curves, and milestones of

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Berichte Zur Wissenschaftsgeschichte 33, no. 4 (December 1, 2010): 365–81; Katja Rothe, "Mimesis als Sozialtechnik: Kurt Lewin, der Film und die Nachahmung," *Mimesis: Archiv Für Mediengeschichte* 12 (2010): 127–36.

[11] Arnold Gesell, "Cinemanalysis: A Method of Behavior Study," *The Journal of Genetic Psychology* 152, no. 4 (1991 [1935]): 549–562. For an excellent study of Arnold's Gesell's cinematographic method: Scott Curtis, "'Tangible as Tissue': Arnold Gesell, Infant Behavior, and Film Analysis," *Science in Context* 24, no. 3 (2011): 417–42. Carola Ossmer at Lübeck University is currently working on a dissertation project about Gesell's cinemanalysis.

[12] Smuts, *Science in the Service of Children, 1893-1935*, 1.

[13] Smuts, *Science in the Service of Children, 1893-1935*, 1–13, 155–90.

[14] Smuts, 191–225; Kathleen W. Jones, *Taming the Troublesome Child: American Families, Child Guidance, and the Limits of Psychiatric Authority* (Cambridge, Mass: Harvard University Press, 1999).

motor and cognitive development, not, as they would be later, emotional and communicative capacities.[15]

In Europe, the situation was not fundamentally different. The work of well-known researchers in child development, such as Jean Piaget in Switzerland and Charlotte Bühler in Austria, concentrated, as well, on cognitive development in the individual child and a focus on the infant remained rare.[16] Even psychoanalysis, which located the source of psychological disorders in early life experiences, was slow to engage with preverbal children as subjects of observational study until about the mid-1930s.[17] The Second World War interrupted developments in Continental Europe, and, in the post-war period, the USA would emerge as the international center of infant research. In the UK and the USA, the war also had an influence on the public status of child psychiatry and, especially, child psychoanalysis, not at least due to the exodus of many leading practitioners to these countries. Psychoanalysts featured as experts in radio shows and magazine articles, discussing and advising about the consequences of the war on family life

[15] Smuts, *Science in the Service of Children, 1893-1935*, 139–251; Sydney A. Halpern, *American Pediatrics : The Social Dynamics of Professionalism, 1880-1980* (Berkeley: University of California Press, 1988), 80–90; Manfred J. Waserman, "Henry L. Coit and the Certified Milk Movement in the Development of Modern Pediatrics," *Bulletin of the History of Medicine* 46, no. 4 (July 1, 1972): 359–90; Richard A. Meckel, *Save the Babies: American Public Health Reform and the Prevention of Infant Mortality, 1850-1929* (Ann Arbor: University of Michigan Press, 1998).

[16] Charlotte Bühler took into account the development of facial expressions in the first year of life and their relevance for communication. However, her focus remained on the establishment of norms of cognitive development. E.g. Charlotte Bühler, *Soziologische und psychologische Studien über das erste Lebensjahr* (Jena: Fischer, 1927); Charlotte Bühler and Hildegard Hetzer, "Das erste Verständnis für Ausdruck im ersten Lebensjahr," *Zeitschrift für Psychologie* 108 (1928): 50–61; Charlotte Bühler, Pearl Greenberg, and Rowena Ripin, *The First Year of Life* (New York, NY: The John Day Company, 1930). Piaget focused on cognitive development from three years on. E.g. Jean Piaget, *The Language and Thought of the Child* (London: Routledge, 1926); Jean Piaget, *Judgment and Reasoning in the Child* (London: Harcourt, Brace and Company, 1928); Jean Piaget, *The Child Conception of the World* (London: Routledge, 1929); Jean Piaget, *The Child's Conception of Physical Causality* (London: Harcourt, Brace and Company, 1930); Jean Piaget, *The Moral Judgment of the Child* (London: Routledge, 1932).

[17] See *Chapter One*. On the history of child psychoanalysis also see George Makari, *Revolution in Mind : The Creation of Psychoanalysis* (New York: Harpercollins, 2008), 418-485.

and child development. Especially, the separation of young children from their families was a prominent topic that would find echoes in the post-war period.[18]

The Rise of Infant Mental Health and the Interactive View of Infancy

At the end of the war, when the story of this dissertation sets in, the disciplinary and institutional landscape of infants was complex. Infant mental health was not yet recognized as a distinct topic of medical and psychological interest, even though practitioners had begun paying attention to psychic distress due to war conditions. Various professionals were engaged in care for children, including pediatricians, child psychiatrists, psychologists, nurses, educators, and social workers.[19] These professions underwent themselves important transformation in the 1950s and 60s. For example, child psychiatry did not exist as a distinct discipline in the USA until the introduction of a medical certification in 1959.[20] Pediatrics was also undergoing a process of sub-specialization that included, in the late 1950s, a movement for psychosocial approaches, demanding a greater consideration of behavioral issues in children.[21] Clinical psychology was considerably expanding and became a major workforce in mental health care, not at least due to large federal funding.[22] Institutionally, psychiatric and psychological care for children continued

[18] On the USA see *Chapter One*. On the UK: Michal Shapira, *The War Inside: Psychoanalysis, Total War, and the Making of the Democratic Self in Postwar Britain* (Cambridge, UK: Cambridge University Press, 2013).
[19] Jones, *Taming the Troublesome Child;* Smuts, *Science in the Service of Children, 1893-1935*.
[20] American Academy of Child Psychiatry, "The History of the American Academy of Child Psychiatry," *Journal of the American Academy of Child Psychiatry* 1, no. 1 (January 1, 1962): 196–202.
[21] Halpern, *American Pediatrics,* 128-148.
[22] On clinical psychology: James H. Capshew, *Psychologists on the March: Science, Practice, and Professional Identity in America, 1929-1969* (Cambridge, UK: Cambridge University Press, 1999), esp. 171-174.

to be provided in child guidance clinics and hospitals but also included new approaches such as residential treatment centers.[23]

We will see in *Chapter One* that the focus on infant mental health cut across many of these professional and institutional developments. Psychoanalysis set the pace. As mentioned-above, already during the war, psychoanalytic practitioners opened infancy up as a topic for mental health care. Notably, Rene Spitz and Katherine Wolf in the USA, and John Bowlby and James Robertson in the UK used research film to argue that psychic disorder in infancy, previously considered not possible, was, in fact, a widespread and badly neglected reality in contemporary institutions, such as nurseries, pediatric hospitals, and foundling homes.[24] Their attention to the psychopathology of infancy and their call for institutional reform contributed to the post-war cultural and professional ascend of psychoanalysis and marked all of the professions involved in infant care.[25]

In the 1950s and 60s, research at the major centers in the USA, such as the Yale Child Study Center, shifted to a psychoanalytically informed inquiry into the influence of environmental factors and, especially, maternal deprivation on infant development. At the same time, infancy became a site for professional differentiation: It allowed child psychiatrists to argue for the

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[23] On residential treatment centers: Deborah Blythe Doroshow, "Emotionally Disturbed Residential Treatment, Child Psychiatry, and the Creation of Normal Children in Mid-Twentieth Century America" (Ph.D. diss., Yale University, 2012), https://search.proquest.com/docview/1271996450?accountid=12006.

[24] On Spitz and Wolf see *Chapter One*. On Bowlby and Robertson: James Robertson, *A Two-Year-Old Goes to Hospital* (London: Tavistock Child Development Research Unit, 1952); John Bowlby and James Robertson, "A Two-Year-Old Goes to Hospital," *Proceedings of the Royal Society of Medicine* 46, no. 6 (1953): 425–27; Frank C. P. van der Horst and René van der Veer, "Changing Attitudes towards the Care of Children in Hospital: A New Assessment of the Influence of the Work of Bowlby and Robertson in the UK, 1940–1970," *Attachment & Human Development* 11, no. 2 (2009): 119–42; Frank C. P. van der Horst, *John Bowlby : From Psychoanalysis to Ethology : Unravelling the Roots of Attachment Theory* (Oxford: Wiley-Blackwell, 2011); Marga Vicedo, *The Nature and Nurture of Love* (Chicago: University of Chicago Press, 2013).

[25] On the rise of psychoanalysis: Nathan G. Hale, *The Rise and Crisis of Psychoanalysis in United States: Freud and the Americans, 1917-1985* (New York: Oxford University Press, 1995). For more details see *Chapter One*.

distinctiveness of psychic development in childhood as opposed to adulthood, served psychosocial pediatricians to point to the importance of taking into account social and psychological development from the earliest age, and opened new venues for research in developmental and clinical psychology.

However, further developments were necessary for infant mental health to take off as a distinct field of expertise, discussed in *Chapters Two* and *Three*. In the 1960s and 70s, a new generation of practitioners at the intersection of child psychiatry, developmental psychology, and pediatrics drew on cinematographic microanalysis to argue that infant development had to be seen not simply in terms of environmental factors, such as maternal care, but, rather, as a dynamic and temporal process that hinged on the quality of caregiver-infant interaction. The introduction of video technology into scientific research and clinical practice in the 1970s further allowed making caregiver-infant interaction analytically accessible and therapeutically exploitable. Practitioners and parents could observe their own interactions with babies and modify their behaviors accordingly. The turn to the interactional view also provided the conceptual basis for making infant mental health a clinical field. Starting in the late 1970s, the field was institutionalized on national and international levels. In 1978, leading practitioners founded the organization *Zero to Three* that developed diagnostic guidelines for early childhood. In 1980, the *World Association of Infant Psychiatry* held its first congress, elevating the field to a global level. In the 1990s clinics and institutions specialized in early childhood followed suite in many Western countries. The institutionalization of the field went hand in hand with the spread of video and audiovisual technologies, forming its pedagogical, scientific, and clinical infrastructure.

Audiovisual Technologies and the History of Science and Medicine

How do we understand the prominence of (media) technologies in articulating the interactive vision of infancy and establishing infancy as a site for mental health intervention? Why could they play such a pivotal role? An argument about the role, or agency of technology quickly raises the specter of technological determinism, of the idea that technologies leave no or very few choices to their users and thus determine the course of history. There has been much written about this topic, and I do not argue for any hard version of technological determinism.[26] Rather, I am concerned with the uses of (media) technologies in science and medicine, akin to what the film scholar Scott Curtis has recently called a "tactile historiography."[27] Technologies are part of our daily life, of what we are doing and how we are communicating. It is difficult to imagine today's life without Internet, laptops, and smartphones, even though these technologies are of recent vantage. This holds as much true for our private doings at home as for professional activities in laboratories and hospitals. In other words, technologies do, of course, have effects on what we are doing and how we are doing it, but these effects depend on their users and are bound

[26] The two polar historiographical positions concerning the relationship between science and technology are, on the one hand, a hard version of technological determinism that sees technology as the driving force for historical change, and, on the other hand, the concept of the social construction of technology that refers to the idea that social relationships are part of the makeup of technological systems and that technologies are thus socially determined. A good example for the first position is Lynn White, *Medieval Technology and Social Change* (Oxford: Oxford University Press, 1962); on the second position: Donald A. Mackenzie, *Inventing Accuracy: A Historical Sociology of Nuclear Missile Guidance* (Cambridge, MA: MIT Press, 1990). For a good, concise overview see Sergio Sismondo, *An Introduction to Science and Technology Studies*, 2nd ed. (Malden, MA: Wiley-Blackwell, 2010), 96-105. There are many intermediate positions between these poles and recent works have drawn attentions to the many dimensions of the relationship between users and technology, including, for example, links between technology, the history of disease, and the history of the body. See e.g. Keith Wailoo, *Drawing Blood: Technology and Disease Identity in Twentieth-Century America* (Baltimore, MD: Johns Hopkins University Press, 1999); and David Harley Serlin, *Replaceable You: Engineering the Body in Postwar America* (Chicago, IL: University of Chicago Press, 2004).

[27] Scott Curtis, *The Shape of Spectatorship: Art, Science, and Early Cinema in Germany* (New York, NY: Columbia University Press, 2015).

to the contexts in which they are used. The contribution of this dissertation is to look how certain kinds of technologies have opened up new opportunities and set new limits for understanding and treating infants in historically specific contexts. Its point of departure is that scientists and physicians have actually been using these technologies for gaining knowledge, training their skills, and caring for patients.

A corollary from this approach is that, to understand the history of scientific and medical concepts of infancy, we have to pay attention not only to the history of science and medicine but also to the history of media and media technologies. These considerations naturally lead to the question of what can we gain from media technologies for doing historical work. What kind of historical knowledge do we obtain in focusing on the history of the use of audiovisual technologies in laboratories and clinics? First of all, they provide windows for historicizing and contextualizing science and medicine. This claim is not new, and has been highlighted by various scholars for public health movies and scientific documentary film, but it has rarely been exploited for the use of film and video in scientific research.[28] Yet, research film is informative in its content as well as in its formal and technological features. For example, the texture of the images, their aesthetics, and their narrative structure provide particular links to public and visual

[28] On public health film and scientific documentary: Leslie J. Reagan, Nancy Tomes, and Paula A. Treichler, eds., *Medicine's Moving Pictures: Medicine, Health, and Bodies in American Film and Television* (Rochester, NY: University of Rochester Press, 2007); Christian Bonah and Anja Laukötter, "Moving Pictures and Medicine in the First Half of the 20th Century: Some Notes on International Historical Developments and the Potential of Medical Film Research," *Gesnerus* 66, no. 1 (2009): 121; Mark S. Micale, *The Mind of Modernism : Medicine, Psychology, and the Cultural Arts in Europe and America, 1880-1940* (Stanford, CA: Stanford University Press, 2004). There is a growing body of literature that engages with uses of film in research, especially for the first half of the twentieth century. A classic is Lisa Cartwright, *Screening the Body: Tracing Medicine's Visual Culture* (Minneapolis, MN: University of Minnesota Press, 1995). Recent studies include Janina Wellmann, "Science and Cinema," *Science in Context* 24, no. 03 (2011): 311–28; Scott Curtis, "Science Lessons," *Film History* 25, no. 1–2 (2013): 45–54; Scott Curtis, *The Shape of Spectatorship;* Hannah Landecker, *Culturing Life: How Cells Became Technologies* (Cambridge, MA: Harvard University Press, 2010). On the role of observational technologies and methods in family therapy: Deborah Weinstein, *The Pathological Family : Postwar America and the Rise of Family Therapy* (Ithaca, NY: Cornell University Press, 2013).

culture.[29] One such link is the use of moving pictures in front of public and professional audiences: the images contain information on how a certain topic is staged in the public sphere. In the history of infant research, this is, for instance, important in the above-mentioned calls for institutional reform that were raised on the basis of research films by René Spitz and Katherine Wolf in the immediate post-war period, discussed in *Chapter One*. The dramatic rendering of the footage made visible the possibility of psychic disorder in infancy and served as an argument for a change in medical practice.

Media technologies also constitute a site for thinking through the relationships between science, medicine and broader media-historical transformations.[30] In *Chapter Four*, I discuss, for example, how the ubiquity of video in twenty-first century medical practice figures within the contemporary media economy of surveillance. The possibility of continuous observation in hospitals and outpatient clinics raises questions about how to balance between care and privacy, and between panoptic fantasies and epistemic interest. These questions are not necessarily new but they have obtained a pressing relevance with the ubiquity of media technologies in the contemporary landscape of infancy. The historiographical point is that the historical specificity of (media) technologies is a powerful tool for shedding light on broader issues around particular medical or scientific practices.

But these technologies also tell us much about the history of science and medicine in its own right, simply because they are part of what researchers and physicians are doing. Again, this is

[29] For an elaboration of this argument see: Hannah Landecker, "Microcinematography and the History of Science and Film," *Isis* 97, no. 1 (2006): 121–32. Also: Curtis, *The Shape of Spectatorship*.

[30] This approach is informed by German media studies and recent literature in the history of science and the history of knowledge. See for example: Jimena Canales, *A Tenth of a Second: A History* (Chicago, IL: University of Chicago Press, 2009); Bernhard Siegert, *Cultural Techniques : Grids, Filters, Doors, and other Articulations of the Real* (New York, NY: Fordham University Press, 2015); Friedrich A. Kittler, *Discourse Networks 1800/1900* (Stanford, CA: Stanford University Press, 1990). On early twentieth century research film in physiology as a modernist apparatus for disciplining the body: Cartwright, *Screening the Body*, esp. 17-46.

historically specific. Rene Spitz and Katherine Wolf were changing reels, seeking appropriate filming conditions, visiting and revisiting their research sites, and, years later, cutting films strips and editing them into a movie. The process was delicate and took a considerable amount of time to be accomplished. In contrast, today's physicians may catch their smartphones and capture spontaneously almost any situation. The video can be reviewed immediately, deleted, retaken, or uploaded. These changes are significant and have an influence on the content of scientific and medical statements. First, they influence the kind of evidence that is produced. The process of filming, as a process of inscription, leaves an imprint on the data:[31] the conditions for lighting, camera installation, and length of the reels set limits not only to what is ultimately captured, preserved, and analyzed but also to the range of admissible behaviors during the research process. Second and closely related, the technological possibilities of the medium change the field of the visible and audible (and of the invisible and inaudible). Media scholars have shown how the telescope redefines the morphology of the sky and "creates the senses anew."[32] We will see in *Chapter Three* that video redefined the morphology of infant behavior and, with it, the medical and scientific ways of seeing and handling infants. Third, media technologies create communities of observers. *Databrary* is an advanced technology of collective empiricism.[33] It allows compiling, sharing, defining, and redefining a set of working objects among developmental scientists. Similarly, video has become a common tool for collectively training

[31] On the role of inscription in science: Timothy Lenoir, ed., *Inscribing Science: Scientific Texts and the Materiality of Communication* (Stanford, CA: Stanford University Press, 1998); Bruno Latour, *Science in Action: How to Follow Scientists and Engineers through Society* (Cambridge, MA: Harvard University Press, 1987); Bruno Latour, "Visualization and Cognition: Thinking with Eyes and Hands," *Knowledge and Society: Studies in the Sociology of Culture* 6 (1986): 1–40.
[32] Joseph Vogl and Brian Hanrahan, "Becoming-Media: Galileo's Telescope," *Grey Room*, no. 29 (2007): 17.
[33] Lorraine Daston and Peter Galison, *Objectivity* (New York, NY: Zone Books, 2007), 19–27; Lorraine Daston and Elizabeth Lunbeck, *Histories of Scientific Observation* (Chicago, IL: University of Chicago Press, 2011).

the eyes and ears of practitioners and patients. It allows tuning and fine-tuning ways of seeing and perceiving infants, as further discussed in *Chapters Three* and *Four*.

Chapter Overview and Sources

Each chapter of this dissertation addresses a specific moment in the interwoven histories of infant psychology and psychiatry and (media) technologies, following a chronological order. The first three chapters focus on the emergence of the infant psy-field in the USA from the post-World-War-II period to the 1980s. During that time, the USA was the international driving force of the field, significantly influencing its development in Western Europe. While international and transnational aspects run throughout the entire narrative, the fourth chapter explicitly opens the view on the international situation and looks at how the field and its audiovisual practices spread since the 1980s. It focuses on a case study of an outpatient clinic for early childhood in France. Each chapter also stages a specific encounter between infant psychiatry and (media) technologies, exploring first on film and then on video and computational technologies. *Chapter One* shows how, in the post-World War II period, the psychoanalytic researchers Rene Spitz and Katherine Wolf activated documentary and ethnographic films to draw attention to the emotional life of infants. Child psychiatry was not yet established as a distinct medical discipline and infancy was largely considered outside of the range of psychiatric interest. Relying on the emotional appeal of moving images, Spitz and Wolf argued that suffering and psychiatric disorder in infancy was not only a psychopathological possibility but also a widespread reality in contemporary institutional care. The means of the medium were crucial for both transmitting a call for institutional reform to public and professional audiences and providing epistemic access

to the suffering of the preverbal child. Their movies sparked an effort among psychoanalytic practitioners to integrate observational evidence in theories of infant development. Researchers moved from an investigation of the biological and psychological characteristics of the individual infant to an exploration of the influences of the environment on emotional development in infancy, focusing on the importance of the mother-infant relationship.

Chapter Two investigates how, in the 1960s and 70s, a group of infant researchers and medical practitioners criticized previous research for a unidirectional focus on the mother, based on micro-analytic cinematographic observation. While these practitioners were not necessarily in opposition to psychoanalytic approaches, they claimed that the mother-infant relationship had to be considered a two-way street: It was time to explore how the infant was not only molded by, but actively shaped his environment. Cinematographic microanalysis allowed seeing the discrete ways in which the infant exercised influence on his caregivers and highlighted the need to take into consideration the interactive quality of infant behavior in medical interventions. It also provided an operational and conceptual basis for the development of infant psychiatry as a distinct field of medical expertise, focusing on pathologies of caregiver-infant interaction as both causes for and consequences of disorders in infancy.

Chapter Three explores how the microanalysis of dyadic interaction spread in infant research in the 1970s and 80s and became the basis for new fields specialized in infancy due to the introduction of video technology into scientific research and clinical practice. The chapter focuses on T. Berry Brazelton's Child Development Unit at Harvard University, a pioneering training and research center for the emerging 'sub-disciplines' of behavioral pediatrics and infant psychiatry. Video allowed the practitioners at the center to incorporate the microanalysis of caregiver-infant interaction into scientific and clinical practice: the use of synchronized cameras,

special effects, such as split screens, and real-time replay enabled them to immediately visualize interactional dynamics and provided an audiovisual interface for scientific research, medical training, and therapeutic consultations. Video, I argue, mediated the new interactive vision of infancy and, with it, the rise of a new field of medical expertise.

Chapter Four follows the interactive vision of infancy into its maturity in the twenty-first century and investigates its most recent transformations due to digital and computational technologies. The chapter focuses on scientific research and clinical practice at an outpatient clinic specialized in early childhood in Paris. The unit was designed as a facility for observing, investigating, and intervening into the relational field of the infant, incorporating video-based observation into its architectural layout and clinical procedures. I argue that this commitment to technologically mediated observation staged a tension between medical surveillance and care, between panoptic aspirations and supportive services for patients. This tension continues with the rise of digital technologies that both enable ubiquitous but more dispersed observation and contribute to a re-articulation of the understanding of health and pathology in infancy. The rise of new fields of research, such as social signal processing, further contribute to a localization of pathology on an interactive level but also bear the risk of reducing it to the operational interface between computational engineering and infant psychiatry.

The *Conclusion* reflects about what the story of the rise of the interactive vision of infancy and infant mental health tells us about the role of observational technologies in the history of science and medicine. It also discusses how we may understand, against this background, recent transformations in infant mental health and developmental psychology.

The dissertation draws on a rich array of archival and primary source material, including research films and videos, personal manuscripts and correspondences, scientific and medical

publications, parenting advice literature, architectural layouts, oral history interviews, and ethnographic observations. This diversity of sources allows tracing the uses of media technologies in a variety of historical contexts, ranging from the intimate practices in laboratories and clinics to professional and public debate, and from research film in the 1940s to motion recording in the 2010s. It reveals the importance that these technologies have obtained for the generation of knowledge, professional and public discourse, and diagnostic and therapeutic procedures, and shows how profoundly our present ways of conceptualizing, treating, and educating infants hinge on the media-history of the twentieth and twenty-first centuries.

Chapter One

"The Visual Turn in Psychoanalysis:" Affects, Institutions, and Infant Observation in Post-War USA (1940s-1960s)[1]

The sad looking girl in *Figure 1.1* is one of the main characters in the 1947 movie *Grief: A Peril in Infancy* by the psychoanalyst and psychiatrist Rene Spitz (1987-1974). The movie was cut together from cinematographic research that Spitz and his assistant, the psychologist Katherine Wolf (1907-1957), conducted in a foundling home in Middle America and a nursery of a US penitentiary during the Second World War.[2] The aim was to investigate the effects of

[1] The film scholar Lisa Cartwright speaks about "a visual turn in psychoanalysis" in the postwar period, showing how psychoanalytic practitioners and notably Rene Spitz, used film as both evidence of pre-linguistic development and a moral call to the viewer. Cartwright focuses on the use of the films for humanitarian reform, and her ultimate stakes are with film theory. She thus uses Spitz's work for intervening in Lacanian psychoanalytic film theory, arguing that the work "introduces means to think through the possibility of a new psychoanalytic theory of the emergent subject." My work builds on Cartwright's analysis but shifts the focus and significantly extends the analysis. I show the lasting importance of Spitz and Wolf's cinematographic work for the histories of child psychiatry, developmental psychology, and infancy, and use it as a jumping point for thinking through the relationship between observational technologies and the history of science and medicine. See below and 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 (2004): 35–49.

[2] Spitz never publicly revealed the location of the institutions. His personal papers show that the prison was the Westfield State Reformatory at Bedford Hills, New York, where Spitz conducted research with the assistance of Mr. Böhmer (cinematography) and Katherine Wolf, starting in 1944. See "Correspondence and Notes Re Planned Research, 1943-1949," M2141, Folder 104, RSP, AHAP. Further references to "Westfield" and "Bedford" in "Transcript of Interview," 1973, M2121, Folder 3, and "Film inventory," M2139, Folder 93, RSP, AHAP. Women in the reformatory were, among others, imprisoned due to the Wayward Minor Act, a law that was instituted in New York City in 1923 and later extended to New York State, sending young women to the reformatories at Albion and Bedford Hill for "willful disobedience" and immorality. See Ruth M. Alexander, "The Only Thing I Wanted Was Freedom: Wayward Girls in New York City, 1900-1930," in *Sexual Borderlands: Constructing an American Sexual Past*, ed. Kathleen Kennedy and Sharon R. Ullman (Columbus, OH: Ohio State University Press, 2003), 250–72; Erica Rhodes Hayden, *Incarcerated Women: A History of Struggles, Oppression, and Resistance in American Prisons* (Lanham, MD: Lexington Books, 2017). The foundling home was probably in Mexico and called "Casa de Cuna". Spitz referred to it as "Cuna" in his personal papers. See "Infantile Pre-Psychosis," M2111, Folder 10, and "Film inventory," M2139, Folder 93, RSP, AHAP. (Possibly, it was Casa Cuna Conchita, Monterrey, N.L., which had been established in the late 1930s, see "Casa Cuna

institutionalization and hospitalization on infants from a psychoanalytic perspective. Based on the footage, Spitz and Wolf argued that children under the age of two years, who were deprived of maternal care and love, developed severe psychosomatic conditions, ranging from minor and major depression to sociopathy and psychotic disorders.[3] The empty gaze and motionless mimics in the girl were a sad testimony to contemporary institutional practices that focused on hygienic conditions but did not take into consideration the emotional needs of young children. The movie was a call for change in infant care and contributed to a politicization of infancy in post-war society, asking for both a reform of contemporary institutions and a revision of theories of infant development. The stakes were not only with institutional but also with medical, scientific, and cultural practices. Spitz and Wolf claimed that, in order to understand the deficits in contemporary institutions, one had to better comprehend and recognize emotional development in early childhood. *Grief* demonstrated how to achieve such an understanding: the suffering of the girl was visible on the screen and in real life, provided one observed carefully her behavior and development over time.

This chapter explores Rene Spitz and Katherine Wolf's cinematographic work as a jumping point for a larger inquiry into infant research in the United States in the post-war period. I will argue that Spitz and Wolf's movies were part of a re-negotiation of the status of observational and visual evidence in psychoanalytic research and practice that would prove consequential for the fate of infant research and care in the second half of the twentieth century and considerably inform subsequent psychiatric approaches to infancy.[4] Spitz and Wolf's work was a forerunner of a host of psychoanalytically informed observational and longitudinal studies of infant

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Conchita," accessed September 12, 2017, http://www.casacunaconchita.com.)

[3] Rene Spitz, *Grief: A Peril in Infancy*, 1947, MI, AHAP; R. A. Spitz, "Hospitalism: An Inquiry into the Genesis of Psychiatric Conditions in Early Childhood," *Psychoanalytic Study of the Child* 1 (1945): 55–56."

[4] See below and Cartwright, "Emergencies of Survival'."

development that flourished in the 1950s and 60s. Almost all of these studies sought to integrate psychoanalytic reasoning with empirical and sociobiological data.[5] The integration inevitably raised questions about the nature of observational evidence and its relationship to psychological and psychoanalytic theory. What could outward behavior tell about internal emotions? How could it shed light on such complex metapsychological concepts as the oedipus complex or the libidinal object? And, what behavior was worth observing? We will see that the answers to these questions considerably shifted in the two decades following the Second World War with important implications for what was to come, including the rise of infant psychiatry as a sub-specialty and the emergence of studies of mother-child interaction.

Intimately bound to the questions about the relationship between observed behavior and affective development was a negotiation of the role of emotions in the observational process itself. The movie *Grief* is here indicative for a set of tensions that not only pervaded Spitz's films and scientific writings, but also gave rise to a specific mode of infant observation in contemporary psychoanalytic research.[6] At the center were questions about the relationships between sight and insight, scientific observation and therapeutic intervention, and detachment and involvement.[7] Spitz initially introduced cinematography as a tool of direct observation, stressing its utility for keeping emotional "detachment" and validating hypotheses. However, edited into a documentary movie, the footage for *Grief* lost its original imprint of detached observation for a direct appeal

[5] Michal Shapira has argued that an effort to put psychoanalysis on an empirical basis was one prominent trend in the development of John Bowlby's attachment theory in Britain in the 1950s. This chapter shows that the effort was a broader development in the USA. Michal Shapira, *The War inside: Psychoanalysis, Total War, and the Making of the Democratic Self in Postwar Britain* (New York, NY: Cambridge University Press, 2013).

[6] On the historicity of scientific observation see Lorraine Daston and Elizabeth Lunbeck, *Histories of Scientific Observation* (Chicago, IL: University of Chicago Press, 2011).

[7] For a similar set of tensions in contemporary observational practices in family therapy see Deborah Weinstein, *The Pathological Family : Postwar America and the Rise of Family Therapy* (Ithaca, NY: Cornell University Press, 2013), 109–44.

to the empathy of the viewer.[8] It demonstrated with emotional means that infants underwent an important affective development in the first year of life and that their affects could be observed, had clinical significance, and offered sites for therapeutic intervention. It drew attention to the "emotional climate" of the infant's environment and we will see that observation of that climate depended on a careful negotiation not only of the empathy of the public but also of the affective participation of the observer. *Grief* stands for a tensed union of detachment and involvement that remains embedded in therapeutic practice and modes of infant observation until today.[9] This chapter traces back the origins of this union to a specific combination of affect and observation that emerged in psychoanalytic infant research in the late 1940s and 50s.

The Chapter is divided into five chronological sections. The first focuses on Spitz's work and psychoanalytic observation during the Second World War. Spitz laid during this time the programmatic and material foundation for his intervention in infant research in the postwar period. In the second section, I investigate how his efforts met with a more general focus on infants in contemporary research and politics. The third and fourth sections focus more explicitly on Spitz's scientific and cinematographic work and its relationship to the role of emotions and affect in observation. I show how Spitz gave his films a dramatic structure, emphasized the role of affect in both infant development and observational practices, and contributed to a specific

[8] There are two important and interrelated theoretical subtexts to the double-function of the footage of *Grief* as both research footage and raw material for a documentary movie. The first concerns its ambivalent relationship to questions of genre, the second archival preservation: While the original research footage does not exist anymore, the footage qua documentary movie was archived and has obtained an iconic status among professionals, contextualizing "scientific facts" in a dramatized narrative and thus freely moving on a range from primary evidence to popular spectacle. More specifically on genre: Rick Altman, *Film/Genre* (London: BFI Publishing, 1999); Janina Wellmann, "Science and Cinema," *Science in Context* 24, no. 3 (2011): 311–28; Christian Bonah and Anja Laukötter, "Moving Pictures and Medicine in the First Half of the 20th Century: Some Notes on International Historical Developments and the Potential of Medical Film Research," *Gesnerus* 66, n o. 1 (2009): 121; Leslie J. Reagan, Nancy Tomes, and Paula A. Treichler, eds., *Medicine's Moving Pictures: Medicine, Health, and Bodies in American Film and Television*, Rochester Studies in Medical History (Rochester, NY: University of Rochester Press, 2007).

[9] See *Chapters Two* to *Four*.

mode of infant observation. The fifth section investigates parallel developments to and repercussions of Spitz's work, looking at research projects that emerged throughout the USA and advanced psychoanalytic approaches to infant psychology.

Setting the Stage: Rene Spitz, Infant Observation, and Psychoanalysis before and during the Second World War

Infant observation was not new in the post-war period and Rene Spitz embarked on it relatively late in life. Born in a wealthy Jewish family in Vienna in 1887, Spitz studied medicine in Hungary and got interested in psychoanalysis, when he met the psychiatrist and pioneering Hungarian psychoanalyst Sandor Ferenczi during a medical internship in 1908. In 1910-11, he underwent a didactic analysis with Sigmund Freud, and, after serving as a military physician during the First World War, became an active member of the Psychoanalytic Institutes in Vienna and Berlin in the interwar years. In both Berlin and Vienna various practitioners, including Karl Abraham, Melanie Klein, Anna Freud, Edith Jackson, and Siegfried Bernfeld, developed an interest in child analysis and early childhood development at that time. Spitz joined the Viennese group and sought permission to study observational protocols in the baby lab of the leading psychologist of early childhood, Charlotte Bühler, at Vienna's Child Welfare Department (*Kinderübernahmestelle)* in the mid-1930s.[10]

It was at the Department that Spitz met his future assistant, the psychologist Katherine Wolf. Wolf had received a doctoral degree in psychology at the university of Vienna in 1930 and had since been working as a research associate at Bühler's lab, focusing on the standardization of

[10] According to Spitz's own re-collections, reading Bernfeld's *Psychologie des Säuglings,* published in 1925, sparked his interest. See "Interview with Rene Spitz" 1967, Box 3, OHC, LC.

developmental scales for the first year of life.[11] The archival record only gives limited information on Wolf's biography and on her relationship with René Spitz, which may in itself be telling about the hierarchical, though friendly, collaboration between the two. Spitz hired Wolf, and would provide the financial means, determine the direction, and take the main credit for their collaborative research projects during the subsequent years.[12] Already before the outbreak of the Second World War, Spitz and Wolf began their "Psychoanalytic Research Projects on Problems in Infancy", studying the development of infants in institutions with the help cinematographic observation.[13] Partly due to the independent financial means of Spitz, they were able to continue their work in the early 40s, when they both emigrated to the USA.[14]

In the New World, Spitz and Wolf laid the programmatic ground for the observational approaches to early infancy that would come to the fore in the 1950s, both drawing on their interwar experiences and proposing a new approach to early infancy. On their initiative a Committee for Research in Infant Psychology formed in the New York Psychoanalytic Society

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[11] Diane E. Kaplan, "Archiving the Records of the Longitudinal Study of the Child," in *A Girl's Childhood: Psychological Development, Social Change, and the Yale Child Study Center*, ed. Deborah Weinstein, Linda C. Mayes, and Stephen Lassonde (New Haven: Yale University Press, 2014), 133–57, 135.

[12] On Spitz's financial means: "Memorandum of Conversation between Dr. Fries, Dr. Malcove, and Dr. Spitz" 1943, M2119, Folder 2, RSP, AHAP. The relationship between Spitz and Wolf is difficult to assess. On the one hand, the most famous output of their research, the movies, are credited only to Spitz, although Wolf did a considerable, if not the main part of the cinematographic work. On the other hand, they authored papers together, commented on their respective drafts, and entertained a friendly, though formal correspondence in the 1950s. See below and Katherine Wolf, "Correspondence: Rene Spitz" (1951- 1958), Box 87, Folder 7, CSC, YU.

[13] "'PROPOI'" 1953, M2137, Folder 83, Rene Spitz Papers, Archives of the History of American Psychology, The Cummings Center for the History of Psychology, The University of Akron.

[14] Spitz emigrated from Paris to New York in 1938. See Peter Mantell, *René Spitz, 1887-1974: Leben und Werk im Spiegel seiner Filme* (Köln: ISAB-Institut, 1991); Pierre Geissmann and Claudine Geissmann-Chambon, *A History of Child Psychoanalysis*, New Library of Psychoanalysis ; 30 (New York, NY: Routledge, 1998), 213–15. Wolf first moved to Geneva to work with Jeanne Piaget and then to the USA in 1941. See Diane E. Kaplan, "Archiving the Records of the Longitudinal Study of the Child," in *A Girl's Childhood : Psychological Development, Social Change, and the Yale Child Study Center*, ed. Linda C. Mayes and Stephen Lassonde (New Haven, CT: Yale University Press, 2014), 135. On the popularity of Spitz's work see also Marga Vicedo, *The Nature and Nurture of Love* (Chicago, IL: University of Chicago Press, 2013), 28–30.

that met for the first time on Feb 11, 1943. Half of the committee was composed of recent emigrants, mirroring an overall shift in the membership of the Society. The exodus of German and Austrian analysts since the late 1930s had not only led to a concentration of famous analysts at the East Cost, but also made Viennese and Vienna-trained practitioners the dominating group in the New York Psychoanalytic community.[15] The committee was no exception. Rene Spitz was elected chairman and Katherine Wolf secretary. The other members included the American pioneer of psychoanalytically informed psychosomatics Dr. H. Flanders Dunbar, the New Yorker psychiatrist and psychoanalyst Dr. Lilian Malcove, and, although absent during the first meeting, the Vienna-trained psychoanalyst Dr. Margaret Fries and the Viennese lay child psychoanalyst Berta Bornstein. Almost all of them had acquired considerable experience in child study already before the war and sought to both continue former research and expand activities to early infancy.[16]

The emphasis on early infancy was in tune with larger trends in both the international psychoanalytic movement and specific developments in America. Child psychoanalysis had become a central but controversial issue in the psychoanalytic movement since the mid-1920s, creating both deep fractions and new alliances. While the British society was increasingly drawn into a conflict between the Kleinian and the Freudian school, achieving a climax in the "Controversial Discussions" from 1941-44, the rise of Heinz Hartmann's "ego psychology" and the empirical orientation of both Anna Freud and Melanie Klein also provided the basis for an

[15] On transformation of the New York Society: George Makari, *Revolution in Mind: The Creation of Psychoanalysis* (New York, NY: Harpercollins, 2008), 473–83.

[16] "Minutes of the Meeting of the Committee for Research in Infant Psychology" 1943, M2119 Folder 2 and M2124 Folder 6, RSP, AHAP. As far as the archival record allows judging, the Committee only existed for a short period of time. In the Spitz Papers there are minutes of the first two meetings in 1943. The initiative for the foundation of the Committee came from Spitz and Wolf, but Spitz stepped back from presidency after the second meeting and there were some conflicts about the purposes and objectives of the Committee.

opening of psychoanalysis to other scientific disciplines, especially in the USA.[17] This process was all but peaceful. As George Makari has shown, conflict centered on the extent of opening that was permissible for the movement to continue existing. The emigrant community formed an old Freudian guard in the New York Psychoanalytic Society that would, together with Heinz Hartmann's version of ego psychology, dominate US psychoanalysis in the postwar period, institutionally split from the so-called "neo-Freudians." The latter consisted of a heterogenous group, including, among others, Karen Horney, Sándor Radó, and Harry Stack Sullivan, who would eventually obtain their own institutional homes with the Association for the Advancement of Psychoanalysis, the Analytic Center at Columbia University, and the William Alanson White Institute, respectively. While the "orthodox" group remained committed to historically established Freudian tenets, such as libido theory and the structural model of the psyche, some of the "neo-Freudians" suggested radical revisions of psychoanalytic theory, partly in an attempt to closer approach concepts in contemporary behavioral and natural sciences.[18]

The members of the Committee for Research in Infant Psychology were firmly rooted in the "orthodox" group but equally committed to further promoting empirical methods for the psychoanalytic study of infants.[19] Spitz and Wolf outlined the program, walking a fine line

[17] Heinz Hartmann attributed to the ego an important role in the regulation of drives and in the adaptation to reality. Hartmann's theories provided a theoretical basis for observational approaches, since ego functions (such as perception, memory, and motor control) could directly be tested and assessed. See below, and Heinz Hartmann, *Ego Psychology and the Problem of Adaptation,* Journal of the American Psychoanalytic Association: Monograph Series, No. 1 (New York, NY: International Universities Press, 1958); Eli Zaretsky, *Secrets of the Soul: A Social and Cultural History of Psychoanalysis* (New York, NY: Random House, 2004), 276–86.

[18] Makari, *Revolution in Mind*, 473–83; Geissmann and Geissmann-Chambon, *A History of Child Psychoanalysis*; Nathan G. Hale, *The Rise and Crisis of Psychoanalysis in United States : Freud and the Americans, 1917-1985*; Nathan G. Hale, *Freud and the Americans* (Oxford: Oxford University Press, 1971*)*.

[19] The American physicians Drs Fries, Dunbar, and Malcove had all been active in both psychoanalysis and clinical research. Margaret Fries was trained in pediatrics in the 1920s, had worked at the New York Infirmary for Women and Children and been active in both child guidance and research on behavioral problems in young children in the Interwar Period. In 1930, she went to Vienna to undergo a personal

between psychoanalysis and experimental psychology. At the center was the question of how to relate two different modes of observation to one another: "psychoanalytic technique" and "the experimental method."[20] "Psychoanalysis," Spitz and Wolf argued, "has no actual observations to offer on the subject of infants." Especially statements on the preverbal period had so far been restricted to "reconstructions made from the informations gathered in analysis of adults, adolescents, and school-children."[21] The psychoanalytic technique of accessing libidinal conflicts through spoken language seemed insufficient for an understanding of the emotional development in infancy. In contrast, Spitz and Wolf stated, experimental psychology had accumulated a wealth of data, especially on the first year of life, but the data had been methodologically and theoretically deficient.[22] It had focused on single functions and activities in isolation such as the development of grasping "independently from the rest of the child's activities and independently from the rest of the child's personality, emotional structure, etc."[23]

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analysis with Anna Freud, subsequently completing her analytic training at the New York Psychoanalytic Society. Helen Flanders Dunbar went as well to Vienna to get her first analytic training with Felix and Helen Deutsch in 1929. In the same year she received a PhD in philosophy at Columbia University, after having graduated not only in philosophy but also in theology and medicine. She subsequently trained in psychiatry and pioneered, together with other members of the Psychoanalytic Institute, psychosomatics in New York. Lilian Malcove was the only member of the committee, who had graduated from the New York Institute without any particular connections to Europe during the prewar period. She grew up in Canada and moved to New York in the mid-1920s. Since 1929, she had been working as a training and supervising analyst at the New York Institute. Berta Bornstein was the only lay analyst in the group. Originally trained in Berlin, she went to Vienna in the mid-1920s, where she became part of the intimate circle of Anna Freud and worked and published as a child psychoanalyst until moving to New York. On Bornstein: Makari, *Revolution in Mind*, 461. On Fries and Malcove: Thompson, Nachmann, and O'Neil, "Olga Knopf, Margaret Fries, Lilian Malcove," *The American Psychoanalyst* 48, no. 4 (2014); "The Lillian Malcove Biography Project," accessed September 12, 2017, http://www.lillianmalcove.org. On Dubar: "Biography of Helen Flanders Dunbar," accessed September 12, 2017, http://www.apadivisions.org/division-35/about/heritage/helen-dunbar-biography.aspx; Hale, *The Rise and Crisis of Psychoanalysis in United States*, 180–84.

[20] Katherine Wolf and Rene Spitz, "Schematic Outline of a Program for the 'Child-Research-Committee' of the New York Psychoanalytic Institute" undated, ca 1943, 3, M2124, Folder 6, RSP, AHAP.

[21] Rene Spitz and Katherine Wolf, "Expose of Research Project on the First Two Years of Life" undated, ca 1943, 4, M2119, Folder 2, RSP, AHAP.

[22] Wolf and Spitz, "Schematic Outline of a Program for the 'Child-Research-Committee' of the New York Psychoanalytic Institute," 6.

[23] Spitz and Wolf, "Expose of Research Project on the First Two Years of Life." 5.

Moreover, psychologists had either rejected or ignored psychoanalytic theory, impoverishing their approaches and outcomes. What was necessary, Spitz and Wolf concluded, was a "total personality viewpoint" that combined analytic reasoning with experimental technique, contextualizing observation of behavior in the emotional development and social environment of the children and thus shedding light "on the mechanisms responsible for the genesis of the child's behavior."[24] While the psychoanalytic viewpoint and the retrospectively articulated hypotheses about infancy were to provide the theoretical framework and convey insight into the significance of behavior in the overall emotional development of the individual,

> "our experiments will observe the actual behavior of infants and will attempt the reconstruction of psychic phenomena from this behavior. These behavioristic observations combined with experiments, will take place under controlled conditions and will attempt to supplement, verify, and rectify the psychological theories about infancy and formation, development, and early structure of the psychic apparatus."[25]

Spitz and Wolf argued for a new union of psychoanalytic theory and psychological observation that was to eliminate faulty psychoanalytic theories, verify unproved theoretical predictions, and contribute to a coherent "theory of the first two years of life."[26]

As Spitz and Wolf were well aware, the criticism of the retrospective nature of psychoanalytic theory of young children was not new in the psychoanalytic movement, neither was the emphasis on direct observation. The rise of child analysis in the interwar period went hand in hand with a demand for observational and empirical evidence that was usually traced back to Sigmund Freud himself, who had highlighted its value for testing "fundamental theorems" in the introduction to

[24] *Ibid.*; "Minutes of the Meeting of the Committee for Research in Infant Psychology."
[25] Spitz and Wolf, "Expose of Research Project on the First Two Years of Life," 5.
[26] Wolf and Spitz, "Schematic Outline of a Program for the 'Child-Research-Committee' of the New York Psychoanalytic Institute," 10–11.

his case study of "little Hans" in 1909.[27] While S. Freud's case study remained more or less isolated at that time, child analysis moved to the forefront of the psychoanalytic movement in the 1920s.[28] Again, the emphasis was on the value of observational and empirical evidence. In 1927 on the Tenth International Psychoanalytic Congress in Innsbruck, the then rising Viennese star of child analysis, Anna Freud, stressed "the importance that the subject has acquired in the eyes of the International Association during the last years." A. Freud attributed that importance not only, as her father has done, to child analysis' ability to confirm "conceptions of the mental life of children, which, in the course of the years, have been deduced by psychoanalytic knowledge from the analyses of adults," but especially stressed that "direct observation thus employed leads us to fresh conclusions and supplementary conceptions."[29] In the same vein in London in 1932, Melanie Klein, introduced her opus magnum, *The Psychoanalysis of Children,* with a reference to S. Freud's hope "that further analyses of small children would give us a deeper and more accurate knowledge of their psychology than analysis of adults had done, and would thus be able

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[27] S. Freud, "Analysis of the Phobia of a Five-Year Old Boy," in *The Standard Edition of the Complete Psychological Works of Sigmund Freud, Volume X (1909): Two Case Histories* (London: Hogarth Press, 1955). Freud states in the introduction: "When a physician treats an adult neurotic by psycho-analysis, the process he goes through of uncovering the psychical formations, layer by layer, eventually enables him to frame certain hypotheses as to the patient's infantile sexuality; and it is in the components of the latter that he believes he has discovered the motive forces of all the neurotic symptoms of later life…But even a psycho-analyst may confess to the wish for a more direct and less roundabout proof of these fundamental theorems. Surely there must be a possibility of observing in children at first hand and in all the freshness of life the sexual impulses and wishes which we dig out so laboriously in adults from among their own débris — especially as it is also our belief that they are the common property of all men, a part of the human constitution, and merely exaggerated or distorted in the case of neurotics." On further criticism of retrospective nature: M. Klein, "The Psychological Principles of Infant Analysis," *International Journal of Psycho-Analysis* 8 (1927): 25–37; Melanie Klein, *Die Psychoanalyse des Kindes* (Internationaler Psychoanalytischer Verlag, 1932). See also Makari, *Revolution in Mind*, 418 ff.; Geissmann and Geissmann-Chambon, *A History of Child Psychoanalysis*; Leo Kanner, *Child Psychiatry* (Baltimore, MD: CCThomas, 1935), 8. .

[28] There were notable exceptions, including Ferenczi, Karl Abraham, and other, and a thorough historical investigation of child psychoanalysis before the First World War is still missing. See also Makari, *Revolution in Mind*, 418 ff.

[29] Anna Freud, *Einführung in die Technik der Kinderanalyse: Vier Vorträge am Lehrinstitut der Wiener Psychoanalytischen Vereinigung* (Wien: Internationaler Psychoanalytischer Verlag, 1927). See also Makari, *Revolution in Mind*, 425.

to make important and fundamental additions to the theory of Psycho-Analysis."[30] Still, Anna Freud and Melanie Klein had primarily focused on children who could already talk, partly due to their therapeutic orientations. For A. Freud, child analysis required a confidential relationship between analyst and child, the child's insight into its condition, and a conscious wish for cure. Analysis was only possible in children who had already achieved certain maturity.[31] Melanie Klein had pushed analysis to an earlier age, using play to access unconscious processes in children as young as two years old and suggesting major revisions in Freudian theory of early childhood development. However, she did only occasionally articulate theories on the basis of behavioral observation in children younger than two years, mostly assessing infancy from the retrospective angle of early childhood.[32] Moreover, her theories were received with much hostility from the Viennese practitioners, considerably limiting their reception in the USA.[33] While the difference between child analysis in the interwar period and the aim of the committee during the war was to an extent exaggerated, it did entail a change of emphasis in method and object of psychoanalytic observation. The focus clearly moved to early infancy. No longer were verbal utterances to constitute the basis of observation but their non-verbal behaviors. As Spitz stated, "the reactions will be studied at the moment of their inception and not deduced from the presence of symptoms or characters in the later life of the child."[34] The method was to include not only the study of single cases but, if possible, the longitudinal study of controlled groups,

[30] Klein, *Die Psychoanalyse des Kindes*, 17.
[31] Freud, *Einführung in die Technik der Kinderanalyse*.
[32] Melanie Klein, "Infant Analysis," *International Journal of Psycho-Analysis* 7 (1926): 31–63; Klein, "The Psychological Principles of Infant Analysis"; Melanie Klein, "Early Stages of the Oedipus Conflict," *International Journal of Psycho-Analysis* 9 (1928): 167–80; Klein, *Die Psychoanalyse des Kindes*.
[33] See e.g. R. A. Spitz and K. M. Wolf, "Anaclitic Depression," *Psychoanalytic Study of the Child* 2 (1946): 322–24; Geissmann and Geissmann-Chambon, *A History of Child Psychoanalysis*, 174–78, 210–24; Makari, *Revolution in Mind*, 473–85.
[34] Wolf and Spitz, "Schematic Outline of a Program for the 'Child-Research-Committee' of the New York Psychoanalytic Institute," 4.

combining direct observation with psychological tests and statistical validation, and thus approaching research procedures in contemporary psychology and medicine. For example, Spitz and Wolf proposed several tests that evaluated social responses and child development, including a test for the recognition of human faces, developed by Eino Kaila, and a developmental assessment designed by Katherine Wolf and Hildegard Hetzer in the 1920s. Spitz and Wolf stressed the utility of the latter that allowed situating individual children on an overall developmental index on the basis of six independently tested traits of personality development. The traits included the "development of perception, body mastery, social relations, memory, relations to inanimate objects, and intelligence (which in the first year is limited to understanding of relations between and insight into the functions of objects)" and were assessed with simple observational tests such as the abilities of infants to visually follow objects, react to sounds, recognize friendly and hostile facial expressions, and manipulate objects.[35] These tests and experiments were to be included in a recording of behavior in "natural situations," contributing to an observational foundation of psychoanalytic theory of early childhood.[36] In the proposal for the Committee, the focus of psychoanalytic observation had clearly shifted from the verbal to the behavioral and visual.

[35] Spitz, "Hospitalism;" "Minutes of the Meeting of the Committee for Research in Infant Psychology;" "Memorandum of Conversation between Dr. Fries, Dr. Malcove, and Dr. Spitz;" H. Hetzer and K. Wolf, "Babytests," *Zeitschrift Für Psychologie* 107 (1928): 62–104. Hetzer, Wolf, and Bühler developed the baby tests to shift the focus of psychological inquiry from distinguishing between "normal and abnormal" that they considered the objective of (Binet's) intelligence testing to assessing the "overnormal" and "productivity" [p. 65]. They argued that this required naturalistic observation and a consideration of single functions within the overall psychological development of the infant. The tests were modeled at Arnold Gesell's research and proposed a systemized assessment method of psychological maturation. Spitz and Wolf modified both tests and interpretation in their above-cited work without providing any in-depth discussion of their modifications.

[36] Wolf and Spitz, "Schematic Outline of a Program for the 'Child-Research-Committee' of the New York Psychoanalytic Institute."

Infants, Experts, and the War

Much of Spitz and Wolf's proposal was programmatic. The Committee worked under considerable hardships. The war was in full blow and funding for infant research was sparse. As mentioned above, Spitz financed most of his and Katherine Wolf's studies with his own means, but further financial funds were felt as an urgent need.[37] The Committee members were doubting that the great private foundations such as Macy would be interested in infants and "the whole meeting agreed" that "some propaganda would be necessary," suggesting "to use mother schools and mother courses by radio for this purpose." Another issue was access to young children. The members mostly worked with private families, making research not only a sensitive matter but also limiting the possibility for standardization of observations and experiments. Part of the Committee's effort was to evaluate the opportunities for institutional research, notably in the New York Foundling Hospital and the Bellevue Hospital to which the members had some personal connections.[38]

However, change was underway. Towards the end of the war, young children increasingly moved to the center of public attention, not at least due to the exigencies of the war on US family life. The attention to young children went hand in hand with a growing status of psychoanalysis during the war. Psychoanalysts took prominent positions in the Army, the Navy, and the Air Force, and dominated psychiatric training, applying new approaches to an unprecedented rise of war neuroses and psychosomatic disorders among American servicemen.[39] At the home front, child developmental experts and psychoanalysts featured in radio shows and parent advice literature, addressing questions about the best care and emotional support for children in times of

[37] "Memorandum of Conversation between Dr. Fries, Dr. Malcove, and Dr. Spitz."
[38] "Minutes of the Meeting of the Committee for Research in Infant Psychology."
[39] Hale, *The Rise and Crisis of Psychoanalysis in United States*, Chapter 11.

emergency. For example, in a 1944 pamphlet, entitled "Children must be told too," the psychoanalyst Margaret Mahler asked about how to deal with the fact that "wartime death is all around us." While children must be "faced with the possibility of death in the family," Mahler emphasized that "the child's age, his environmental and cultural traditions, and his own individual life experiences" had to be taken into account: "It is your emotional attitude more than your words, the how rather than the what, that makes explanations or behavior helpful or not to the child. Of this we are sure: if in your own way you meet with your child the fact of death and help him with his feelings about it, you will have a happier child now and a better adjusted adult later."[40]

The question was not only about the war but also about democracy and the future of American society. As Arnold Gesell, the director of the Child Development Clinic at Yale University, put it in the *Bulletin of the Child Welfare League of America*: "The war has demonstrated that the family is the most fundamental unit of a democratic culture."[41] But the war had put unprecedented hardships on the family, sending not only the men to the front but also the mothers to the factories. "If mother works… Her children must be left in good hands," commented Gesell in *This Week Magazine on* May 16, 1943, cautioning that "the determination of whether or not a mother should work ought to be based on a careful consideration of her individual circumstances - rather than on slogans and catch-lines and patriotic enthusiasm." The experience of Britain had shown that children "who were separated from their parents and who were placed in strange evacuation homes were the children who suffered mentally and became psychological problems." The US had not been "put to such an extreme feat," but was "already

[40] Margaret Mahler and Ruth Henning, "Childen Must Be Told Too, New York Committee on Mental Hygiene" 1944, Box 64, Folder 1115, MMP, YU.
[41] Arnold Gesell, "Individual versus Group Care" (Child Welfare League of America Bulletin, 1944), Box 3, Folder 2, AGCPC, YU.

getting a taste of at least a partial disruption of democracy's fundamental institution: the home."[42] For "a better world for the children of today and for the unborn children of tomorrow," Gesell aired in *Yale Interprets the News* on Sunday, October 24, 1943, not only elevated "standards of child care" were needed but also "a democratically conceived system of developmental supervision" to "attain a more just and universal distribution of developmental opportunity for infants and young children" as "a next logical step in the social evolution of postwar America." While Gesell's vision might, as the interviewer remarked, have sounded like "a Utopian dream," the message was clear: young children were in urgent need of professionally guided social attention to alleviate the effects of the war on their mental health and pave the way for the future.[43]

The wartime demands for improved childcare met with a growing attention to "maternal deprivation" in the immediate postwar years. Various psychoanalytic practitioners in Britain and the USA had investigated the effects of institutionalization on young children during the war. Notably, Anna Freud and Dorothy Burlingham collected a considerable amount of observations about both the war situation and child development in an institutional setting in the Hampstead war nurseries in London, which they had established with financial support from the American Forster Parents' Plan for War Children as a shelter for orphaned children in 1941.[44] The Hampstead nurseries were well known in the psychoanalytic and child development community

[42] Arnold Gesell, "If Mother Works...," *This Week Magazine*, May 16, 1943.
[43] Arnold Gesell, "Yale Interprets the News: War Conditions Increase Need for Scientific Child Guidance" (Transcript of Radio Broadcast, October 24, 1943), Box 3, Folder 1, AGCPC, YU.
[44] While A. Freud had already established a war nursery with the outbreak of the war, the support of the Forster Parents' Plan allowed opening two additional houses in spring 1941. The report from 1942 covers the period from winter 1940 to spring 1942. See Anna Freud and Dorothy T. Burlingham, *Young Children in War-Time: A Year's Work in a Residential War Nursery* (London: G. Allen & Unwin ltd., 1942). See also 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.

around the world, enjoying support from various outstanding practitioners including Rene Spitz and Ernst Kris.[45] The reports from the nurseries circulated during the war in two small booklets, entitled *Young Children in War-Time* (1942) and *Infants without Families* (1944), informing, among others, Arnold Gesell's above-cited advice on childcare.[46] However, Freud and Burlingham's concern was less with child guidance than with the emotional development and trauma in young children. Pointing out the necessity "to do research on the essential psychological needs of children" even during the war situation, they established a detailed observational index and suggested, based on their observations, that the separation form their mothers was, at least, as significant a trauma to young children as the war itself.[47]

The studies at the Hampstead nurseries and parallel studies on maternal separation in the USA and Britain left an imprint on mental health policy immediately after the war. In 1948, the General Assembly Declaration of Universal Human Rights by the United Nations stated that "motherhood and childhood are entitled to special care and assistance" and the World Health Organization charged the British pediatrician and psychoanalyst John Bowlby to assess the current state of research on effects on young children of separation from their mothers. Bowlby's research led to his famous report on "Mental Care and Mental Health" in which he argued "deprivation of mother-love in early childhood can have far-reaching effect on mental health and personality development of human beings," criticizing care in contemporary hospitals, nurseries, and foundling homes.[48]

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[45] Spitz was foster parent and both Spitz and Kris coordinated efforts in the USA during the war to secure funding for the Hampstead nurseries: Rene Spitz, "Corr and Papers, 1943-46", M2119, Folder 13, RSP, AHAP.

[46] Gesell, "Individual versus Group Care."

[47] Freud and Burlingham, *Young Children in War-Time: A Year's Work in a Residential War Nursery*, 12; Dorothy Burlingham and Anna Freud, *Infants without Families: The Case for and against Residential Nurseries* (Allen and Unwin, 1944). See also Cartwright, "Emergencies of Survival'."

[48] John Bowlby and World Health Organization, *Maternal care and mental health: a report prepared on*

Psychosomatic Disease in Infancy

Spitz and Wolf's postwar publications and movies intervened in the debate about maternal and emotional deprivation in putting it into a broader pathopsychological framework and emphasizing the importance of experiences in the first year of life. Immediately after the war, they published two classic papers that directly drew on their previous observational research to argue not only that the emotional circumstances of care were crucial for early development, but also that infants as young as six months could suffer from severe psychosomatic disorders. The papers both modified contemporary theories of early childhood development and articulated an observational approach for a wider audience.

The first paper, entitled "Hospitalism," published in the first issue of the *Psychoanalytic Study of the Child* in 1945, and solely authored by Spitz, compared the development of the infants in the Middle American Foundling Home to that of the infants in the nursery of the US reformatory for women, pointing to a tragic difference. While the infants in the nursery developed more or less normally, showing a progressive acquisition of physical and psychic skills, the infants in the Foundling Home had severe developmental problems. They were not only extremely susceptible to "infections and illness of any kind" with "staggeringly high mortality figures" but also failed to develop basic skills such as walking, talking, and continence during the first two years of life. Spitz examined the babies with the Hetzer-Wolf test, showing that, while the developmental quotient of the prison babies remained more or less stable, the quotient of the foundling home babies sank "by the end of the second year…to 45, which corresponds to a mental age of

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behalf of the World Health Organization as a contribution to the United Nations programme for the welfare of homeless children, World Health Organization monograph series (WHO Press, 1952), 14.

approximately 10 months, and would qualify these children as imbeciles."[49] In looking for the reasons of the difference in development, Spitz turned to the institutional conditions. He emphasized that, while the two institutions had many similarities, notably healthy babies at admission and good hygienic conditions, they differed in the contact the babies had with their mothers. The infants in the nursery were cared for by their imprisoned mums. In contrast, the children in the Foundling Home had only sparse contact with their mothers during the first three months of life and were then left almost without human contact for the rest of their infancy. Spitz concluded that the reason for the different developments was emotional deprivation: "We believe that they suffer because their perceptual world is emptied of human partners, that their isolation cuts them off from any stimulation by any persons who could signify meaning in this age."[50] The paper was an alarming call for taking into consideration the emotional needs of young children in contemporary institutional care. It also advanced an argument about the infantile psyche: infants could develop severe emotional and psychological disease already in the first year of life.

The second paper, entitled "Anaclitic Depression" and published in 1946, addressed more explicitly psychic disease in infancy. Spitz and Wolf described several cases of a "striking syndrome" that they had observed in a subgroup of the infants in the prison nursery. In the course of a temporary separation from their mothers in the second half of the first year of life, these infants showed "a weepy behavior that was in marked contrast to their previously happy and outgoing behavior," and gave, after a time, "way to withdrawal," accompanied by a loss of weight, insomnia, and a gradual decline in the development quotient. Spitz and Wolf argued that this syndrome had to be understood as depressive disease comparable to melancholia in adults due to "the loss of the love object," i.e. the mother. The claim raised questions for both

[49] Spitz, "Hospitalism," 59, 70.
[50] *Ibid.*, 67–68.

psychoanalytic theory and clinical diagnosis. If depression in adults is considered a conflict between the different spheres of personality, notably the superego and the ego, how to explain the disorder in infants who do not yet have a superego and only a nascent, still undifferentiated ego? In psychiatric terms, if "psychosis is characterized" by a disturbance of the higher functions of the ego such as "delusion, disturbance of thought processes, abnormal thought production and mental confusion," how to diagnose "psychiatric disturbance…during the preverbal stage"? To address these questions, Spitz and Wolf emphasized the role of the environment and the importance of behavioral observation. They argued that psychotic disturbance not only concerned the higher but also more elementary functions of the ego such as a "modification of motility […], postural changes and pathognomonic expression." These functions were already developed "when the child arrives at the second half of the first year of life":

> "At this stage the child is capable, as we have stated above, of reacting to environmental experience by demonstrable affective disorders… The more subtle disorders can be detected in the dejected pathognomonic expression and posture of these infants. They show an obvious distaste for assuming an erect position or performing locomotion. It is in such behavioral changes that we have to seek the evidence of the pathological process."[51]

The pathological process is not simply an "arrest in development" but a "visible manifestation of emotions." According to Spitz and Wolf, the intrapsychic processes of melancholia were replaced by a conflict between the nascent ego and the immediate environment: the loss of the loved mother and the impossibility of seeking a substitution in institutional conditions fulfilled the function of a sadistic superego that gradually destroyed the "body ego of the infant."

Spitz and Wolf's statement was radical at the time. While infancy was seen as a period of important neurophysiological development in contemporary pediatrics and psychology and of

[51] Spitz and Wolf, "Anaclitic Depression," 325–26.

significant libidinal development in psychoanalysis and psychiatry, the possibility of psychic disease in the first year of life was rarely considered. "The functions acquired at that age," Kanner wrote in the first edition of the 'best selling' textbook of Child Psychiatry, "arise almost entirely from 'within,' that is, from the propensities inherent in the species." Psychiatric disorders in infancy could include disturbances that were primarily of physical origin, such as congenital malformations and cerebral diseases, and "functional" disturbances due to inborn and/or environmental factors, such as "epilepsy," "congenital word-blindness," "faulty feeding habits," and, in late infancy, "temper tantrums," but Kanner reserved such complex psychic phenomena as melancholia to a later age.[52] For sure, the view of infancy was slowly changing.[53] The rise of psychoanalytic approaches during the Second World War had made psychiatrists perceptive to a dynamic thinking about infant development and a growing body of studies on "maternal deprivation" shifted attention from inborn to environmental factors.[54] Still, Spitz could lament in 1950 that

[52] Kanner, *Child Psychiatry*, Chapter 5, 31. The first edition was reprinted four times, in 1937, 1942, 1946, and 1947. Kanner's textbook was the only textbook available in child psychiatry in the USA at that time, addressing first and foremost a pediatric audience. Child Psychiatry did not yet exist as a medical specialty in its own right. The 1935 edition follows a Meyerian approach, describing psychopathology as dynamic reaction patterns of the child's personality. Kanner clearly distinguishes his approach from heredity theories, Watsonian behaviorism, and Psychoanalysis. The second and much enlarged edition appeared in 1948, kept the Meyerian framework but also emphasized psychodynamic approaches and included a large amount of "psychosomatic problems" and "problems of behavior" with a special section on hospitalism. Cf. Andrew M. Fearnley, "Thinking about Methods: Longitudinal Research and the Reorientation of the Postwar American Mental Sciences," in *A Girl's Childhood: Psychological Development, Social Change, and the Yale Child Study Center*, ed. Deborah Weinstein, Linda C. Mayes, and Stephen Lassonde (New Haven CT: Yale University Press, 2014), 41–70.

[53] Note that Spitz was not completely breaking with the view of the infant as driven by reflexes and internal tensions during the first months of life. For Spitz, psychic disease was possible earlier than acknowledged, but still only in the second half of the first year. The infant became a psychological individual from about the third month of life with the differentiation of Ego from the Id and a topographical organization of the psyche. This was to change with the rise of cognitive approaches in the 1970s, see Chapter 2 and Rene Spitz, "A Field Theory on Ego Formation and Its Implications for Pathology" (Draft of Talk, 1958), M2115, Folder 2, RSP, AHAP.

[54] On the impact of psychoanalysis on psychiatry see Hale, *The Rise and Crisis of Psychoanalysis in United States*. On dynamic approaches to infancy and maternal deprivation see e.g. Leo Kanner, *Child*

> "[…] psychiatrists rarely think of applying their science to the first year of life […] Psychiatric disturbance is not considered a possibility; if it is considered at all, it is considered in terms congenital or inherited somatic malformation or deficiency of the central nervous system. The era of organicism in psychiatry is still very close to us and it seems to us that the preverbal stage of infancy is the last stronghold of this school."[55]

For Spitz the reason was evident: "our present dynamic approach in psychiatry is based on the verbal behavior of our patients," non-verbal behavior not being taken into account.[56]

Affect and Observation

Spitz's movies aimed at alleviating the deficits of contemporary child psychiatry in making the non-verbal behavior visible and thus demonstrating both method and outcome of infant observation to a wider audience. In the 1940s and 50s, Spitz produced eleven movies for broad distribution and a total of forty seven films for personal use.[57] Spitz mostly used the unpublished films for his own scholarly presentations, but also shared some of them with university departments for graduate training in medicine and psychology.[58] The publicly available movies targeted a professional audience and could easily be rented by university departments, professional organizations, and medical and psychological practitioners through the New York

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Psychiatry [2d ed.] (Baltimore, MD: CCThomas, 1949); William Goldfarb, "Infant Rearing and Problem Behavior," *American Journal of Orthopsychiatry* 13, no. 2 (April 1943): 249–65; William Goldfarb, "Psychological Privation in Infancy and Subsequent Adjustment," *American Journal of Orthopsychiatry* 15, no. 2 (April 1945): 247–55.

[55] René A. Spitz, "Psychiatric Therapy in Infancy," *American Journal of Orthopsychiatry* 20, no. 3 (July 1950): 623.

[56] *Ibid.*, 623.

[57] The films for personal use included twenty-three long and twenty-four short films. A comprehensive listing with summaries of the films can be found in Mantell, *René Spitz*.

[58] See, for example, Spitz to Kenworthy, March 31, 1953, M2137, Folder 79, RSP, AHAP..

University Film Library.[59] Already in the late 1940s the distribution was quite "successful" with purchases and rentals from various university departments and libraries throughout the country.[60] During the 1950s and 60s, circulation of the movies increased both nationally and internationally up to about 350 rentals per year in the USA alone. Purchasers included the UNICEF and the WHO as well as numerous universities, clinics, and professional schools in the USA and abroad.[61]

The relationship between Spitz's movies and his scientific work is multilayered and partly difficult to reconstruct. The footage was originally produced as research footage to help in the analysis of the children in the foundling home and the nursery. It spanned a production period of approximately 10 years, starting in the mid-30s, and was only later edited into documentary movies. The original footage is not accessible anymore and only few records of their initial production are preserved. The papers on hospitalism and anaclitic depression refer to cinematography as a method, giving little explicit detail on how the method informed the argument, which was, as we have seen, based on various kinds of evidence, including the Wolf-Hetzer baby tests, interviews with the institutional staff, and case histories. However, there are commonalities between the published movies and the scientific papers that point to an underlying tension between involvement and detachment that laid at the heart of Spitz's

[59] See e.g. Spitz to Krejici, October 22, 1947, M2137, Folder 77; Spitz to Bain, May 14, 1948, M2137, Folder 77; Spitz to Wurz, December 11, 1948, M2137, Folder 77; Spitz to Veer, December 18, 1948, M2137, Folder 77; Spitz to Entemann, January 12, 1949, M2137, Folder 77; Spitz to Skaela, January 13, 1949, M2137, Folder 77; Spitz to Bettelheim, February 21, 1949, M2137, Folder 77; Spitz to Carpenter, May 10, 1949, M2137, Folder 77; Spitz to Department of Communication, New York Film Library, March 1950, M2137, Folder 78, RSP, AHAP. See also Mantell, *René Spitz, 1887-1974*. According to Mantell, Spitz asked the New York University Film Library to distribute the films, only in 1951, but the above-cited correspondence shows that the Library was distributing them from at least 1947.

[60] Spitz to Carpenter, May 10, 1949. See also sales of movies in M2137, Folder 77, RSP, AHAP.

[61] For example, in the USA in the years 1957-1960, the movies were rented an average of about 250-350 times per year, generating a total income of $2000-3000, of which Spitz received half. Similar numbers were achieved until 1971. "Rental and Sales Income New York University Film Library" n.d., M2137, Folder 88, RSP, AHAP.

visualization of emotional development in infancy. Here and there the footage mediated an emotional message. While the message is foregrounded in the movies, it works in the background of the papers. For example, "Anaclitic Depression" captures the reader with an emotionally charged narrative. The paper begins with a dramatic description of the syndrome in three cases, based on research footage that would later figure in some of the movies. Spitz and Wolf describe, for instance, a "colored female," whose "radiant smiling behavior has ceased" when she was 7 1/2 months old: "She lay immobile in her crib…with an expression of profound suffering…soundless weeping, tears running down her face…"[62] The reader is both emotionally drawn into the case and hold in suspense. The resolution of the cases is only given at the end. The dramatization can be seen of an incident of scientific prose, but it is also tied to Spitz's purpose of visualizing the emotions in infants. Key is here a tensed relationship between, what Spitz called, the "emotional climate," or the "emotional atmosphere of a given situation," and scientific observation. In his writings and lectures in the late 40s and early 50s, Spitz repetitively proposed "screen analysis" and observation with "cinematographic means" as a way to navigate between emotional participation and objective sight:

> "The motion picture is close to ideal for recording behavior, its pattern and its sequences in infants. It permits us to review and restudy behavior patterns and sequences at any time — it becomes possible to repeat a given observation or experiment as many times as required for its better understanding. Through the introduction of the 24 frames by second technique we have improved this method of screen analysis, since we are able to see any movement three times as slowly as it actually occurred, that is, in a threefold magnification. No verbal record can provide this; what is more the motion picture mostly renders much of the emotional atmosphere of a given situation. Particularly this latter is

[62] Spitz and Wolf, "Anaclitic Depression," 314–15.

> difficult to achieve in direct infant observation for the observer hardly ever remains objective, but finds himself either drawn into the emotional dynamics of the observed infant and thus modifying the observed phenomena, or he overcompensates his detachment and overlooks relevant manifestations. The machine does neither of these if sufficiently well handled."[63]

The moving images not only allowed to review and magnify patterns but most importantly to balance involvement and detachment in the observer. The aim was to understand the emotional dynamics in a given situation but the understanding required a specific alignment of emotions in the observer himself. As Spitz put it elsewhere: "Screen analysis […] liberates one to a certain extent from the fear of harming other children, for when looking on film one is not forced to act, one can observe; one is not emotionally involved."[64]

If screen analysis was to enable detachment, the footage qua movie was to foreground the emotional effects on the viewer qua observer. The first and most famous of the many movies that Spitz produced was *Grief: A Peril in Infancy* released in 1947. The "drama" both exhibits a medical condition and mediates an emotional message, a double function that is discernible from the beginning. Shot on silent, black and white 16mm film, the movie operates in, what the film scholar Bill Nichols has called, an expository mode of documentary, directly addressing the viewer through both images and didactic intertitles.[65] The scientific purpose is stated in the beginning, marking at the same time the image as an index of reality: "We show…only behavior which is neither exceptional for the particular child, nor influenced by the filming situation. The

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[63] Rene Spitz, "The Films of the Psychoanalytic Research Project on Problems in Infancy" (Talk, December 19, 1952), 5, M2137, Folder 83, RSP, AHAP.
[64] Rene Spitz, "Vassar Lecture Outline" 1946, 1, M2111, Folder 14, RSP, AHAP.
[65] Bill Nichols, *Representing Reality: Issues and Concepts in Documentary* (Bloomington, IN: Indiana University Press, 1991), 34–38; Bill Nichols, *Blurred Boundaries: Questions of Meaning in Contemporary Culture* (Bloomington, IN: Indiana University Press, 1994).

behavior patterns of the children presented correspond within a reasonable age range to those of all the children in this environment when under the influence of similar circumstances."

The movie then depicts a dramatic image of the lived reality of the young children in following a narrative line with three chapters structured in problem, crisis, and resolution. Title cards guide the viewer through the chapters and the emotional development of the infants. The first sequence, entitled "The Baby loses its Mothers," begins with a close-up of "Jane who has outstandingly good relations with her mother" and is smiling "happily even at strangers," which is represented in her interaction with Spitz (*Figure 1.2*). The movie now takes a first turn: "Jane's mother was suddenly forced to leave the baby in the care of strangers," preparing the viewer for what is to come: "the loss for the baby is comparable to that of a school child suddenly orphaned of both parents, dumbed on another continent, in an alien environment, where nobody speaks its language and costume and food are foreign." The subsequent shots show Jane's "depressed expression" (*Figure 1.3*) and her violent weeping in reaction to strangers. The seriousness of the situation is underlined with both textual and iconic means. A close-op of an intensively weeping Jane (*Figure 1.4*) is introduced with a note on "the despairing expression and the tears which are unusual at this age. Jane did not scream while weeping, she only moaned." The next section of the film shows further cases of "depression" in infants, tracing the transition from happy and socially interactive to grieving and withdrawn child, which is attributed to the "mother's absence."

The second chapter addresses the further development of the children, visualizing the arguments of "Hospitalism" and "Anaclitic Depression." The title card states, "if the mother returns after an interval of less than three months, the recovery is rapid. Should the separation last much longer, then a frozen, apathetic attitude becomes generalized; not even weeping occurs anymore, only a

thin wailing, and contact with such children becomes impossible." It follows the emotionally most touching and disturbing footage, realized in the "foundling home" where "the only thing missing was motherly love." The movie shows eight to thirteen months old babies who "*cannot* sit or stand," are unresponsive to smiles, react with "bizarre movements or head shaking, reminiscent of psychiatric disturbances," and "are a pray of minor and major ailments." The third and last chapter presents "the cure." The message draws on the emotional impression of the preceding images: "Do you remember the face of tragic despair at the end of our first film? That child was rejecting the whole world, breaking out in tears at the approach of visitors. We show you the same child a few days after its mother's return. Watch her welcome the visitors now." Jane is happy again (*Figure 1.5*). The movie ends in summarizing the message for childcare: "It is the emotional climate created by the mother which enables the child's mind to develop normally. Where this emotional climate is lacking the baby's mind cannot develop properly. If it grows up it may become mentally impaired, asocial, criminal or insane. Where the emotional climate is good it will produce happy, active, intelligent children." The closing images show healthy ten months old infants playing in the nursery.

In exhibiting the "reality" of suffering, *Grief* directly appeals to the pity and empathy of the viewer. It places the argument about emotional development and trauma in infancy into the realm of spectatorial experience. The film scholar Lisa Cartwright has aptly dubbed Spitz's cinematographic strategy "Moral Spectatorship," highlighting that the movie not only sought to create empathy but also showed Spitz as a moral agent who engages with the depressed children and thus calls the spectator to moral action and institutional reform.[66] Yet, the visions of infancy

[66] Cartwright further argues that Spitz's films and "spectacular interventions" in front of the camera "broke with the codes of analytic neutrality and passivity" that were ingrained in the psychoanalytic profession (Cartwright, "Emergencies of Survival'," 42). The argument is somewhat in tension with the history of child psychoanalysis. In fact, Anna Freud and the Viennese school had explicitly attributed to

and infant observation, which the movie articulates, are complex, if not contradictory. The research protocol for the footage was non-interventionist. The contrast between the exhibition of suffering in the infants and the attitude of pure observation generated not only empathetic but also hostile responses from contemporary audiences, leading Spitz to insist on restricting the use to professional audiences and on framing the screening with both introduction and final discussion by an experienced lecturer.[67] From this perspective, the movie stages a broader field of tension between looking as a mode of understanding and acting for therapeutic relief. The foregrounded dependency and helplessness of the infant gave this tension a painful acuity.

In this context, it is important to note that Spitz's movies were carefully constructed from heterogeneous sources. Most of the movies were produced between 1945 and 1952, edited from fragments of prewar and war footage. Some additional pictures were added after the war from research in private families and the prison nursery. In the editing process, Spitz deliberately combined the footage from various locations and different historical moments to create touching narratives. Thus, in the 1948 movie *Somatic Consequences of Emotional Starvation in Infants*, he drew on the same material from the infants in the foundling home, now contrasting their development to that of infants raised in private families. The movie powerfully juxtaposes happy, agile, and interactive family infants with despaired, almost motionless, and unresponsive orphans. The film does not mention that the footage of the private families was shot before and

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the analyst the role of an educator, moving away from a pure focus on cathartic cure. Still, I entirely subscribe to Cartwright's argument about moral spectatorship as a strategy for advancing institutional reform through the exhibition of suffering.

[67] René A. Spitz, "Films and Mental Health," *Bulletin of the World Federation for Mental Health* 2, no. 1 (1952): 35–40. Similarly, according to the psychiatrist Robert Emde, who closely worked with Rene Spitz in the 1960s and 70s, *Grief* evoked intensive, even if contradictory, emotional responses in contemporary audiences: "The story is told that when Spitz first showed sections of *Grief: A Peril in Infancy,* to a group of New York physicians, a number became teary and expressed agony because of a compelling empathetic response to the suffering infants." Others were shocked and asked Spitz how he could show such a movie. See René A. Spitz and Robert N. Emde, *René A. Spitz, Dialogues from Infancy: Selected Papers* (New York: International Universities Press, 1983), 426; Robert N. Emde, interview by Felix Rietmann, April 24, 2017.

after the war, while that of the foundling home was realized during the war; nor does it further elaborate on the context and histories of the shown infants.[68] What remains is a moving testimony of trauma in infants, emotions constituting both observed object and spectatorial address.

Psychoanalytic Infant Research in the 1950s

The question of how to navigate between observation and affect pervades an important part of psychoanalytic literature and research from the mid-1940s to the mid-1960s, moving between two interrelated aspects: First, the relationship between behavioral observation and emotional development in infants, and, second, the role of emotions in the observer. The two aspects were, perhaps, most clearly addressed in the research program of the Child Study Center at Yale University. In the 1950s, various academic centers in the USA developed research projects that focused on mental health in infants, including institutes and universities in the cities of New Haven, Boston, New York, Denver, Chicago, and San Francisco.[69] Many of the projects had a multi-disciplinary orientation, included emmigré psychoanalytic practitioners, and sought to combine infant observation with psychoanalytic theory. The Yale Child Study Center under the

[68] Rene Spitz, "Film Materials (Psychogenic Diseases in Infancy)" n.d., M2139, RSP, AHAP. The papers allow reconstructing, to a limited extent. the production of the movies and the cases that Spitz had used. For example, they contain a shot list for three of Spitz' movies "Smiling Response" (1948), "Somatic Consequences of Emotional Starvation" (1948), and "Psychogenic Diseases in Infancy" (1952). Additionally, the papers contain sheets that show which original footage went into the production of which movies, showing considerable overlaps between all of Spitz's movies. The papers also show that the shots were made for various purposes and a contextual and narrative continuity only created in the movies. For example, various shots were made for testing psychological functions and validating psychological tests, such as the smiling response. In the movies, the shots were then partly used to illustrate happiness or suffering in a naturalistic observational context.

[69] Sally Provence, "History of Infant Mental Health Services and Studies at CSC" n.d., Box 1, SPP, YU.,"Ittleson Center for Child Research" 1954-1956, Box 10, Folder 251, MMP, YU. See also Geissmann and Geissmann-Chambon, *A History of Child Psychoanalysis*, 210–29.

leadership of Milton Senn was probably the biggest and most important hub for the development of naturalistic studies of early childhood, applying and further developing some of the propositions that Spitz and the Committee for Research in Infant Psychology proposed during and after the war.

The Center was founded in 1949 as a follower of Arnold Gesell's Yale Clinic of Child Development and continued developmental research in the tradition of the clinic, although under very different conditions and with important conceptual and methodological modifications. Trained in both pediatrics and psychology, Arnold Gesell started to conduct research on the development of infants in the 1910s and rose to fame in the interwar period. In the mid-20s he developed a specially-designed observational dome that allowed filming infants while performing simple experiments. On the basis of the cinematographic material, Gesell formulated a theory of the stage development in infants focusing on locomotor skills but also accounting for cognitive aspects. Gesell belonged to the so-called school of maturationist psychology that saw the development of skills as a natural succession of developmental milestones due to the maturation of the nervous system. His studies sought to establish norms for these milestones based on a detailed observation of behavior.[70] In 1949, when Gesell handed the Clinic over to the pediatrician Milton Senn, the theoretical landscape of infant development had, as we have seen, considerably changed. Maturationist and behaviorist approaches still circulated and would continue to do so throughout the following decades, but the rise of psychoanalysis promised new approaches to both early childhood development and psychopathology, focusing now on the question of how to understand the psychic processes in infants underneath their behavioral

[70] Arnold Gesell, *An Atlas of Infant Behavior: A Systematic Delineation of the Forms and Early Growth of Human Behavior Patterns* (New Haven: Yale University Press, 1934). On Gesell's cinematographic method: Scott Curtis, "'Tangible as Tissue': Arnold Gesell, Infant Behavior, and Film Analysis," Science in Context 24, no. 3 (2011): 417–42.

manifestations. This entailed, to use Rene Spitz's formula, an inquiry into the emotional climate of infants, largely read as an assessment of maternal care. The emphasis shifted from the establishment of norms in the laboratory to an investigation of mother-child relationships and infant development in a "naturalistic setting" by means of longitudinal and observational studies.[71]

It was under the directorship of Senn that the Child Study Center embarked on longterm longitudinal studies of infants and young children. On an institutional level, the initiative was part of a larger re-structuring of infant research at Yale University, made possible by new funding opportunities for research on children by the National Institute for Mental Health as well as private funding bodies (esp. the Commonwealth Fund), going along with a promotion of multi-disciplinary projects.[72] The Child Study Center was considerably extended, leading to the establishment of three main divisions: a laboratory nursery school, a child psychiatric unit, and the child developmental unit.[73] In 1949, Milton Senn appointed the psychoanalyst Ernst Kris to lead a multi-disciplinary team in an exploration of personality development in infants in both normal and pathological conditions by means of longterm longitudinal observational studies. The group included, among others, the psychologist and former assistant of Rene Spitz, Katherine Wolf, the pediatrician Sally Provence, the psychiatrist Samuel Ritvo, the psychoanalyst

[71] H. Hartmann and E. Kris, "The Genetic Approach in Psychoanalysis," *Psychoanalytic Study of the Child* 1 (1945): 11–30; E. Kris, "Notes on the Development and on Some Current Problems of Psychoanalytic Child Psychology," *Psychoanalytic Study of the Child* 5 (1950): 24–46; E. Kris, "Opening Remarks on Psychoanalytic Child Psychology," *Psychoanalytic Study of the Child* 6 (1951): 9–17; Fearnley, "Thinking about Methods," 58.

[72] S. Ritvo et al., "Some Relations of Constitution, Environment, and Personality as Observed in a Longitudinal Study of Child Development: Case Report," *Modern Perspectives in Child Development*, 1963, 107–143; Provence, "History of Infant Mental Health Services and Studies at CSC"; Fearnley, "Thinking about Methods."

[73] Norman Cameron, "A Report Prepared to the Provost's Committee on a Sampling of Research and Teaching Activities Now Going on in the Child Study Center at Yale University (CSC)" February 28, 1963, Box 1, SPP, YU.

Marianne Kris, as well as social workers and educators.[74] Rene Spitz, Heinz Hartmann, Sybille Escalona, and Anna Freud acted as scientific consultants.[75] The mission of the project was twofold: providing services to families and gaining knowledge through therapy and education; a concept that Ernst Kris called "action-research."

The idea of "action research" had been developed in social psychology and psychoanalysis already in the interwar period but obtained a particular articulation in the context of the research at Yale. Initially, it was used to characterize a combination of social work and procuration of data in the "field," as opposed to the laboratory of academic psychology. The psychologist Kurt Lewin characterized it, for instance, as "a comparative research on the conditions and effects of various forms of social action, and research leading to social action."[76] The Yale researchers preserved the emphasis on social action, but extended the concept to include clinical and therapeutic intervention, reinforcing the question of how to balance between involvement and detachment in psychological observation. For Ernst Kris, the question was primarily one of extending psychoanalytic wisdom to research in early childhood. He stressed, "psychoanalysis had grown up as action research […and] learned to investigate as part of the therapeutic procedure," taking the "own actions into account."[77] The "attitude of the psychoanalytically informed observer" was "decisively influence by the therapeutic and preventive intention." To be sure, this harbored dangers and "therapeutic and preventive enthusiasm tends to distort the observer's attitude," but Kris emphasized that, if controlled, the advantages outweighed the disadvantages, allowing studying children in the "richness of real life." This was especially

[74] Linda C. Mayes, "The Right Place (and Persons) at the Right Time," in *A Girl's Childhood : Psychological Development, Social Change, and the Yale Child Study Center*, ed. Linda C. Mayes and Stephen Lassonde (New Haven, CT: Yale University Press, 2014), 95–119.
[75] Provence, "History of Infant Mental Health Services and Studies at CSC."
[76] Kurt Lewin, "Action Research and Minority Problems," *Journal of Social Issues* 2, no. 4 (November 1, 1946): 35.
[77] Kris, "Opening Remarks on Psychoanalytic Child Psychology," 12.

important in infancy, where the environment played a crucial role for development.[78] Along Spitz's lines, Kris saw the way for an understanding of infant development in a combination of psychoanalytic theory and observational data. The longitudinal studies at the Child Study Center were to provide prototypes in checking "data gained by observation" against observations in "psychoanalytic treatment" in the same individual at a later date.

The approach was based on methodological propositions that Heinz Hartmann, Ernst Kris, Rene Spitz, and others had advanced in the late 1940s and early 1950s. Hartmann and Kris distinguished between "dynamic" and "genetic" approaches to the psyche. Again, at the center was the question of how to relate observational behavior to internal processes. According to Hartmann and Kris, "dynamic" propositions were concerned with "human behavior in a specific situation," while "genetic" ones investigated "the origin of this behavior," and had most completely been developed in "the psychoanalytic interview," reconstructing childhood experiences through retrospective introspection. Only genetic propositions could "make perceivable the drives that a behavior detail represents, their direction, their intensity and their structural interconnection."[79] The question was now how to assess early development, for which the "retrospective method" did not sufficiently take into account the interplay of "maturation" and "environment." In a similar fashion as Spitz, they concluded that "it is essential to supplement the data supplied by the psychoanalytic interview with data established by other observational methods," proposing a combination of "retrospective and prospective" methods, that is "psychoanalysis and observation of life histories."[80]

The Center ran several studies in the 1950s that followed the design proposed by Hartmann and Kris. The projects considerably overlapped in subjects, object of inquiry, and method. The most

[78] *Ibid.*, 11–12.
[79] Hartmann and Kris, "The Genetic Approach in Psychoanalysis," 11, 19.
[80] *Ibid.*, 26, 28.

ambitious one was the "Yale Longitudinal Study," which was conducted from 1951-59 and followed sixteen families from birth to adolescence. The assessments included prenatal interviews, weekly visits in a well-baby clinic, home visits, and, once the children were two years old, psychoanalytic interviews and, in some cases, therapy for both parents and children. During the visits various developmental tests were performed, and all observations were carefully noted and archived.[81] Several scholars have highlighted remarkable aspects of the projects. First, the sociopolitical setting of the project was innovative and geared toward social improvement in disadvantaged families, providing free psychological and medical services for the participating families. Both a socially engaged city administration and generous research funding in the post-war period facilitated the social reformatory mission and left the left-leaning practitioners much leeway.[82] Second, the study sought to systematically investigate the emotional and personality development in children from birth on. This required not only carful observation but also an effort to understand what was going on in the children, assessing their internal processes and giving voice to their feelings.[83]

While the study sought to explore childhood development from the neonatal period to school age, almost nothing was published about early infancy. The low rate of publishing had several reasons, including the longitudinal and open-ended design of the study and the sudden deceases of two of the leading practitioners: Katherine Wolf, who was heading the research group on early infancy, and Ernst Kris, who directed the entire project and coordinated research on pre-school age. However, in parallel and partly overlapping, two members of the study, the pediatrician

[81] Diane E. Kaplan, "Archiving the Records of the Longitudinal Study of the Child."
[82] David A. Carlson, "The Longitudinal Study and Its Setting," in *A Girl's Childhood : Psychological Development, Social Change, and the Yale Child Study Center*, ed. Linda C. Mayes and Stephen Lassonde (New Haven, CT: Yale University Press, 2014), 71–94; Mayes, "The Right Place (and Persons) at the Right Time."
[83] See above, and Mayes and Lassonde, *A Girl's Childhood.*

Sally Provence and Rose Lipton, conducted a five-year long research project on *Infants in Institutions* that largely drew on the same methods, while addressing a specific area of interest. A detailed report of the study was published in 1962.[84] Against the background of a growing literature on maternal deprivation and hospitalism, Provence and Lipton set out to obtain a clearer picture of "which aspects of family-rearing were important for child development." Underneath was the assumption that the categories of maternal deprivation and hospitalism were used too broadly, lacking a nuanced idea of the factors and aspects that conditioned the development of children. Drawing on Heinz Hartmann's distinction between constitutional, maturational, and environmental factors, Lipton and Provence combined various assessment methods to both investigate "the autonomous ego functions" and "gain important clues about the nature of a child's relationship to people, his areas of conflict, and some of the defensive maneuvers he is likely to employ."[85] The assessment methods included infant tests, notably the Gesell Developmental Test and the Hetzer-Wolf Baby Tests, physical exams, observations of infant behavior, and interviews in seventy-five infants and caregivers that were controlled with the same number of infants in private families, recruited from other research projects at the Child Study Center.

The report conveys a vivid idea on how the researchers at the Center integrated behavioral observation into analytic theory. In the descriptive part, the authors go into great detail in specifying the care for the babies and the reactions of the infants in routine activities, including feeding, bathing, changing of diapers, and sleeping. The overall focus is on a relative lack of stimulation and emotional contact in the institutions, introducing into the description an

[84] Rose W. Coleman Lipton and Sally Provence, *Infants in Institutions: A Comparison of Their Development with Family-Reared Infants during the First Year of Life* (New York, NY: International Universities Press, 1962), 9.
[85] *Ibid.*, 16–17.

evaluative stance. The most detailed observations concern the situation of feeding. While Provence and Lipton assert, for example, that "the institution carefully provided a diet for all infants that was nutritionally appropriate for physical growth," they note that "the staff was never large enough to provide anything more than a propped bottle for the infants under eight months of age. Thus, from the earliest weeks of life the institutionalized infant did not come to associate his state of discomfort arising out of hunger and the comfort derived from being fed with a human being, nor did he receive the wide variety of sensations associated with being held by his mother."[86] The report then further describes the conditions of feeding and the reactions of the babies, interweaving descriptive and interpretative elements. For example, feeding for infants younger than four months were given on a fixed schedule, six times daily, according to the institution's routine with "little chance for modification to meet an individual infant's needs […] The nipple was placed in his mouth and the bottle propped on a small pillow. The attendant worked quickly in order that the other seven to nine infants could be fed," experiencing "virtually no change in the quality or quantity of outside stimulation except for the presence of the nipple in the mouth."[87] In contrast, the "infant who is held for feedings by his mother has an enormously different experience and set of sensations […] he experiences a human contact, a social interchange with all the variety of both positive and negative emotions."[88] After highlighting the importance of these emotions for a "child's development" and "his learning about the world," the authors conclude their observation in asserting sensory and emotional deprivation in the institutional infants.[89] What Spitz set out to show - the importance of social interchange for the early emotional development in infants, had become part of the evaluative

[86] *Ibid.*, 31.
[87] *Ibid.,* 31–32.
[88] *Ibid.,* 33.
[89] *Ibid*., 40.

framework in Provence and Lipton's study. Their observations and discussions focused on "infant development as a dynamic, unfolding process based upon a complex set of interactions between the baby, with his unique characteristics, and his environment," and throughout the report the environment was evaluated in terms of maternal care.[90]

The discussion focuses on the consequences of the different experiences of maternal care on the ego and emotional development in the infants. For example, Provence and Lipton notice a difference in posture upon holding already during the second month, the institutional infants being comparatively flask and badly positioned. These "deficits" are also observed in other locomotor functions and the authors attribute them to a lack of a "stimulative learning environment." Subsequently, they translate these observations into psychoanalytic terms, speaking of "a delay or disturbance in bringing various aspects of the maturing congenital apparatus under the control of the ego."[91] The psychoanalytic perspective allowed integrating the data into a "genetic" view of libidinal and personality development, resolving a tension between sight and insight. It also linked developmental processes to an etiological thinking, providing sites for psychotherapeutic intervention:

> "An example of this is Jerry, who had from birth been a vigorous and active baby. He crept, stood, and walked well, and was generally agile. He became hyperactive in the last part of the first year and in the second. His overactivity was maximized in situations when his mother played with him in an exciting, stimulating way. His skill in the use of his body would deteriorate under the impact of scolding or punitive behavior from her,

[90] *Ibid.*, 18. Note that the authors explicitly state that maternal care is not synonymous with the mother, but with certain kinds of interactions and stimulations that babies receive in families but not in institutional settings. On the other hand, maternal care tends to be used both literally and metaphorically, especially in the conclusion of the study. Moreover, the conclusions are hypothetical and deliberately discuss the considerable differences between family-raised and institutionalized infants with regard to a specific kind of social interaction (i.e. maternal care). Cf. Vicedo, *The Nature and Nurture of Love*.

[91] Lipton and Provence, *Infants in Institutions*, 69.

> and this regression was accompanied by a heedlessness in regard to his own safety. From a large amount of data on Jerry and his family, it could be established that his motor behavior was strongly influenced by the way in which his parents used him as a recipient of their poorly controlled libidinal and aggressive impulses.[92]

Jerry received educational support in the nursery school of the Child Study Center and was analytically treated by Samuel Ritvo, who described an improvement of the child's condition at the age of five years.[93] As in Spitz's case, etiological and therapeutic perspective helped to bridge the tension between detached observation and affective involvement. The conditions of the institutionalized infants could be improved, but only on the basis of social and political change: The study concludes with a passionate call for institutional and societal reform, requiring modifications in "legal procedures […], greater numbers and better trained child-care workers, and a shift in cultural attitudes toward infants and children without families."[94]

Conclusion

The Child Study Center had become a leading center of infant research in the 1950s, exploring a broad set of psychiatric and psychological issues. These included the development of hospitalized children due to the medical diagnosis "failure to thrive", accidents, or surgery, developmental issues in children with inborn errors of metabolism, stress at birth, and of parents with severe psychiatric disorders, normal play in autistic children, as well as theoretical

[92] Lipton and Provence, *Infants in Institutions*, 58–59.
[93] Ritvo et al., "Some Relations of Constitution, Environment, and Personality as Observed in a Longitudinal Study of Child Development: Case Report."
[94] Lipton and Provence, *Infants in Institutions*, 166.

questions of psychoanalytic theory.[95] Next to research and service, the Center also developed a thriving teaching activity on both undergraduate and postgraduate levels, increasing the annual case load of students from one hundred in 1951 to five hundred in 1962, and training a considerable section of the next generation of infant researchers and child psychiatrists.[96] It had become part of a broader network of psychoanalytically oriented centers in child research that emerged during the 50s and 60s and advanced a therapeutic attitude towards early childhood. We will see in the subsequent chapters that some of the basic claims and approaches that were established at that time would remain embedded in infant psychiatry and research in the subsequent decades. These included the emphasis on the environment for the emotional development of the child, as well as an emphasis on the role of affect in both observation and therapy.

On the other hand, funding for research boomed and infant research diversified at the end of the decade, leading to the rise of competing approaches in an increasingly complex disciplinary landscape. One attack came from academic psychology that had considerably suffered from the psychoanalytic criticism in the 1940s and 50s. In the early 1960s, a discussion took place about the future of the Child Study Center that is telling for some of the conflicts and subsequent developments in the field. The discussion occurred against the background of an evaluation of the Center and included reports by the Director of the Center, Milton Senn, outside evaluations by two professors of psychiatry, George F. Mahl and Norman Cameron, as well as statements by the head of the psychology department, Claude Buxton, and the chair of the psychiatry department, F. C. Redlich. While the evaluations were mostly positive, emphasizing the quality

[95] Provence, "History of Infant Mental Health Services and Studies at CSC"; Milton Senn, "The Child Study Center at Yale" n.d., Box 1, SPP, YU; Cameron, "A Report Prepared to the Provost's Committee on a Sampling of Research and Teaching Activities Now Going on in the Child Study Center at Yale University (CSC)."

[96] Senn, "The Child Study Center at Yale."

of the work at the Center, the authors also criticized the low output of publications. Some of them carefully acknowledged various reasons, including the difficulty of conducting longitudinal studies, the clinical activities of the staff, and the early deaths of Kris and Wolf.[97] However, the chair of the psychology department, Claude Buxton took the low output up for a harsher criticism of the activities of the Center and a demand for an extension of developmental research to other departments. While praising the clinical and service-centered approach, he pointed out that such an approach left little time for basic research:

> "We note that the staff has a full patient load and little time can be allocated for analysis of data and writing up research reports […] Should there be so heavy an emphasis upon action research, or the action orientation, and upon community service? […] It seems to be a pertinent question […] whether the action orientation has shortcomings, in that it may lead to excessive attention to particular problems or emergencies with too small a proportion of time and energy into following up the implications that help to establish sound general principles. Furthermore, basic research often requires approaches and settings that do not necessarily correspond to those suitable for the solution of more practical problems. Thus there may be a certain incompatibility of aspirations if one and the same group of persons attempt to aim at both objectives simultaneously."[98]

To a considerable extent, Buxton's comment is related to the specific situation and institutional politics at Yale University. Yet, it is also a testimony for the development of the field of infant research during the 1950s and early 60s. Through the impact of psychoanalytic observational research, the field had considerably expanded, now including a variety of approaches, sub-

[97] Cameron, "A Report Prepared to the Provost's Committee on a Sampling of Research and Teaching Activities Now Going on in the Child Study Center at Yale University (CSC)"; F.C. Redlich, "Comments on Dr. Senn's Report about the Yale Child Study Center" n.d., Box 1, SPP, YU.
[98] Claude E. Buxton, "Yale Child Study Center: Issues and Queries" February 1963, 5–6, Box 1, SPP, YU.

disciplines, and opportunities for funding. While psychoanalytic approaches flourished, academic psychology turned away from the close union of therapy, affect, and observation to revive a tradition with closer ties to the psychological laboratory.[99] It did so, however, against a change in the object of study, directly growing out of preceding psychoanalytic efforts: the focus moved form the stage development of the individual infant to the caregiver-child relationship, going along with the emergence of new observational approaches. Empathetic observation with its close bounds to documentary realism would partly give way to microanalytic studies of interactive events, to which I will turn in the next chapter.

[99] Buxton: "There remain some undertones in Dr. Senn's document which suggest that the emphasis on the whole child and the totality the developmental process, which he defends with warmth and quotations, is possibly still a rallying cry for some who feel that other approaches (experimental, psychometric, or whatever) are inappropriate." *Ibid.,* 10.

Chapter Two

Towards An Interactive Infant: "Bad Mothers," Cybernetic Systems, and Microanalysis of Behavior (1950s-70s)

"Are you a guilty parent?" asked the John Hopkins' psychiatrist Jerome D. Frank in *Harper's Magazine* in April 1957, only to confirm, "If you are a parent at all, the answer is probably yes." This was not to say that guilt was a necessary result of parenthood, but that a "feeling of parental inadequacy and guilt" had become pervasive in contemporary America. For Frank, this was, in part, the fault of psychiatrists and child guidance experts, who presented "the child as if he were a piece of putty to be passively molded by Mom and Dad." Yet, Frank argued "raising a child is a two-way street in which the child, too, plays a part."[1]

Frank's call for a consideration of the active role of the young child in growing up was one voice among many others that asked for a widening of child psychiatric and psychological attention in the USA starting in the late 1950s. A new generation of practitioners from a range of disciplines, including psychiatry, pediatrics, and psychology, felt increasingly unsatisfied with what they perceived as an unidirectional focus on environmental and, especially, maternal effects on childhood development. Instead, they argued that there was an urgent need to understand the other side of the dyad, that is, the capacities of young children to actively mold relationships to their caregivers, already from the earliest age. Infant researches partly turned away from an investigation of institutional conditions to an exploration of the discrete ways and actions through which infants shaped social interaction, hence considering the young child, as a 1974

[1] Jerome D. Frank, "Are You a Guilty Parent?" *Harper's Magazine*, April 1957, 56–58.

textbook summarized, "*a source of* the formation, regulation, and indeed even the malevolent distortion of the caregiver's behavior".[2]

This chapter investigates the turn from the mother to the infant in child psychiatric and psychological research, showing how a view of the infant as a primordially interactive being emerged in observational research in the course of the 1960s. It is a story of gradual transformation rather than radical break. The new generation of practitioners did not necessarily consider a psychiatric focus on parenting as wrong, but argued that it did not sufficiently take into account the complex dynamics of dyadic interaction. Similarly, they shared many of the basic tenets of the psychoanalytic approaches that had marked child psychiatry since the late 1940s, yet sought to enhance them by drawing on recent trends and methods in laboratory research. In many instances, traditional and new approaches coexisted and only gradually shifted through interchanges and slight frictions.[3]

Still, the view of infancy significantly changed through the rise of interactional research: infants and neonates were no longer considered victims of their environments but endowed with remarkable social and communicative capacities. It was no easy task to show these capacities and I will argue that it depended on a considerable recalibration of scientific and medical vision. This recalibration took place on a micro-analytic level and proceeded in several steps over a period of three decades. *Figure 2.1* provides an example of the earliest efforts. The figure shows a frame from a 1965 research movie by the Stanford child psychologist Anneliese Korner (1918-2010). Korner revived cinematographic laboratory methods to explore how tiny and ephemeral

[2] Michael Lewis and Leonard A. Rosenblum, *The Effect of the Infant on Its Caregiver* (New York, NY: Wiley, 1974), ix, emphasis in original.

[3] The gradual character of change is of both historiographical and historical importance. It suggests that narratives that have been established for adult psychiatry and psychology ought to be considered with caution when it comes to the history of child, or, at least, infant psychiatry. The histories of the psychiatric and psychological revolutions of the 1960s and 70s, such as the demise of psychoanalysis, the rise of biological psychiatry, and the turn to cognitive psychology, thus appear less eruptive and clear cut.

behavioral cues, such as neonatal startles, head and limb movements, and clings of the eyes, were significant events in the behavior of newborns. To understand the role of infants in social interaction, Korner argued, one had to reconsider the kind of events that were judged significant in the mother-child relationship. Startles, head and arm movements, mouthing, sucking, and erections were no longer to be considered physiological or visceral noise on the path to maturation but significant cues for the assessment and measurement of an infant's personality and his individual styles of development.

To assess these styles required a different observational practice. It was less the close union between affect and observation that we encountered in psychoanalytic research in the 1950s than a more remote and distanced mode of infant observation that came to the fore in the 1960s. Korner's films exemplify some of the characteristics. From a lay perspective, they are boring to watch. For most of the time nothing happens. As in *Figure 2.1*, we see for hours and hours a neonate who is sleeping in an incubator, recorded by a motionless camera.[4] Almost automatically, tiny stirrings attract attention and become remarkable events. We will see that the micro-observational setting furthered the emergence of these events and rendered them amenable to analysis. In doing so, it also demanded a specific discipline in observational practice that hinges on a distance between the occurrence of the event in vivo and its observation and manipulation on the screen. This distance, I argue, helped practitioners to step out of the dynamics of dyadic interaction to re-center attention on the infant. The new focus on the infant was both political and observational.

[4] The original footage included 1000 feet for each baby, corresponding to a 5 hours period of observation. See Anneliese F. Korner and Rose Grobstein, "Individual Differences at Birth: Implications for Mother-Infant Relationship and Later Development," *Journal of the American Academy of Child Psychiatry* 6, no. 4 (1967): 676–90.

Finally, Korner's films are part of a longer story that included not only a change in observational practice but also, and closely related, the rise of new methods of coding and assessing infant behavior. A key development was the adoption of cybernetic and computational approaches into infant research that provided new tools for conceptualizing and operationalizing the caregiver-child relationship as a "homeostatic system" that depended on the mutual regulation of its components. These approaches drew on the cinematographic micro-analysis of behavior that Korner advanced but moved from behavioral cues to interactive patterns, and from an analysis of the infant in isolation to one of the dyad as an interactive system. As in the case of Korner's films, at the center was the question of how tiny and ephemeral units of behavior translated into a macroscopic functioning of the mother-child relationship. Beginning in the mid-1960s, practitioners started developing systems and classifications for coding dyadic interaction that could then be integrated into an analysis of rhythms and patterns of interaction. It was this research that would ultimately pave the way for a change in both theoretical perspective and clinical practice in the subsequent decades.

The chapter is divided into six sections. The first section focuses on the critique of mother-blaming that emerged among infant health practitioners in the late 1950s and 60s. In contrast to former accounts that focused on criticisms from the outside the medical profession, I show that an important and increasingly influential group of practitioners at the intersection of child psychiatry, development psychology, and pediatrics voiced early on a vivid criticism of an unidirectional focus on the mother. The second section contextualizes these practitioners in contemporary disciplinary changes in medicine and psychology. It also gives some background on the roots and developments that led to a micro-observational focus on early infancy in the 1960s. The third section looks in detail on the work of Anneliese Korner, situating it at the

intersections of old and new traditions in psychoanalysis and developmental psychology. The fourth section explores how infant research further evolved under the influence of cybernetic approaches. The infant became increasingly considered as an active participant in mother-child interaction, considered as a system. This led to changing observational approaches for assessing and analyzing mother-child interaction in the late 1960s and 1970s, which I will show in sections five and six with the examples of the early research projects of the child psychiatrist Daniel Stern and the pediatrician Berry T. Brazelton, respectively.

From Mother-Blaming to Infant Observation

The role of maternal care for mental health had become a publicly staged issue in the post-war period, not least due to the efforts of psychoanalytic reformers to draw attention to the importance of "mother-love" for early childhood development.[5] In this context, some practitioners, such as Dr. Edward Strecker, a former president of the American Psychiatric Association, made inadequate mothering responsible for almost all mental and social ills, ranging from schizophrenia to the demise of American democracy. In 1945, Strecker drew on Philip Wylie's bestselling book, *Generation of Vipers* (1945), to warn against "moms," a term with which he denoted "confused, selfish, and psychologically 'bad' mothers." The danger of mom, Strecker explained, "is neatly camouflaged by a nice social exterior, perhaps successfully concealing her one deadly, all-absorbing purpose of life - the emotional satisfaction, almost repletion, that she derives from keeping her children paddling about feebly in a kind of

[5] See *Chapter One*; Marga Vicedo, *The Nature and Nurture of Love* (Chicago: University of Chicago Press, 2013); Kathleen W. Jones, *Taming the Troublesome Child: American Families, Child Guidance, and the Limits of Psychiatric Authority* (Cambridge, MA: Harvard University Press, 1999); and Anne Harrington, "Mother Love and Mental Illness: An Emotional History," *Osiris* 31, no. 1 (July 1, 2016): 94–115.

psychological amniotic fluid instead of letting them swim away from her with the bold and decisive strokes of emotional maturity." "Immature, selfish 'moms'" made children dependent on them, hindered emotional maturation, and thus produced "sons and daughters who usually are not capable of making more than an indifferent economic return and almost always are incapable of more than a futile social gesture."[6] Strecker's warnings dovetailed with broader concerns about military performance and masculinity in post-war America and spread throughout both public and professional discourse.[7] To a considerable extent, it also reflected daily routine in child psychiatric and pediatric practice of the late 1940s, in which, as the historian Kathleen W. Jones put it, "'mal de mere' became an idee fixe in the corpus of child guidance, explaining both the misconduct of the younger generation and their serious mental illnesses."[8]

The rise of "mal de mere" or "mother-blaming" is usually told as a story of psychoanalysis gone wrong. The initial focus on mothering and family life was well intended. It grew out of a positive interest in the psychology of women by analysts such as Helene Deutsch, Anna Freud, and Melanie Klein, and was taken up in child guidance clinics in the interwar period to provide emotional support for families. Yet, the story goes, in the postwar period, the hegemony of psychoanalytic thinking furthered, if not caused, an almost exclusive linking of the etiology of mental pathology to dysfunctional mother-child relationships, giving rise to conceptions such as the overprotective, the rejecting, the domineering, the ambivalent, or the schizophrenogenic mother. Resistance had to come from the outside and included new scientific findings, the invention of pharmacological treatments for psychoses, criticisms from feminism, the effects of

[6] Edward A. Strecker, "Psychiatry Speaks to Democracy," *Mental Hygiene* 20 (1945): 595–96, 604–5; also cited in Jones, *Taming the Troublesome Child*; and Harrington, "Mother Love and Mental Illness."
[7] On the reception of Strecker see Rebecca Jo Plant, *Mom : The Transformation of Motherhood in Modern America.* (Chicago, IL: University of Chicago Press, 2010).
[8] Jones, *Taming the Troublesome Child*, 213.

deinstitutionalization, and, as Kathleen Jones and Anne Harrington have pointed out, resistance from mothers, beginning in the late 1960s and early 1970s.[9]

However, it is important to note that a criticism of the medical focus on bad mothering developed not only from without but, to a considerable extent, also from within medical practice. Starting in the mid-1950s, a new generation of infant researchers and medical practitioners closely involved in family care and interested in behavioral and psychological aspects of pediatrics asked for a closer look at the infant.[10] Many of these practitioners were trained in psychoanalysis. Although they were not always personally acquainted, they shared common professional networks and were loosely connected through conferences and clinical and scientific meetings. While they did not necessarily stay outside of ideas of "overprotective" parenting, they argued that these words had to be used with caution and urged clinical observation to take into account the individuality of the infant and the changing nature of each specific mother-infant relationship. The above-cited statement of Jerome D. Frank is one example, but there are others, voiced first during conferences and later in both professional and trade publications.

For instance, during a 1956 symposium on "Psychological Aspects in the Care of Infants and Children," the pediatrician and member of the Yale Child Study Center, Sally Provence (1917-1993), noted a recent "tendency to characterize a mother as 'warm', 'cold', 'rejecting' and so on, in relationship to her child." While Provence acknowledged the utility of some of these terms "for purposes of [professional] communication," she emphasized, "parental attitudes towards an

[9] Jones, *Taming the Troublesome Child*; Harrington, "Mother Love and Mental Illness"; Janet Sayers, *Mothers of Psychoanalysis: Helene Deutsch, Karen Horney, Anna Freud, and Melanie Klein* (New York, NY: W.W. Norton, 1991).

[10] On the broader context of psychosocial pediatrics see Sydney A. Halpern, *American Pediatrics : The Social Dynamics of Professionalism, 1880-1980.* (Berkeley: University of California Press, 1988), 128–48.

individual child are not fixed, static, or rigid. They are continuously influenced by the child's growth and development and by other events in the life of the family." What was needed, Provence argued, was an approach that took into account the infant's individuality, starting right from birth: "Newborns differ in the way their homeostatic mechanisms function, in their activity and vigor, in their sensitivities and the processes through which they become aware of the world. Sources of pleasure, tempo and rhythm of body functions, such as sleep, movement, digestion, etc. and organ-system vulnerability differ at birth." For Provence these differences had implications for both childcare and clinical practice. They made "recipes of child care-advice worthless" and asked for an individualized approach to problems of parenting and childhood development that took into account the "interrelationships between the infant's physical and psychological apparatus and the mothering process."[11]

Some initiatives in medical education pointed in the same direction. Thus, Barbara M. Korsch, pediatrician at Cornell University, presented at the symposium a pilot project at a well-baby clinic of the New York City Health Department. The project was meant to train residents in restraining from value judgments about mother-child relationships, and, instead, drawing on the resources that families offered. Korsch suggested several "principles of advising" in minor behavioral problems in children that included "utilizing the mother's own ideas and resources" and "preventing the doctor's prejudices and feelings from blocking observations." Residents were trained in direct observation and interview techniques that aimed at working against the tendency "to identify with the child against the mother" and towards orienting "the physician about the mother's needs so that he can take into account both the child and the mother."[12]

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[11] Sally Provence, "The Mother-Infant Relationship and Infant Development in Conference Transcript of the Twenty-First Ross Pediatric Research Conference on Psychologic Aspects in the Care of Infants and Children" 1956, 16–17, Box 50, Folder 1, TBBP, FCLM.

[12] Barbara M. Korsch, "Experiences of the 'Attitude Study Project' in Conference Transcript of the

The presentations at the symposium were mostly geared towards clinical practice and cautious in tone. While it is difficult to gauge their immediate impact, they indicate a slow change in attitude among a group of health practitioners, working at the intersection of pediatrics, child psychiatry, and psychology, that would gain momentum towards the end of the decade, becoming explicitly linked to new perspectives and methods in infant research.

New Trends in Infant Research

It was a clear indication that changes were underway that the inaugural issue of the official journal of the American Academy for Child Psychiatry was dedicated to a symposium on infancy and early childhood that had taken place in 1960. The journal came into being after a long effort at instituting child psychiatry as a medical discipline in its own right, going back to the 1930s but taking clearer shape only in the post-war period. The field's main professional organization, the Academy for Child Psychiatry, was founded in 1953, and formal medical certification introduced in 1959. The journal of the Academy followed in 1962 and the chosen topic of early childhood for the first issue was no accident.[13] Child Psychiatry partly drew its disciplinary justification from a re-conceptualization of childhood as a period that needed a significantly different approach than adult psychiatry. Infancy provided one fertile ground for pointing to its distinctiveness and highlighting the importance of "observations in child development" for "the

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Twenty-First Ross Pediatric Research Conference on Psychologic Aspects in the Care of Infants and Children", 1956, 42–43, Box 50, Folder 1, TBBP, FCLM.

[13] American Academy of Child Psychiatry, "The History of the American Academy of Child Psychiatry," *Journal of the American Academy of Child Psychiatry* 1, no. 1 (January 1, 1962): 196–202.

training of child psychiatrists," as the organizer of the symposium Eleanor Pavenstedt (1903-1993) noted.[14]

Pavenstedt's appeal to child development referred to the close union between psychoanalytic research and child psychiatric practice that had emerged over the preceding decade. Pavenstedt's own trajectory was exemplary. Born in New York City, Pavenstedt obtained her medical degree and psychiatric training in Switzerland. Upon her return in the USA in the mid-1930s, she served as child psychiatrist in an outpatient clinic at Massachusetts General Hospital in Boston and underwent analytic training with the well-known emigré psychoanalysts Hans Sachs and Helene Deutsch at the Boston Institute of Psychoanalysis. Subsequently, Pavenstedt worked as training analyst at the Psychoanalytic Institute and professor of child psychiatry at Boston University School of Medicine, all the while continuing her clinical responsibilities in outpatient work.[15] In tune with the contemporary emphasis on institutional reform, her scientific work explored the impact of environmental factors, such as institutionalization and socioeconomic status, on early childhood development and the effectiveness of early intervention programs for developmental outcomes.[16]

The symposium clearly inscribed itself into both the union of psychoanalysis and child psychiatry that had been forged in the preceding decade and a growing awareness of the importance of early childhood development for mental health across disciplines. The organizers

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[14] Eleanor Pavenstedt, "Opening Comments," *Journal of the American Academy of Child Psychiatry* 1, no. 1 (January 1, 1962): 140.

[15] Marilyn Bailey Ogilvie and Joy Dorothy Harvey, *The Biographical Dictionary of Women in Science: L-Z* (Taylor & Francis, 2000), 992.

[16] E.g. Eleanor Pavenstedt et al., "Is Trying Enough? A Report of Treatment during the Latency Period of a Girl with Atypical Development: Workshop, 1954," *American Journal of Orthopsychiatry* 25, no. 2 (April 1955): 398–427; Eleanor Pavenstedt, "A Child Guidance Service in a Municipal Hospital," *Children* 10, no. 6 (November 1, 1963): 207; Eleanor Pavenstedt, "A Comparison of the Child-Rearing Environment of Upper-Lower and Very Low-Lower Class Families," *American Journal of Orthopsychiatry* 35, no. 1 (January 1965): 89–98.

took care that "all those who participated" had "a thorough grasp of psychoanalytic concepts and hypothesis" and could thus appreciate the clinical tradition of the new medical specialty. This seemed especially important since child psychiatry had mostly "developed in community clinics" and thus engaged with "clinical material […], which lend itself poorly to research."[17] Pavenstedt stressed that it was an urgent need to systemize and conceptualize knowledge within the discipline and the soaring field of infant research provided one potential venue.

Accordingly, the purpose of both symposium and publication was less to monopolize the age group for the nascent specialty than to draw the attention of child psychiatrists to an emergent sub-field of observational research.[18] Indeed, the contributors included pediatricians, psychologists, and psychiatrists, and some of the statements had an almost programmatic character, asking for new theoretical and methodological approaches to the relationship between infant and environment. For example, the pediatrician T. Berry Brazelton (1918-2018), at that time fellow in the child psychiatric department at the Children's Hospital in Boston, called for new observational methods to evaluate "the infant's influence on the kind of environmental stimuli with which he will be presented, as well as his ability to receive and utilize these stimuli for future personality development."[19] Likewise, his colleague, the child psychiatrist Louis W. Sander (1918-2012), interpreted results from a longitudinal study of mother-child relationship in the light of recent interactional research. Importantly, Brazelton and Sander joined other participants in arguing for an exploration of the dynamics between mother and infant in terms of "negotiation" rather than simply environmental influences.[20]

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[17] Eleanor Pavenstedt, "Introduction to the Symposium on Research in Infancy and Early Childhood," *Journal of the American Academy of Child Psychiatry* 1, no. 1 (January 1, 1962): 5–6.
[18] Pavenstedt, "Introduction to the Symposium on Research in Infancy and Early Childhood."
[19] T. Berry Brazelton, "Observations of the Neonate," *Journal of the American Academy of Child Psychiatry* 1, no. 1 (January 1, 1962): 39.
[20] Louis W. Sander, "Issues in Early Mother-Child Interaction," *Journal of the American Academy of*

Embedded in the emphasis on negotiation and the infant's influence on the environment was an argument about the role of primary care in a changing social and medical landscape that came not only from child psychiatry but also from pediatrics. As the historian Syndey Halpern has pointed out, pediatrics had been in a process of increasing professional differentiation since the first third of the twentieth century. This not only widened the gap between education and general pediatric practice but also made primary care a special field in its own right. In the 1950s, these factors contributed to a movement for psychosocial pediatrics that demanded a greater focus on behavioral and psychosocial problems in adolescents and children and closer ties between pediatrics, child psychology, and child psychiatry.[21] Brazelton was an active proponent in this movement, arguing for the need of a stronger pediatric training in normal child development and parental advice since the early 1950s. According to Brazelton, family structure had been undergoing important changes. With the dissolution of multi-generational families, many young mothers were "deprived of a chance to be reliant on their own mothers" and the pediatrician increasingly occupied the role of the extended family in child-rearing advice and support.[22] To be sure, medical practitioners had been active in mental health advice for children and infants for decades, but Brazelton and other practitioners argued that the empirical basis upon which this advice had relied was weak, if existent at all. What were needed were a re-orientation of research from the mother and the environment to the infant and methods for assessing the capacities that an individual infant brought into social relationships. The question was not simply about the availability of data but also about how infancy was scientifically and medically approached.[23]

Child Psychiatry 1, no. 1 (January 1, 1962): 141–66.

[21] Sydney A. Halpern, *American Pediatrics*, 128–48.

[22] T. B. Brazelton, "Psychologic Aspects in the Care of Infants and Children in Conference Transcript of the Twenty-First Ross Pediatric Research Conference on Psychologic Aspects in the Care of Infants and Children" March 1956, 60, Box 50, Folder 1, TBBP, FCLM.

[23] See T. Berry Brazelton, "Psychological Aspects of Pediatrics" 1952, Box 51, Folder 5, TBBP, FCLM;

Anneliese Korner: Micro-Observation of Neonates

Still, the question remained of what a new approach might look like and how the infant's influence on his environment could be scientifically assessed and clinically exploited. Anneliese Korner's cinematographic research project in the 1960s was an early attempt at addressing some of these questions. Her work is of special interest since it provides a window on how a new vision of infancy was progressively articulated in psychoanalytically informed observational research and allows us to explore some of the larger epistemic changes that went along with this new vision.

Anneliese Korner was born in a German-Jewish family in Munich (Germany) in 1918 and fled to Switzerland in the early 1930s after the rise of National Socialism. After graduating from high school, she studied child psychology with Jean Piaget in Geneva, before following the diaspora of Jewish intellectuals to the USA in 1940. Overseas, she conducted a PhD in psychology at Columbia University, where she was a classmate of Sybille Escalona, a later leading scholar on child development at the Einstein College at Columbia University and a participant at the above-mentioned symposium on infancy and early childhood.[24] Korner subsequently underwent psychoanalytic training, and eventually joined a new force of post-war clinical psychologists, first at the University of Chicago Medical School and then at the Mount Zion Psychiatric Clinic in San Francisco.[25] After several years of clinical work, she obtained a small research grant to

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Brazelton, "Psychologic Aspects in the Care of Infants and Children"; Steven Maron, Interview with T. Berry Brazelton, February 19, 1997, Pediatric History Center, American Academy of Pediatrics.

[24] On relationship between Escalona and Korner, see Sibylle K. Escalona to Anneliese F. Korner, March 20, 1961, Box 9, Folder 19, AKKP, SMHP; Anneliese F. Korner to Sibylle K. Escalona, February 13, 1961, Box 9, Folder 19, AKKP, SMHP; Sibylle K. Escalona to Anneliese F. Korner, March 4, 1965, Box 9, Folder 19, AKKP, SMHP; Anneliese F. Korner to Sibylle K. Escalona, March 10, 1965, Box 9, Folder 19, AKKP, SMHP.

[25] Anneliese F. Korner, "Vitae", ca. 1960, Box 1, Folder 2, AKKP, SMHC; Michelle Brandt, "Anneliese

explore infant research at Harvard University in 1961, where she got into contact with leadings scholars of the field, including Pavenstedt, Sanders, and the child psychiatrist Peter Wolff at the Judge Baker Guidance Center.[26] Familiar with clinical practice, contemporary developmental psychology, and psychoanalysis, Korner was in a prime position when she applied in the following year for a major grant from the Institute for Child Health and Human Development to initiate her study of individual differences in newborns at David Hamburg's department of child psychiatry at Stanford University.[27]

When Korner embarked on her research, she was deeply engaged in the contemporary critique of "parent" or "mother-blaming." In a 1961 article in the journal *Social Casework,* Korner explained that "mental hygiene research and clinical practice had accumulated an increasing body of evidence that pointed to the tremendous influence of the parents' personality and child rearing techniques on the child's development." While Korner saw this principally as a good development, she critically observed that, "as a consequence, many parents have become self-conscious and unsure about themselves," considering "themselves the sole cause of their child's problems." Alarmingly, experts in psychiatry, psychology, and social work had played a pivotal role in creating this "'new syndrome' which one might call 'the parent takes the blame'" due to an oversimplified application of "psychiatric clichés" to the mother-child relationship.[28] Just as

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Korner, Stanford Expert on Neurodevelopment of Premature Babies, Dies at 91," *Standford Medicine News Center*, March 16, 2010, accessed August 20, 2016, http://med.stanford.edu/news/all-news/2010/03/anneliese-korner-stanford-expert-on-neurodevelopment-of-premature-babies-dies-at-91.html. On postwar clinical psychology see Ingrid G. Farreras, "Early History of Clinical Psychology (1896-1949)," in *APA Handbook of Clinical Psychology: Roots and Branches*, ed. John C. Norcross et al. (Washington, DC: American Psychological Association, 2016), 3–18; Joy D. Osofsky, "Infant Mental Health," in *APA Handbook of Clinical Psychology: Roots and Branches*, ed. John C. Norcross et al. (Washington, DC, US: American Psychological Association, 2016), 43–58.

[26] Anneliese F. Korner, "Application for Research Grant to NIH" 1961, Box 1, Folder 30, AKKP, SMHP; Anneliese F. Korner, "Progress Report, Small Grant M-5980" 1962, Box 1, Folder 30, AKKP, SMHP.

[27] Anneliese F. Korner, "Application for Research Grant No. HD 00835-01" November 4, 1963, Box 1, Folder 32, AKKP, SMHP.

[28] Anneliese F. Korner, "The Parent Takes the Blame," *Social Casework* XLII, no. 7 (July 1961): 339,

Brazelton had, Korner saw this not just as a problem of health care training and practice but also of scientific data. What was missing in both research and practice was an appraisal of the "individual differences among children." Advice and care had to take into account, she urged, the particularities and mental capacities of each individual infant, allowing for an informed view of the mother-child relationship, which she described, like Frank, as a "two-way street."[29] Korner approached the problem in studying neonates in isolation immediately after birth, thus looking for behavioral characteristics before the influence of the environment. Her theoretical approach was based on a growing body of psychoanalytic literature that focused on variations in the primary endowment of infants. From a psychoanalytic perspective, a consideration of innate differences in ego function was not necessarily new. As Korner pointed out, Sigmund Freud had already mentioned "that 'each individual ego is endowed from the beginning with its own peculiar dispositions and tendencies'," a statement on which Heinz Hartmann expanded in the 1950s to argue that "individual differences in the primary ego apparatuses" were linked "to later choice of defense and by implication to choice of illness." However, Korner pointed out that a systematic exploration of the "significance of primary ego and drive endowment for later development" was still missing, contributing to the ill-guided advice in child rearing and an insufficient understanding of the etiology of mental illness. In both cases, Korner reasoned, "genetic differences in the biological sense may help create genetic differences in the psychoanalytic sense." As much as a response of a mother to her child may depend on the infant's individual temperament, a particular difficulty may be due to "innate ego and drive variations" rather than, for example, "unresolved maturational tasks."[30] For example, if an infant

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341.

[29] Korner, "The Parent Takes the Blame," 342. On research see: Anneliese F. Korner, "Mother-Child Interaction: One- or Two-Way Street?" *Social Work* 10, no. 3 (1965): 47–51.

[30] A. F. Korner, "Some Hypotheses Regarding the Significance of Individual Differences at Birth for

was hyperactive, was this due to a bursting activity type, or because he was dealing with a neurotic conflict such as a "frantic fear of passivity and of castration anxiety"? While neurotic conflicts might be related to problems of parenting, a clear etiological statement asked for a better evaluation and understanding of innate variations in personality type and "style of development."[31]

The observational question was now how to measure and classify different styles of development. In this context Korner drew attention to discrete variables at birth, such as alertness, reaction to external stimuli, sensory responsiveness, and preference of certain organ zones for libidinal discharges (e.g. amount of penile directions or mouthing) that may allow defining formal characteristics of behavior and activity. Former research had already stressed the importance of some of these variables for child development. For example, Korner derived her analysis of the role of organ zones in mouthing from both theories of the Yale psychoanalyst Erik Erikson and empirical studies of Peter Wolff. According to Erikson, newborn babies are not only disposed towards various organ zones (oral, anal, genital) but also towards different modes for the discharge of drive tensions. For instance, oral discharge could be incorporative, retentive, eliminative, or intrusive, which Korner translated into the more accessible terms of sucking, chewing, drooling, and spitting.[32] Drawing on Peter Wolff's observations of individual differences in erogenous zones, Korner proposed to use cinematographic inquiry to first establish specific modes in individual babies, investigate the extent to which they became generalized as motor patterns, and, eventually, explore whether they proved stable over the time of

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Later Development," *Psychoanalytic Study of the Child* 19 (1964): 58–59. See also H. Hartmann and E. Kris, "The Genetic Approach in Psychoanalysis," *Psychoanalytic Study of the Child* 1 (1945): 11–30, and Chapter 1.

[31] Korner, "Some Hypotheses Regarding the Significance of Individual Differences at Birth for Later Development," 60, 62.

[32] Erik H. Erikson, *Childhood and Society* (New York: W. W. Norton, 1993), 62–96; Korner, "Some Hypotheses Regarding the Significance of Individual Differences at Birth for Later Development."

development.[33] The basic idea was that seemingly random micro-events would form patterns that demarcate individual styles of development. These styles of development would then be formative for the evolving relationship dynamics of the individual baby and her mother. Korner's hypothesis of styles of development allowed her not only to reframe the dynamics between mother and baby, but also to shift the setting from the naturalistic observation that dominated psychoanalytic infant research of the former decade to the more controlled conditions that characterized the laboratory of developmental research. Observation took no longer focused on the evolution of an infant's psyche under given environmental conditions, but on the visible behavior of a neonate in a carefully arranged experimental setting. In this context, Korner gradually came to see cinematography as a crucial method for making both events and patterns visible and quantifiable. Initially she planned to only rely on note taking as was common in observational protocols at that time. However, "after some preliminary observations it became clear that filming the babies would be a far more efficient method of recording data than direct observation." Her choice of Stanford was partly due to the fact that the university had a large department of photography and could thus provide help for the design and construction of Korner's observational set-up.[34]

The advantages of cinematography for Korner's project were manifold and consequential. Scoring could be realized more reliably, be repeated at will, and the record could be used "for demonstration and teaching purposes." Most importantly, it allowed Korner to handle the complexity of the observational task. Her assessment included 22 variables, ranging from the reactions of babies to sound and light to the amounts of urination and defecation as well as the

[33] Korner, "Application for Research Grant No. HD 00835-01," 1963.
[34] Anneliese F. Korner to John C. McDougall, "Korner to McDougall," September 4, 1964, 1, Box 1, Folder 33, AKKP, SMHP.

number of startles, smiles, and movements.[35] The use of film allowed "rating one variable at a time rather then all at once." "Frequencies and sequences of behavior" could thus "be accurately recorded." Given that she assumed that these frequencies and sequences were constitutive of the "style of development," Korner concluded, "films, more than any other recording technique will capture stylistic aspects of the baby's behavior, which may continue and be observable in longitudinal follow-up."[36]

Indeed, to borrow the words of the film scholar Scott Curtis, the formal features of the technology fitted into Korner's larger research agenda.[37] A close reading of her archival documents allows reconstructing how her micro-analytic study enabled her to make a larger argument about the role of the infant in social relationships. For example, the assessment of "Baby Girl 3" involved various steps. It started with a narrative description of parents and the development of the baby until the time of observation at an age of 65 hours. Baby 3 was born on May 9, 1965. She was a full term, healthy neonate and the parents agreed on having the girl filmed during the third postnatal day. While the father, himself a physician, was in the beginning skeptic of the study, he consented after a detailed description of methodology and aims. Since he had also recently purchased a movie camera, he was especially curious about the set-up, and was granted permission to get a copy of his daughter's filmic record. The set-up was comparatively simple. The camera was installed above the infant's incubator and connected to a timer, which randomly switched the camera on and off over the five hour observational period. For analysis, the film was then viewed several times by two independent observers and the events were counted over the period of observation. Additionally, a single observer recorded the behavior of the baby on a spreadsheet. The hand-recorded variables were global and singular, and often

[35] Anneliese F. Korner, "Records of Baby 3" ca 1965, 3, Box 1, Folder 28, AKKP, SMHP.
[36] Korner to McDougall, "Korner to McDougall," 1–2.
[37] Scott Curtis, "Science Lessons," *Film History* 25, no. 1–2 (2013): 45–54.

binary: whether there was a reaction to sound or not, and whether there was urination or not. In contrast, the role of the moving images was to record those events that escaped the attention of the observer. For example, in the recording for *Figure 2.1*, Baby Girl 3 is slightly curling the lips and, at the same time, moving one hand and one leg, and opening the eyes. For Korner's analysis, these elements were important: the mouthing was a mode of oral discharge, the movement of hands, legs, and eyelids indicated a specific state, and the direction of the movement of the hand in relationship to the mouth fueled an analysis of pleasure. Since these events occurred at the same time and in intervals of milliseconds, capturing required viewing the films several times in slow motion and noting quantity, context, and quality for each individual frame on a running sheet.[38]

At the same time, the repeated viewing of the film and the notation of the events had a magnifying effect: discrete events became first noticeable and then merged into patterns. The accidental event became part of a behavioral morphology that Korner subsequently extended to an analysis of temperament and to a discussion of long-term implications.[39] For example, she noticed "markedly different distributions in ego and drive endowment" in Babies 9 and 15: "Baby Boy 15 had a great many penile erections all the way through the nine-hour observation period," which were "coupled with other indications that he might be more heavily endowed on the instinctual than the ego side." Korner contrasted this behavior to "Baby Boy 9," who had no single erection during the period and "was an expert and sustained thumb and fist sucker, and he was capable, unlike most neonates, to coordinate both his hands to his mouth," while frequently

[38] Korner, "Records of Baby 3."

[39] See Korner and Grobstein, "Individual Differences at Birth: Implications for Mother-Infant Relationship and Later Development"; Annelises F. Korner, Bernadine Chuck, and Soula Dontchos, "Organismic Determinants of Spontaneous Oral Behavior in Neonates," *Child Development* 39, no. 4 (1968): 1145; Anneliese F. Korner, "Neonatal Startles, Smiles, Erections, and Reflex Sucks as Related to State, Sex, and Individuality," *Child Development* 40, no. 4 (1969): 1039–53.

refusing a "sterile nipple." Although Korner granted that it was difficult to generalize on the basis of these observations, she highlighted that these differences may express themselves in later organ preferences for libidinal discharges and ego development such as the time of the renouncement of "the sway of the pleasure principle." Moreover, they may also influence the relationship to the mother, depending on her position toward instinctual and mastery strivings: "Baby 15 may engender pride, alarm, awe or aversion, while Baby 9 may please his mother with his skills or disappoint her for depriving her of gratifying him."[40]

The filmic record made the discrete variables visible, not so much because reflex smiles, alertness, and penile erections had not been seen before, but because the film allowed systematically recording them over a prolonged period of time. It thus provided a way to easily measure frequency and sequence of discrete behaviors that would otherwise pass unnoticed, and to test, upon this basis, for self-consistency over time. On a formal level, the motion pictures thus met the requirements of the observational approach: their temporal malleability, the possibility to review them over and over again and to compare different moments in time, facilitated counting and scoring, and helped to demarcate "styles" underneath behavioral noise.[41] At the same time, the record allowed conveying meaning to events that were formerly mostly considered random and thus constituted the basis upon which to articulate an argument about the role of the infant in social relationships. It magnified behavioral variables through the very process of visualizing, seeing, and re-seeing, be it the frequent mouthing of Baby Girl 3 or the many penile erections of Baby Boy 15. The serendipitous event became a regular event and part of a behavioral

[40] Korner and Grobstein, "Individual Differences at Birth: Implications for Mother-Infant Relationship and Later Development," 685–87.

[41] On film form: Curtis, "Science Lessons"; Scott Curtis, "'Tangible as Tissue': Arnold Gesell, Infant Behavior, and Film Analysis," *Science in Context* 24, no. 3 (2011): 417–42; Scott Curtis, *The Shape of Spectatorship: Art, Science, and Early Cinema in Germany* (New York, NY: Columbia University Press, 2015).

morphology. Korner could thus postulate in 1967, "it is not only the mother's conscious and unconscious attitudes, her style, and her child-rearing practices which may shape the mother-infant relationship, but also the infant's own maturational rates, his particular styles of perceiving, and experiencing, and what these evoke in maternal response."[42]

Cybernetics Systems and Sound-Film Analysis

Korner's research films occupied a transitional position. Even though Korner made a case for a re-consideration of behavior and individuality in newborns that would have an afterlife in infant research, her focus on event recording of the infant in isolation remained, to a considerable extent, in the technical and theoretical frame of traditional approaches in developmental psychology. Towards the end of the 1960s, infant researchers at various centers argued for a widening of the frame: from the infant to the infant-in-interaction and from the recording of events to the recording of patterns. An important impetus came from research in the human and social sciences that conceptualized behavior in terms of feedback mechanisms and homeostatic systems. This line of thinking emerged through a series of multidisciplinary meetings, sponsored by the Josiah Macy Jr. Foundation, from 1946 to 1953 that eventually came to be known as cybernetic conferences. The conferences attracted considerable public attention and were attended by leading scholars from the human and the social sciences, many of them with an interest in child development. Participants included, among others, the anthropologists Margaret Mead and Gregory Bateson, the psychoanalysts Lawrence S. Kubie and Erik Erikson, the

[42] Korner and Grobstein, "Individual Differences at Birth: Implications for Mother-Infant Relationship and Later Development," 677.

psychologist Kurt Lewin, and the linguist Roman Jacobson.[43] In the course of the 1960s, various approaches developed out of cybernetic propositions that had an immediate impact on research on mother-infant interaction. To understand the implications of these approaches for the later development of infant research, it is important to have a notion of the history of cybernetics and I will give here a short summary.

The neologism "cybernetics" was coined from the Greek word for steersman by the MIT mathematician Norbert Wiener in his 1947 book, *Cybernetics or control and communication in the animal and the machine,* to denote a "field of control and communication theory" that considered both machines and living organisms as self-regulating mechanisms that relied on the emission and reception of internal and external messages.[44] Central was a model of circular causality in which a message had, through feedback, an impact not only on its recipient but also on its sender. Wiener gives the example of picking up a pencil that relies on a progressive use of muscles both consciously and unconsciously: "To perform an action in such a manner, there must be a report to the nervous system, conscious or unconscious, of the amount by which we have failed to pick up the pencil at each instant. If we have our eye on the pencil this report may be visual, at least in part, but its is more generally kinesthetic, or to use a term now in vogue, proprioceptive." Voluntary actions, Wiener pointed out, thus depended on a system of circular feedback: "The central nervous system no longer appears as a self-contained organ, receiving inputs form the senses and discharging into the muscles. On the contrary, some of its most characteristic activities are explicable only as circular processes, emerging from the nervous system into the muscles, and re-entering the nervous system through the sense organs, whether they be proprioceptors or organs of the special senses." Importantly, Wiener argued that

[43] Steve J. Heims, *The Cybernetics Group* (Cambridge, MA: MIT Press, 1991).
[44] Norbert Wiener, *Cybernetics or Control and Communication in the Animal and the Machine* (Cambridge, MA: MIT Press, 2000), 11.

feedback in biology was comparable and analyzable in similar terms as feedback in engineering, thus locating "an essential unity" in "a set of problems centering about communication, control, and statistical mechanics, whether in the machine or in living tissue."[45]

The vision of an essential unity between human and nonhuman systems was intimately linked to the origins of cybernetics in research on servomechanisms and anti-aircraft gunnery during the Second World War. In the early 1940s, Wiener was involved in efforts to compute and design devices that characterized and predicted the position of hostile aircrafts and could be incorporated into weapons. One of the main challenges of the endeavor was the question of how to calculate the human factors, i.e. the pilot's influence on the course of the aircraft and the gun-pointer's influence on the direction of the gun. Wiener and his small group realized that there was a remarkable self-consistency in an individual's behavior under stress, allowing conceptualizing both man and machine as one self-controlled organism and opening the problem to statistical calculation. Wiener summarized in 1947:

> "I had become engaged in the study of a mechanico-electrical system which was designed to usurp a specifically human function - in the first case, the execution of a complicated pattern of computation, and in the second, the forecasting of the future. In this second case, we should not avoid the discussion of the performance of certain human functions. In the fire-control apparatus, it is true, the original impulse to point comes in directly by radar, but in the more usual case, there is a human gun-pointer or a gun-trainer or both coupled into the fire-control system, and acting as an essential part of it. It is essential to know their characteristics, in order to incorporate them mathematically into the machines they control."[46]

[45] *Ibid.*, 7, 9, 11.
[46] *Ibid.*, 6.

The wartime roots of cybernetics are not trivial. As the historian Peter Galison has pointed out, in the post-war period Wiener increasingly reduced the difference between human intentionality and self-regulation of machines, advancing an understanding of human intentions "as none other than self-correcting black-box entities", thus ultimately referring back to the servomechanisms of the battlefield.[47] To be sure, Wiener's propositions were far from uncontroversial and cybernetic research (including Wiener's own) moved away from military interests. The question of how to understand the human through the machine and the machine through the human finds a continuation in military-sponsored infant research until today, raising uncomfortable questions about the vision of infancy and the human being that is advanced in these approaches.[48]

For the development of infant research in the 1960s, the most important work that grew out of the cybernetic conferences concerned the microanalysis of interpersonal communication. The work developed within the span of a decade in an interdisciplinary research group that met for the first time in November 1955 at the Center for Advanced Study in the Behavioral Sciences at Stanford University and included the anthropologists Gregory Bateson, Alfred L. Kroeber and Ray Birdwhistell, the linguists Norman A. McQuown and Charles F. Hockett, and the psychiatrists Frieda Fromm-Reichmann and Henry W. Brosin. The team published the results of their collaboration in 1971 under the title "The Natural History of the Interview." The basic issue that animated the group and directly grew out of cybernetic research was the question of how to

[47] Peter Galison, "The Ontology of the Enemy: Norbert Wiener and the Cybernetic Vision," *Critical Inquiry* 21, no. 1 (1994): 264.

[48] One example is recent research on facial recognition with Active Appearance Models that promise both an understanding of emotional expressions in infants and software development for market research and the military. See: Daniel S. Messinger et al., "Automated Measurement of Facial Expression in Infant-Mother Interaction: A Pilot Study," *Infancy : The Official Journal of the International Society on Infant Studies* 14, no. 3 (2009): 285–305; S. Baker, I. Matthews, and J. Schneider, "Automatic Construction of Active Appearance Models as an Image Coding Problem," *IEEE Transactions on Pattern Analysis and Machine Intelligence* 26, no. 10 (2004): 1380–84; Fernando De la Torre et al., "IntraFace," *IEEE International Conference on Automatic Face & Gesture Recognition and Workshops* 1 (May 2015).

understand the relationship between three frames of human communication: Language, paralanguage, and body-motion. Their approach relied on the psychoanalytically informed premise that only a small part of human interaction took place on a conscious level, but they shifted the emphasis from an inquiry into mental processes to an analysis of perception and communication. Gregory Bateson explained: "We are interested in such questions as 'what signals are emitted and what orders of awareness does the signaler show by emitting other signals about these signals? Can he plan them? Can he recall them?' And we are interested to know what signals reach the receiver and what signals he knows he has received." To answer these questions, Bateson further reasoned, required taking into account how "every detail of word, vocalizations, and bodily movement" played "its part in determining the ongoing stream of words and bodily movements which is the interchange between the persons."[49] Human interaction relied on the reception and the emission of both verbal and non-verbal messages as well as on the feedback that a person obtained to his messages. The bulk of the work of the team consisted in developing both a theoretical framework and a methodology for analyzing the rules that characterized this human communicative system of feedback in both normal and pathological interchanges. Their methodology heavily relied on the microanalysis of sound film. In practice, the group was divided in three teams, based on different centers and working on different aspects of communication. Birdwhistell directed a team at the Eastern Pennsylvania State Psychiatric Institute that focused "on the description of body motion and the macro-structure of interactional behavior"; Brosin headed a team at the Western Pennsylvania State Psychiatric Institute that worked on "details of body motion and their correlation with clinical history" as well as "on the creation of adequate machinery for the efficient manipulation of

[49] Norman A. McQuown and Gregory Bateson, *The Natural History of an Interview* (Chicago, IL: University of Chicago Library, 1971), 9.

sound film material"; and, McQuown directed the third team in the department of Anthropology at the University of Chicago that concentrated on "the analysis and recording of speech and on the pulling together of all the materials bearing on the analysis of the family-film materials."[50] The groups also trained individual researchers in filmic microanalysis and independently published papers on various aspects of interactional analysis.

Of immediate importance for contemporary infant research were two publications by W. S. Condon and W. D. Ogston, who were members of the group at the Western Pennsylvania State Psychiatric Institute, entitled "Sound Film Analysis and Pathological Behavioral Patterns" and "A Segmentation of Behavior." The guiding questions of both papers were how the temporal stream of human behavior could be divided into meaningful units for behavioral analysis and whether such an analysis could help revealing interactive patterns in normal and pathological behavior. While the first paper presented an example for the utility of sound film micro-analysis in a psychiatric setting, the second articulated the approach in greater detail. For "A Segmentation of Behavior," Condon and Ogston filmed the interaction in a family during dinner, including mother, father and a four-year-old son. Based on a repeated viewing of the films with a time-motion analyzer, Condon and Ogston argued that interactive behavior could be divided into "process units" that were characterized by rhythmic temporal patterns. From an observational point of view, they described these patterns as "an ongoing flow of 'moments-of-sustaining-together' of body parts": "The diverse body parts - eyes, mouth, trunk, head, arms, fingers etc. - tend to change and sustain direction of movement together. If one body part moves or changes direction of movement, it does so concomitantly and in concert with the other body parts moving at that time."[51] Ogston and Condon emphasized the spatial-temporal basis for human behavior:

[50] *Ibid.*, 2.
[51] W. S. Condon and W. D. Ogston, "A Segmentation of Behavior," *Journal of Psychiatric Research* 5,

"Behavior, to reemphasize, occurs as patterns of 'whiles'; a person speaks connecting segments of sound, 'while' eyes and brows move, 'while' arms, hands and fingers move, 'while' the other person or persons move. Behavior *is* what they all are 'while' they occur."[52] It was, again, the temporal malleability of sound-film that allowed to capture the "whiles" and integrate them into a behavioral context:

> "The use of sound motion picture to record human interaction provides a way of storing the visual and verbal aspects of that behavior and permits a re-viewing as often as desired. These re-viewings permit a search for the natural usages and regularities within that process. The discovery in patterns leads, in time, to the clarification of unit identities within the process. The system itself, instead of an informant, provides the contrasts that permit decisions."[53]

The authors thus discovered a surprising synchrony on two levels. First, they noted a "self-synchrony" between speech and movement in their subjects: "The organization of change of a speaker's body motion occurs synchronously with the articulated segmental organization of his speech. The body dances in time with speech."[54] More importantly, they described an "interactional synchrony" between the mother's speech and the movements of husband and child: "The father and son were found to share patterns of bodily changes in a precise harmony with the mother as she spoke. These changes occurred in both in relationship to the mother at exactly the same frame (l/24 of a second). All three sustained directions of change across syllable and word length segments of speech and changed together at the same l/24 of a second that these segments ended, to again sustain directions of movement together across the next ensuing

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no. 3 (1967): 224.
[52] *Ibid.*, 225.
[53] *Ibid.*, 223.
[54] *Ibid.*, 225.

segment… Metaphorically, the three interactants looked like puppets being moved by the same set of strings."[55]

Daniel Stern: From Micro-Observation to Pattern Recording

For infant observers, the kinesic framework and the corresponding microanalytic methodology promised to provide a solution for the troubling question of how to objectify the dynamics of infant-mother interaction and allowed to extend observation to the interactional process itself. Towards the end of the 1960s, several practitioners were working on experimental setups that applied movement analysis to the preverbal age. Although many of the efforts tended to be individual, if not ideosyncratic, they reflect larger trends that would progressively lead to the rise of both a new field of research and a corresponding vision of infancy. An early example is the work of the child psychiatrist Daniel Stern (1934-2012). Stern became increasingly interested in infant development during his residency in psychiatry at the Einstein College of Columbia University in the mid-1960s, where he studied with Sybille Escalona. After finishing his residency, he became a fellow at the Psychoanalytic Research Institute in New York, seeking ways to approach infant behavior scientifically. Against the background of an increasingly common use of television for educational purposes, Stern recalls: "I happened to have available then a series of TV tapes that had been taken at the hospital of schizophrenic mothers feeding their babies. The babies were under a year and I just started to look at them, and I spent maybe six months just looking at them, over and over again, a whole bunch of them." To systemize his interest in infant behavior, he went into training with the experimental psychologists Howard Hunt, John Gibbon, and Don Hutchins to apply behavioral analysis to the images on the screen,

[55] *Ibid.*, 229.

directly drawing on Ogston and Condon's propositions for a micro-analysis of behavior.[56] He first published his results in his 1971 study "A Micro-Analysis of Mother-Infant Interaction" that would become a corner stone for the development of infant mental health in the following years. In the paper, Stern highlighted the importance of recent studies on the relationship between mother and infant, but criticized that these studies still remained on the level of generalization. The question was not simply whether interaction was important but to determine "which interactive events affect which emerging infant social behavior […]: Unless we know the specific maternal and infant behaviors involved, we remain at a level of generalization which is no longer fruitful."[57] Like Korner, he was concerned with discrete aspects in infantile behavior, but it was not the startle or head movement as such that was important but its concrete meaning in mother-child interaction.

To decipher these meanings, Stern proposed to combine clinical impression with the interactional microscopy that had been advanced by cybernetic research. His first major study focused on a mother with two three-and-a-half months old twins. Stern had observed different behavioral dynamics with each twin. While the mother had a clinically normal relationship with one of the twins, she showed an "overstimulating," "insensitive," or "controlling" behavior with the other. With this focus on controlling behavior, Stern worked within the problematic of "mother-blaming," but was searching for the reasons not in the mother but the micro-dynamics of interaction. Adopting Condon and Ogston's micro-analytic technique, he filmed the exchanges between infants and mother at home with a portable television camera at 24 frames per second on first a weekly, later a biweekly and finally a monthly basis from the age of 3 to 15

[56] Daniel N. Stern, Reminiscences of Daniel N. Stern, 1982, 1–20, IDP, CCOHA.
[57] Daniel N. Stern, "A Micro-Analysis of Mother-Infant Interaction: Behavior Regulating Social Contact between a Mother and Her 3 1/2-Month-Old Twins," *Journal of the American Academy of Child Psychiatry* 10, no. 3 (July 1971): 501.

months. The reasoning behind the long follow-up was to see whether the dynamics remained stable or changed over time. Selected tapes were then kinescoped and analyzed with a hand-operated movie viewer that allowed to "manipulate speed and size of any motion" as well as "to go back and forth over any number of frames."[58] Sound was equally recorded but Stern considered it irrelevant for the behavioral dynamics after further analysis without elaborating in detail the reasons. Rather, he focused on the visual system and face-to-face interaction, due to its "obvious importance in regulating the social behavior."[59] The outgoing hypothesis was that the number and amount of face-to-face contact corresponded to the differences in behavior dynamics. Furthermore, Stern was interested in the cues that initiated and terminated contact. The analysis moved on a scale of split seconds. Stern highlighted that 3½ months old infants "turn their heads rapidly and often"; in the case of the twins, an average of 1.73/sec. and 1.34/sec, respectively, going up to 3/sec. with greater activity. While Stern initially assumed that these tiny movements were without importance, unless they altered the dyadic face position,

> "[…] in the course of repeated viewing of the short film segments, frame-by-frame, [he] noticed a striking and unexpected temporal relatedness between individual infant head movements and the ongoing maternal movements. […] Split-second infant head turns away from the mother occurred predominantly when she was approaching the infant, and head turns toward the mother occurred with her withdrawals from the infants' visual field."[60]

As in Korner's case, the filmic analysis had a magnifying effect. However, tiny movements became not only visible but also gained meaning in social interaction.

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[58] *Ibid.*, 504–5.
[59] *Ibid.*, 502.
[60] *Ibid.*, 508–9.

Figure 2.2 shows a drawing from Stern's film, illustrating the micro-dynamics of mother-infant interaction over an interval of 0.333 seconds. Stern called the rhythmic relationship between the infant's head movements and the movements of the mother a "mutual approach-withdrawal pattern", and drew on the same metaphorical description as Condon and Ogston in comparing it to a dance or a "waltz." He argued that interaction was patterned and that this pattern depended on both mother and infant: "It is […] a mutual interactive event - an event in which specific infant and maternal behaviors together produce repetitive sequences." "Over-stimulation," Stern concluded, depended on both members of the mother-infant dyad.[61]

T. Berry Brazelton: From Reciprocity to Rule-Learning

At the same time during which Stern developed his televisual analysis of interactive patters in New York City, T. Berry Brazelton sought both organizational and methodological pathways to promote his vision of psychosocial and developmental pediatrics in Boston. He did so with indefatigable energy, advancing scientific research, clinical training, and public advocacy on several levels and in various capacities. Since the early 1960s, Brazelton was part of an informal group of practitioners from both the East and the West Coast who regularly met at the porch of his house in Cape Cod to discuss matters of infant mental health, ranging from contemporary research to politics. The group included Sally Provence, the social worker and child psychoanalyst Selma Fraiberg (1918-1981), the child psychiatrist Reginald S. Lourie (1908-1988), the Chief of the newly established National Institute of Child Health and Human Development, Leon Yarrow (1921-1982), and, later, the child psychiatrist Stanley Greenspan (1941-2010). United in dissatisfaction with contemporary approaches, the practitioners looked

[61] *Ibid.*, 501, 508, 513.

for ways to institute an interest in interactive babies throughout the country. Their efforts eventually contributed to the establishment of the National Center for Clinical Infant Programs, the predecessor of Zero-to-Three, in the 1970s, developing the first diagnostic manual for psychiatric disorders in early childhood in the 1980s, topics I will further discuss in the third and fourth chapters.[62]

Next to these institutional efforts, Brazelton turned to psychology to develop methods for a systematic study of social interaction in infants. In the late 1960s, he undertook a fellowship at Harvard University's Center of Cognitive Studies, studying with the psychologist Jerome Bruner (1915-2016). Bruner belonged to the leaders of the "cognitive revolution" in the 1950s and extended his research to infants in the mid- and late-1960s.[63] According to Brazelton, Bruner got turned on "like a beacon" when Brazelton showed him what he could do with newborns. Burner asked him to come over to the Center and help developing approaches to the social capacities of infants.[64] For Brazelton, this provided an opportunity to underpin his clinical interests with systematic studies, even though the change was not free from personal conflict, itself telling of the gap between the clinical reality of infant care and the rise of recent trends in developmental research that Brazelton sought to bridge:

> "The real challenge in my ability to be a researcher came when I went to work with Jerome Bruner at Harvard and he offered me a job - he needed to learn about babies… I

[62] T. Berry Brazelton, interview by Felix Rietmann, October 30, 2016, and April 13, 2017.
[63] "Center for Cognitive Studies: Annual Reports 1967-1969" 1969 1967, HUF 265.161.4, CCS, HUA; Jerome S. Bruner, "Center for Cognitive Studies: Annual Report 1970-71" 1971, HUG 4242.54, JBP, HUA; Jerome S. Bruner, "Report of Research, 1968-71" 1971, HUG 4242.54, JBP, HUA; Jerome S. Bruner, "Final Report, 1965-71" 1971, HUG 4242.54, JBP, HUA. On the cognitive revolution and cybernetics see Howard Gardner, *The Mind's New Science : A History of the Cognitive Revolution* (New York, NY: Basic Books, 1985). On Burner's Center see Jamie N. Cohen-Cole, *The Open Mind: Cold War Politics and the Sciences of Human Nature* (Chicago, IL: The University of Chicago Press, 2014).
[64] T. Berry Brazelton, Interview with T. Berry Brazelton, interview by Milton Senn, May 25, 1978, 21, American Child Guidance Clinic and Child Psychiatry Movement interview collection, National Library of Medicine.

> really learned rigor when I was over there. I nearly had a breakdown, I was so upset by it, but in the process I went back into analysis and re-organized… It was a new world and here I was in my '40s by then, and I felt, good Lord, I should know everything, but I could see that their rigor was a window into recording and looking at things that I cared about that I had just never been exposed to. Whatever all of the insights I had gotten from psychiatry could be really rigorously looked at if you take the rigor of their research techniques and applied them in the even excitings of process oriented stuff that they were into in child psychiatry and pediatrics."[65]

Research techniques would, indeed, become pivotal for showing how the infant actively participated in social interaction. As the historian Jamie Cohen-Cole has pointed out, the research at Bruner's Center was marked by multi-disciplinary and methodological exchange.[66] The labs heavily drew on cinematographic methods and designed a special seat that allowed to film infants during prolonged experiments (*Figure 2.3*). The seat allowed performing experiments with and filming infants, while maintaining them in a comfortable position. The research was less concerned with pathology than with normal development. The teams focused on the acquisition of manual skills, the processing of information, and the development of linguistic and communicative capacities in early childhood. In this context, T. Berry Brazelton worked in a group that investigated social communication in early infancy.[67] Similar to Daniel Stern, Brazelton's team was concerned with "non-specific patterns" of communication, particularly the "rhythmic, cyclic quality of mother-infant interactional behavior."[68]

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[65] 1978 Interview with Brazelton by Milton Senn.
[66] Cohen-Cole, *The Open Mind*.
[67] Jerome S. Bruner, *Processes of Cognitive Growth* (Worcester, MA.: Clark University Press, 1968).
[68] T. Berry Brazelton, Barbara Koslowski, and Mary Main, "The Origins of Reciprocity: The Early Mother-Infant Interaction," in *The Effect of the Infant on Its Caregiver*, ed. Michael Lewis and Leonard A. Rosenblum (New York: Wiley, 1974), 49.

The group published its findings in an edited volume in 1974, entitled "The Effect of the Infant on Its Caregiver." The volume included, among others, papers by Selma Fraiberg, Anneliese Korner, and Daniel Stern, contributing to a growing psychological and medical literature that now considered the infant as the source of the behavioral regulation.[69] Most of the studies employed filmic analysis to investigate the meanings of subtle events in the dynamics of mother-infant interaction. Brazelton's paper was particularly concerned with interaction in early infancy, at an age of 2 to 20 postnatal weeks. The study explored reciprocity in five dyads with cinematographic methods. The first two weeks of observation took place at home, and, from week four on, infant and mother visited the lab on a weekly basis and the team filmed the dyads at each visit during 60 seconds of undisturbed interaction. The set-up was rather complicated, including Bruner's infant seat and a mirror construction that allowed to capture mother and infant in the same frame without them seeing mirrors or camera. The films were subsequently analyzed with "Gesell's stop-frame cinamanalytic techniques of behaviors" and a "qualitative assessment of movement patterns", using models from cybernetics and kinesics.[70]

The researchers combined these two approaches to embed behavioral events in the dynamic flow of interaction over time. Similarly to Korner and Stern, they focused on micro-events during visual interaction such as smiling, laughing, intent and dull looking, leaning forward and back, crying, yawning, and tonguing. Initially, they sought to rely on coding of the behaviors, but soon they "felt that this record of 37 coded variables did not adequately describe the interaction" and added detailed narrative accounts, partly to better accommodate dynamic changes of behavior over time. Their findings were similar to Daniel Stern's but extended his "mutual-approach withdrawal pattern" to a much earlier age. They argued that as early as 2 to 3 weeks, one could

[69] Lewis and Rosenblum, *The Effect of the Infant on Its Caregiver*.
[70] Brazelton, Koslowski, and Main, "The Origins of Reciprocity," 69.

observe constant cycles of attention and nonattention in dyadic interaction. The filmed dyads exhibited in average 4,4 of these cycles in a minute's interaction and they included typical segments from initiation and orientation to a gradual peak of excitement, ending with deceleration and withdrawal.

According to Brazelton et al., the elements that characterized these segments were subtle but visible in stop-frame analysis. For example, an infant may initiate a cycle in looking back at his mum with dull eyes, slowly pedaling his extremities toward her. As she responds to his looking at her, his face may become more alert and his eyes may brighten "with fleeting smiles, grimaces, and vocalizations." His movements may get jerkier, his body may twist, and he may spit up. At the peak of excitement, he may exhibit high-pitched activity of his arms and limbs, intensively look at his mum, or bring his hand to the mouth to suck. The latter may also lead to deceleration and subsequent withdrawal. Deliberately putting their results in cybernetic terms, the researchers hypothesized that these cycles represented a homeostatic mechanism expressing "the immature organism's capacity to attend to messages in a communication system."[71] Furthermore, they argued that the nature and rhythm of the cycles depended on the individual relationship of the mother with the child and changed over time. While "mothers were 'programmed' to seek *attention* from their infants," they may exhibit different sensitivities the infant's cues and develop different interactional styles. According to the authors, the rules of these styles had to be learnt and re-learnt with each developmental step of the infant. Failure to do so could lead to pathologies in the relationship. The etiologies and diagnoses of these pathologies were complex. Contrasting their findings to earlier studies that established "failures of mothering" on the basis of "classical event recording," they pointed out that the subtle interactive events of the mother-infant dyad changed with the interactive context in which they

[71] *Ibid.*, 56, 60.

were occurring. Adequate care for infants, they concluded, required a diagnostic system for recording and analyzing mother-infant interaction that took into account the individual interactive rules over time.[72]

Conclusion

By the time Brazelton's group published its findings, the scientific framework for understanding infants had considerably changed. It was no longer the potentially "toxic" influences of a mother on her offspring that constituted the focus of attention, but the capacities of the infant to actively shape his social environment. Publications increasingly replaced "mother" by "caregiver," begun to explore the role of the father in dyadic interaction, and, most importantly, argued that the infant had to be taken into consideration in the evaluation of relationship problems.[73] Although "mother-blaming" had not completely died out, it was under considerable attack in both the public and the professional arena. This chapter has explored how this attack was articulated in observational research in the course of the 1960s. I have argued that it depended not only on political arguments but also, and closely connected, on a reconfiguration of scientific vision. To understand the mother-child relationship differently required a new way of seeing it and a different mode of infant observation. This new mode was slowly negotiated between the late 1950s and the early 1970s: Anneliese Korner's cinematographic micro-analysis provided an example for how practitioners built a bridge between psychoanalytic theory and the

[72] *Ibid.*, 69, 68, emphasis in the original.
[73] On the role of the father see e.g. M. E. Lamb, "Fathers: Forgotten Contributors to Child Development," *Human Development* 18, no. 4 (January 1, 1975): 245–66; Michael E. Lamb, "The Development of Mother-Infant and Father-Infant Attachments in the Second Year of Life," *Developmental Psychology* 13, no. 6 (1977): 637–48. Also 1973 conference on the "Role of the Father in Child Rearing", Box 40, Folder 27, TBBP, FCLM.

developmental laboratory in drawing attention to the importance of discrete behavioral cues in the mother-child relationship; cybernetic research furnished both methodological and conceptual tools for further analyzing these cues as crucial signals in social feedback; the adoption of these tools in infant research by Daniel Stern, T. Berry Brazelton, and others, finally allowed practitioners not only to explain but also to show - on film - how dyadic interaction functioned as a mutually regulated homeostatic system. The shift from environmental influences to interactional dynamics corresponded to a transition from naturalistic observation to laboratory exploration, from a focus on internal conflicts to an emphasis on their external manifestations, and from affective involvement to analytic distance in the observational process. We will see in the next chapter that this distance not only provided an epistemic stance for scientific work but would also become a powerful clinical instrument in the nascent field of infant mental health in the 1970s and 1980s.

Chapter Three

Creating a Subspecialty: Scales, Interactions, and Video Assessments (1970s-1980s)

"I feel so strongly that the neonate shapes his environment around him that I am sure we could mobilize a whole culture if we could present them with exciting, demanding neonates."[1] When the pediatrician T. Berry Brazelton was writing about the argumentative power of interacting neonates to a colleague in 1972, his efforts to "mobilize a whole culture" were already well advanced. He had just received generous funding from the Carnegie Corporation of New York to establish the Child Development Unit at Boston's Children's Hospital.[2] The Unit was meant as both a center for research on infancy and a site for raising a "new breed of academic pediatricians who, in addition to competence in prevention and treatment of somatic disease, will have a solid grasp of the field of child development."[3]

This chapter traces the history of the Child Development Unit from its pioneering years in the early 1970s to its height of success in the 1980s. The program at the Unit provides a window on broad and consequential changes in the scientific and clinical landscape of early childhood. It was founded with the ambitious aim of firmly anchoring the interactive vision of infancy that had been articulated over the preceding decade in scientific and clinical practice.[4] The task was

[1] Brazelton to Coursin, November 30, 1972, Box 40, Folder 26, TBBP, FCLM.
[2] On the establishment of the Child Development Unit see "Program for the Training of Clinical Scholars in Child Development" 1971, Box 487, Folder 2, CCNY, CUA; B. Brazelton to Charles A. Janeway, July 26, 1971, Box 40, Folder 26, TBBP, FCLM; Charles A. Janeway and Julius B. Richmond to Margaret Mahoney, January 10, 1972, Box 40, Folder 25, TBBP, FCLM; "Carnegie Program for the Training of Clinical Scholars in Child Development: Progress Report, July, 1972 - June, 1973" 1973, Box 39, Folder 32, TBBP, FCLM.
[3] "Carnegie Program for the Training of Clinical Scholars in Child Development: Progress Report, July, 1972 - June, 1973," 1.
[4] On the interactive view of infancy see *Chapter Two*.

no longer to only show that infants possessed considerable communicative and social capacities, but more importantly to develop, transmit, and spread the tools and skills for assessing, recognizing, and clinically exploiting these capacities. It was not simply a question of conducting research, but also of developing and standardizing assessment methods, training practitioners, promoting a nationwide network of researchers and clinicians, and drawing public attention to the interactive capacities of babies. The Child Development Unit was on the forefront of many of these efforts on both national and international levels. Its graduates progressively populated newly founded clinical and scientific centers for early childhood development across the country, its tools spread in psychological research and clinical practice around the world, and its theoretical approach set much of the paradigm of infant research and care for the last third of the twentieth century.[5]

The successful articulation and spread of the new vision of infancy relied on a change in technologies and practices of observation.[6] *Figure 3.1* provides a key example, showing the set-up of one of the main assessment instruments at the Child Development Unit, the Face-to-Face Paradigm. The Paradigm grew out of the work that T. Berry Brazelton and the psychologist Edward Tronick conducted at Jerome Bruner's lab in the late 1960s, consciously putting an adult - mostly, but not exclusively, the mother - and an infant into a position that demanded intensive social interaction. While the early experiments relied on a cinematographic registration of

[5] See also *Chapter Four* and *Conclusion*.

[6] There were a number of social and cultural trends working in the background. To name just a few, these included changes in family patterns, partly due to an increased entrance of women in the workforce; changes in cultural values in the wake of the counterculture of the 1960s; new priorities in research funding and structures of care; as well as developments in media and communication technologies. In fact, Brazelton's team was able to activate many of these forces. For example, the Unit obtained its explicit justification from a direct appeal to contemporary societal changes, and its research and training program aimed at addressing shifting demands in primary care that came from both families and practitioners. On changes in family patterns and the entrance of women into the workforce, see Judith Walzer Leavitt, *Make Room for Daddy: The Journey from Waiting Room to Birthing Room* (Chapel Hill, NC: University of North Carolina Press, 2009), 268.

mother-infant interaction, the research setting that emerged in the 1970s made use of newly available video technology. Video allowed immediately transmitting parallel images of adult and infant on a split screen, thus making directly visible and readable the dynamics of dyadic interplay. The set-up changed the analytic process and the viewing experience for the scientific observer: the cumbersome development of film was replaced by a direct replay of a magnetic tape, the framing extended from the dyad in one frame to the dyad in two frames, and the reading could partly be processed by a computer, not relying anymore on a manual analysis alone. We will see that these changes had important consequences. The video set-up materialized, made directly perceivable and thus helped to further articulate the interactive and communicative vision of infancy. It allowed seeing and therapeutically accessing the mutual reciprocity between infant and caregiver that was increasingly considered the most salient characteristic of social interaction at the earliest age. The ability of video to synchronize images and sounds in the viewing experience co-conditioned the emergence of synchrony as a pivotal analytic for the infant-caregiver relationship. It also contained the promise of extending interactive analysis to a variety of scientific and medical settings. Clinical fellows and parents successively joined the ranks of infant observers. Seeing babies in interaction became as much a means for training the perception of researchers and clinicians as it served as an interface for parents to see their children in a new way.

While the Face-to-Face Paradigm addressed audiovisual observation, the second major assessment tool at the Unit, the Brazelton Neonatal Behavioral Assessment Scale, additionally appealed to the manual skills of physically examining infants. The Scale was designed as a clinical instrument to assess interactive capacities in the physical checkup of newborns right after birth. Both tools, I argue, functioned as technologies of perception, as tools that allowed

practitioners and parents to reconfigure their sensual impressions of and remodel their attitudes towards infants.[7] The two levels, the manual and the representational, are important since they provide an explanation for how the assessment instruments worked at the Unit and why they worked so well in the contemporary field of early childhood development. They point to an intricate relationship between observational technology, theoretical perspective, and clinical and scientific practice. The program relied on the assumption and realization that, to effectively change clinical habits, physicians had to incorporate an evaluation of psychological functioning into their daily practices of observing, listing, touching, and manipulating infants; and that, to reform scientific experimentation, researchers had to modify their ways of seeing, coding, and analyzing caregiver-infant interaction. To change 'a whole culture,' the Unit had to transmit "a new way of looking at infants," as the psychologist Elizabeth M. Fox cunningly put it in a review of its early history.[8]

The five sections of this chapter explore how the Child Development Unit managed to transmit this new way of looking. The first section contextualizes the foundation of the Unit in the contemporary disciplinary landscape of pediatrics and child psychiatry and shows how it was connected to larger trends in infant research and care. The second and third sections investigate the development of the two main assessment tools at the Unit: The Brazelton Neonatal

[7] I am introducing the concept of technologies or techniques of perception to address an intermediary level between scientific and clinical practices and, what Michel Foucault called, technologies of the self. As Daston and Galison have pointed out, scientific practices, such as scribbling into a notebook, also function as techniques of the self: they are formative for certain ways of being and prescriptive of how science should be done. One question that animates this chapter is then how this formation and prescription worked in the specific context of infant research in the 1970s and 80s. The broader historiographical point is that an answer benefits from going beyond "scientific sight" and taking into consideration various modes of perception as well as their technological mediations. See Michel Foucault et al., *Technologies of the Self: A Seminar with Michel Foucault* (Amherst, MA: University of Massachusetts Press, 1988); Lorraine Daston and Peter Galison, *Objectivity* (New York, NY: Zone Books, 2007), esp. 35-42.

[8] "Carnegie Program for the Training of Clinical Scholars in Child Development: Progress Report, July, 1974 - June, 1975" 1975, 75, Box 39, Folder 36, TBBP, FCLM.

Assessment Scale and the Face-to-Face Paradigm. An detailed analysis of the design and the use of the Neonatal Scale will show us how the Unit aimed at retraining the nerves and muscles of physicians in providing an instrument for the physical examination of interactive capacities in newborns. An investigation of the Face-to-Face Paradigm will bring us to a retraining of scientific vision and, to a limited extent, audition through the use of videotaping and viewing. Taken together, the tools shifted not only psychological and pediatric concepts about but also scientific and clinical practices of perceiving infants. The fourth section explores how video as a technology of perception was used therapeutically at the Unit, helping "the mother […] to see [her infant] as he really is."[9] The fifth section focuses on training, exploring how the tools were used for educating the clinical perception of a new generation of infant observers. I will end by briefly reflecting on the broader impact of the Unit on the development of the overlapping fields of infant mental health, early childhood psychiatry, and developmental pediatrics both nationally and internationally.

Creating a New Subspecialty

The program at the Child Development was multi-disciplinary in both composition and target. The initial proposal was supported by both Charles A. Janeway, Physician-in-Chief in pediatrics at the Children's Hospital, and Julius B. Richmond, Psychiatrist-in-Chief and Professor at the Department of Child Psychiatry and Human Development. It suggested training spots for both pediatric and child psychiatric fellows.[10] The staff, too, had various disciplinary backgrounds and included the pediatrician T. Berry Brazelton as director of the program, the psychologists

[9] "Technical Proposal: Harvard Institute for Parents and Infants" March 3, 1977, 2, Box 39, Folder 18, TBBP, FCLM.
[10] "Program for the Training of Clinical Scholars in Child Development."

Edward Tronick (*1942), Elizabeth M. Fox (*1942), and, later, Heidelise Als (*1940) as instructors and researchers, as well as various psychiatrists and pediatricians as supervisors and associated faculty.[11]

Brazelton was the most experienced member of the staff, while Tronick, Fox, and Als were recent graduates from doctoral programs in developmental and clinical psychology at the University of Wisconsin, Pennsylvania University, and Yale University, respectively.[12] Tronick had worked together with Brazelton at Jerome Bruner's Center of Cognitive Studies since 1968 and co-authored the initial proposal for a research grant for the Unit.[13] Fox and Als were recruited at the beginning of the program to strengthen instruction and scientific supervision for the clinical fellows.[14] The multi-disciplinary composition of team and target group reflected the recent trend in infant research of forging alliances between psychology, child psychiatry, and pediatrics. It also furthered the stated objective of creating a new "subspecialty of child development at Harvard comparable to established subspecialties such as cardiology, immunology, or hematology," cutting across various fields concerned with normal and pathological processes in early childhood.[15] It was only later, due to a lack of funding for child psychiatric fellows that the program decided to only admit pediatricians, all the while keeping close ties to both psychology and psychiatry.[16]

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[11] "Carnegie Program for the Training of Clinical Scholars in Child Development: Progress Report, July, 1972 - June, 1973."

[12] On Tronick and Als see T. B. Brazelton, "Grant Application: Assessment and Follow-up of High Risk Infants" October 29, 1976, Box 39, Folder 1, TBBP, FCLM. On Fox see T. B. Brazelton, "Proposal: Training Pediatricians in Preventive Mental Health" 1976, Box 40, Folder 12, TBBP, FCLM.

[13] T. Berry Brazelton and Edward Tronick, "Application to the Grant Foundation for a Research Project" December 1, 1971, Box 40, Folder 523, WTGFR, RAC.

[14] "Carnegie Program for the Training of Clinical Scholars in Child Development: Progress Report, July, 1972 - June, 1973"; "Carnegie Program for the Training of Clinical Scholars in Child Development: Progress Report, July, 1974 - June, 1975."

[15] "Carnegie Program for the Training of Clinical Scholars in Child Development: Progress Report, July, 1972 - June, 1973," 2.

[16] The Carnegie Foundation only agreed on funding pediatric fellows, partly due to the considerable costs

In speeches and writings, Brazelton urged that the new subspecialty was badly needed in health care for children. During the annual Copeland lecture to the medical staff at the Children's Hospital, Brazelton drew on contributions to the 1970 White House Conference for Children to argue that Americans had paid a good deal of "lip service to caring about their children" but "less attention to their real needs." It was time now to apply the know-how that had been gathered over the last decades to a change in "the *lot* of our future children." Pediatricians and physicians were "at the most influential front." They had "experience in creating and maintaining relationships with parents and children," had "opportunity and training in looking on the whole picture - the family as well as individual child, somatic as well as psychological and their interplay," and were thus able "to spot early developmental deviations." Yet, Brazelton criticized, "medical training [had] essentially ignored child development." What was needed was a change from the "disease-oriented, pathology-focused approach to medicine" towards a "training of young physicians" that transmitted "all of the know-how […] for understanding interpersonal relationships, normal development, and the diagnostic as well as therapeutic tools of intervention."[17]

Brazelton and his co-authors made similar arguments in the initial grant application to the Carnegie Foundation. The proposal asserted that "pediatrics, more than any other branch of

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of the program, partly because reviewers criticized a lack of elaboration for the training of child psychiatrists. The latter was planned to be under the supervision of the psychoanalytic child psychiatrist Peter Wolff. Janeway, Richmond and Brazelton applied to the Commonwealth Fund for additional funding, which was, however, declined: Carnegie Corporation of New York, "Memorandum Concerning the Children's Hospital Medical Center" January 7, 1971, Box 487, Folder 2, CCNY, CUA; Janeway and Richmond to Mahoney, January 10, 1972; Carnegie Corporation of New York, "Resolution B3536" February 10, 1972, Box 487, Folder 2, CCNY, CUA; Charles A. Janeway to T. Berry Brazelton, May 2, 1972, Box 40, Folder 24, TBBP, FCLM.

[17] T. B. Brazelton, "Developmental Framework of Infants and Children: The Roots of the Future" (Washington, D.C., March 24, 1971), 1–4, emphasis in original, Box 81, Folder 20, TBBP, FCLM. A heavily modified version of the talk was published in 1983: T.B. Brazelton, "Developmental Framework of Infants and Children: A Future for Pediatric Responsibility," *Journal of Pediatrics* 102, no. 6 (1983): 967–72.

medicine, [had] had spectacular success" in dealing with somatic and infectious diseases over the preceding decades, but cautioned that these advances had entailed serious consequences for medical training and care: "The wards and clinics of university centers" had become places "where children with unusual somatic illnesses [were] concentrated."[18] As a result, medical education became detached from the problems of everyday life. In particular, "parents [were] turning more and more to pediatricians for advice concerning a wide range of psychological, social, and developmental problems in children"; an advice the "average pediatrician [was] relatively poorly prepared to offer."[19] Child psychiatry could not salvage, because, "inundated by a flood of patients desperately seeking help," it was lacking both "mental health manpower" and "a firm foundation for scientifically based mental health programs."[20] For the authors, the diagnosis was evident: "the foregoing trends have created a situation in which those physicians to whom contemporary American society looks for in the rearing of healthy children are still being trained for practice as it were in the past, rather than it should be in the future."[21] The Unit was designed to alleviate the problems of the present and prepare the future in creating the theoretical, operational, and human basis for a medical expertise in child development.

The missionary tone of Brazelton's speeches and writings has partly to be understood in the context of broader changes in pediatrics since the post-World-War II period. As discussed in *Chapter Two*, Brazelton had been an active supporter of the movement for psychosocial pediatrics that asked for a closer attention to behavioral and educational problems in children since the 1950s. As the historian Sidney Halpern and others have pointed out, the movement moved between two contradictory poles. On the one hand, it was a reaction against a growing

[18] "Program for the Training of Clinical Scholars in Child Development," 1.
[19] *Ibid.,* 2.
[20] *Ibid.,* 2.
[21] *Ibid.,* 3.

specialization within pediatrics and its corresponding focus on scientific medicine. Similar to Brazelton, psychosocially oriented pediatricians criticized that training exclusively concentrated on the management of "unusual somatic illness" and did not sufficiently prepare for the everyday problems of pediatric praxis. On the other hand, the movement - and the mission of the Child Development Unit - inscribed itself into the very drive of making pediatrics more scientific that fueled specialization in the first place, only that the focus of the science of pediatrics was to shift from somatic disease to mental health.[22]

Within this tensions between specialization, scientific pediatrics, and the management of everyday issues, infants occupied a special position. Neonatal and perinatal medicine had made major advancements since the 1960s, partly due to technological innovations such as ventilator support, micromethod blood sampling, and neonatal intensive care nurseries. When Brazelton wrote the proposal for the Child Development Unit, infant mortality was going down and "abnormalities of nervous function shortly after birth" were attracting increased attention from specialists.[23] Against this background, Brazelton articulated a position that sought not to loose touch with key commitments of general pediatric praxis such as communication and social development. Yet, the initiative could not escape its birth tensions: was child development a specialty or did it belong to the general curriculum of pediatrics? What exactly was the place of

[22] Sydney A. Halpern, *American Pediatrics : The Social Dynamics of Professionalism, 1880-1980.* (Berkeley, CA: University of California Press, 1988), 128–48; Jeffrey P. Baker, "Reinventing a Specialty: How Pediatrics Survived Its Own Success," *Pediatrics* 102, no. Supplement 1 (July 1, 1998): 197–200; Robert J. M. D. Haggerty and Stanford B. M. D. Friedman, "History of Developmental-Behavioral Pediatrics," *Developmental and Behavioral Pediatrics* 24, no. 1S (February 2003): S1–18.

[23] H. F. R. Prechtl, "Problems of Behavioral Studies in the Newborn Infant," in *Advances in the Study of Behavior*, ed. Daniel S. Lehrman, Robert A. Hinde, and Evelyn Shaw (Cambridge, MA: Academic Press, 1965), 75–98, 75. On neonatology: J. P. Baker, "The Incubator and the Medical Discovery of the Premature Infant," *Journal of Perinatology* 20, no. 5 (August 2000): 321–28; Alistair G. S. Philip, "The Evolution of Neonatology," *Pediatric Research* 58, no. 4 (October 1, 2005): 799–815.

the new sub-speciality in pediatric training? What was its institutional position at Harvard and at the Children's Hospital? How could institutional and disciplinary practices be changed?
We will see that the Unit advanced various strategies for addressing these questions that included the training of a new generation of clinician-researchers, the construction of the theoretical and operational infrastructure of a new field, and public engagement. However, the relationship to pediatrics was at times tensed, both leading to questions of the disciplinary location of the field and reinforcing the outspokenly multi- and interdisciplinary identity of the program. As one fellow would put in 1974, one central aspect of the program was "to deal with the resistances to 'our approach' to pediatrics within the established ranks of pediatrics, the hospital, and the training program."[24]

Examining Interactive Capacities: The Brazelton Neonatal Behavioral Assessment Scale

A central part of the construction of the new field was the design and development of "a set of instruments for pediatricians to use in evaluating children which clearly outline the observable age-appropriate levels of development in the motor (gross and fine), cognitive, social, and linguistic areas."[25] These included a scale for assessing the behavior of newborns and a video-based observational setting for analyzing the interaction of infants with their caregivers during the first year of life. Both tools aimed at incorporating an interactive view of infancy into the process and practice of evaluating babies.

[24] "Carnegie Program for the Training of Clinical Scholars in Child Development: Progress Report, July, 1973 - June, 1974" 1974, 42, Box 39, Folder 34, TBBP, FCLM.
[25] "Carnegie Program for the Training of Clinical Scholars in Child Development: Progress Report, July, 1972 - June, 1973," 12.

At the time of the foundation of the Child Development Unit, Brazelton had already been working at a neonatal behavioral assessment scale for about a decade and a first version was published in 1973. The scale was designed to address an omission in a growing number of assessment methods for newborns that were proposed during the 1960s.[26] According to Brazelton and his colleagues, most of the existing scales focused on neurological and somatic issues, mirroring the pediatric concern with physical health. For example, the APGAR score, which had been used in the assessment of newborns since 1953, was a quick evaluation of parameters such as breathing, heart frequency, skin color, and reactivity immediately after birth, but did not take into account any behavioral patterns.[27]

A more detailed score was Prechtl's neurological exam, published in 1964, that was used for estimating the maturity of newborns on the basis of morphological and functional parameters such as body posture, hair-growth, and mobility. While Prechtl's exam reflected a growing concern with infant development, it did not provide any measure of "interactive behavior."[28] According to Brazelton, this was a significant omission since research over the last two decades had shown that "the specification of mother-infant social dynamics" was "crucial for any correct understanding of development."[29] His Neonatal Assessment Scale was designed to fill the gap and provide a tool for assessing "the initial psychological capabilities of neonates to engage in

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[26] The medical backgrounds for the development of assessment scales in the 1960s include, among others, improvements in neonatal survival and related concerns about the early diagnosis of neurological impairment. See H. F. R. Prechtl, "Problems of Behavioral Studies in the Newborn Infant"; "Technical Proposal: Harvard Institute for Parents and Infants" March 3, 1977, Box 39, Folder 18, TBBP, FCLM.

[27] T. Berry Brazelton, *Neonatal Behavioral Assessment Scale* (Philadelphia, PA: Spastics International Medical Publications: J. B. Lippincott, 1973), 1–3; Heidelise Als and T. Berry Brazelton, "Comprehensive Neonatal Assessment (Brazelton Neonatal Behavior Assessment)," *Birth* 2, no. 1 (December 1, 1974): 3–9; Virginia Apgar, "A Proposal for a New Method of Evaluation of the Newborn Infant," *Anesthesia & Analgesia* 32, no. 4 (August 1953): 260.

[28] T. B. Brazelton and Frances Degen Horowitz, "A Proposal to Support the Production of a Training Film to Be Used with the Brazelton Neonatal Behavioral Assessment Scale" ca. 1971, 1, Box 39, Folder 24, TBBP, FCLM; Brazelton, *Neonatal Behavioral Assessment Scale*, 4.

[29] Brazelton and Tronick, "Application to the Grant Foundation for a Research Project," 12.

social interaction."[30] The interest was less with the neurological maturity of the infant than with his interactive capacities that were hypothesized to be relevant for "his later personality development."[31]

The scale allowed transferring many of the ideas about the social capacities of newborns that had been articulated in the former decade to the clinical practice of physically examining an infant. A pivotal element was the flexible sequence of the scale's administration. It demanded from the medical examiner to progressively enact various aspects of the interactive behavior of infants with their caregivers. The newborn's behavior guided the order of the administration of the testing items and the procedure took into account his or her readiness to engage in social exchange, being oriented on his or her "state of consciousness." Ideally, the evaluation carefully followed and gradually modulated the different phases of a baby's alertness, bringing him or her "up from a light sleep to an alert state, then into more active states, to crying, and down to an alert inactive state again."[32] It did not "score average behavior or employ rigid standardized procedures of eliciting behavior" but sought "to elicit the best behavior of which an infant [was] capable."[33] It was demanding for both newborn and examiner, asking both of them to deliver their best possible performance.[34] The single items tested several aspects of the newborn's interaction repertoire, including the sensual modalities of vision, audition, and touch. The items ranged from arousal with lights and rattles and the orientation to animate and inanimate visual and auditory stimuli, to the ability to maintain body tension when pulled to sit and the newborn's

[30] *Ibid.*, 10.
[31] Brazelton, *Neonatal Behavioral Assessment Scale*, 2.
[32] Heidelise Als et al., "The Brazelton Neonatal Behavioral Assessment Scale (BNBAS)," *Journal of Abnormal Child Psychology* 5, no. 3 (1977): 216.
[33] Brazelton and Horowitz, "A Proposal to Support the Production of a Training Film to Be Used with the Brazelton Neonatal Behavioral Assessment Scale," 1.
[34] For example, the manual of the scale gives detailed advice on how to structure and modify the exam according to the effects of the maneuvers on the newborn's state: Brazelton, *Neonatal Behavioral Assessment Scale*, 9–10.

"cuddliness."[35] They demanded the examiner to listen to the affective quality of the newborn's cries, to observe his reactions to stimuli, and to handle, hold, and cuddle him.[36]

From a theoretical perspective, the scale sought to capture the social homeostasis of the newborn; his abilities to maintain a balance between internal needs and external influences, which was considered a precondition for engaging in social interaction. This required testing motor and sensual capacities, as well as the capacity to maintain a calm or an alert state and to withstand physiological needs.[37] The approach was compatible with both traditional psychoanalytic views and recent perspectives that considered the mother-child relationship as an interactive system, discussed in *Chapter Two.* In psychoanalytic terms, the newborn's "mastery of himself" translated to the development of his ego functions in relation to drive tensions and external stimuli; in terms of systems theory, it corresponded to a "growing sophistication for the [infant's] behavioral systems" for social interaction and communication.[38]

During the 1970s, Brazelton's team worked hard to establish the scale as a scientific and clinical instrument. On the one hand, they developed statistical measures of the behavioral dimensions and tested validity and reliability of the scale with normative studies in healthy full term infants. On the other hand, they explored its utility for dealing with clinical problems and its value for addressing scientific questions. The broader purpose of the research was to anchor the scale in scientific and clinical routine by demonstrating that an evaluation of the psychological capacities of newborns was a worthwhile effort that could address urgent clinical problems. For example,

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[35] *Ibid.*, 29.
[36] *Ibid.*, 13–64.
[37] Brazelton, *Neonatal Behavioral Assessment Scale*; Als et al., "The Brazelton Neonatal Behavioral Assessment Scale (BNBAS)."
[38] T. Berry Brazelton and Edward Tronick, "Application to the Grant Foundation for a Research Project" December 1, 1971, 10, 4, Box 40, Folder 523, WTGFR, RAC. On psychoanalysis see also T. B. Brazelton and H. Als, "Four Early Stages in the Development of Mother-Infant Interaction," *Psychoanalytic Study of the Child* 34 (1979): 349–69.

the team at the Unit conducted various studies that investigated the long-standing question of how analgesic and anesthetic medication administered to mothers during labor and delivery affected postnatal behavioral adaptation in the newborn. Earlier studies had shown that commonly used medication depressed attention and responsiveness. However, these studies had not taken into account the complexity of neonatal behavior and its dependency on the newborn's state of alertness. Neither had they assessed the drug's influence on responsiveness in the mother-infant interaction during the first postnatal weeks, thus giving, according to Brazelton, little information about the psychological importance of the observed effect.[39] To their surprise, the team at the Child Development Unit found that the administration of carefully controlled analgesic premedication and anesthesia to mothers during labor had only minor behavioral effects on normal healthy neonates.[40] In a 1976 paper, Tronick et al. argued that the scale thus provided an instrument for tracing the recovery of newborns after birth and that "depression without improvement" had to be seen as an indicator of another "underlying insult", operating synergistically with the effect of drugs.[41] The drug study was one example of how the scale allowed assessing the reaction of the newborn to environmental conditions and tracing the evolution of behavioral adaptation across the postnatal period. The scale promised to provide a tool for clinically assessing and understanding the psychological trajectory of individual neonates right from the beginning.

The scale clearly hit a nerve. After having been presented at many occasions, notably at the Society for Research in Child Development, it was quickly seized upon by researchers both

[39] T. Berry Brazelton, "Progress Report: The Analysis of Mother-Infant Social Interaction, July, 1972 - July, 1973" June 25, 1973, 5–7, Box 41, Folder 528, WTGFR, RAC.
[40] T. Berry Brazelton, "Progress Report: The Analysis of Mother-Infant Social Interaction, October, 1974 - October, 1975" January 8, 1976, 1–3, Box 41, Folder 528, WTGFR, RAC.
[41] Edward Tronick et al., "Regional Obstetric Anesthesia and Newborn Behavior: Effect Over the First Ten Days of Life," *Pediatrics* 58, no. 1 (July 1, 1976): 100.

nationally and internationally.[42] Already in the second year of the program, Brazelton's team felt "swamped by requests," training thirty researchers from across the country, the UK, Hawaii, Guatemala, Italy, and Israel, and turning down "an equal number of requests."[43] To deal with the task, the Child Development Unit produced three films that demonstrated the scale's use and outsourced instruction to other locations, notably the Universities of Washington and Kansas.[44] In 1976, they also obtained a grant from the National Foundation of the March of Dimes to set up training centers for clinicians and researchers at Harvard and Washington.[45]

The establishment of the centers was timely. Studies using the scale multiplied, posing the challenge of how to maintain standardized use and compatibility of results.[46] One problem emerged out of the very dependence of the scale on the examiner's perception. In cross-cultural studies, researchers tended to adopt the scores to the properties of their respective sub-populations and thus "to bring [their] particular population of neonates toward mean scores on the items."[47] As a consequence, a comparison of development between two different populations became impossible. For example, Brazelton reports from a researcher from London who trained in the score "to study the effects of cradleboards on Navajo infant development" in Arizona. He returned to the Child Development Unit to check reliability and, "as we worked with him, he and

[42] T. Berry Brazelton, "Progress Report: Mother-Infant Reciprocity in Normal and Failing Pairs, October 1975 - October 1976" 1976, 43–50, Box 39, Folder 19, TBBP, FCLM; see also T. Berry Brazelton, Interview with T. Berry Brazelton, interview by Milton Senn, May 25, 1978, American Child Guidance Clinic and Child Psychiatry Movement interview collection, National Library of Medicine.
[43] T. Berry Brazelton, "Progress Report: The Analysis of Mother-Infant Social Interaction, October, 1973 - October, 1974" October 21, 1974, 44, Box 41, Folder 528, WTGFR, RAC.
[44] Brazelton, "Progress Report: The Analysis of Mother-Infant Social Interaction, October, 1973 - October, 1974."
[45] T. Berry Brazelton, "Progress Report: The Analysis of Mother-Infant Social Interaction, October, 1976 - August, 1977" August 15, 1977, 3–4, Box 41, Folder 527, WTGFR, RAC.
[46] By 1978, "220 clinical and experimental research centers in the United States alone" were using the scale. T. Berry Brazelton, "Research Proposal: The Development of an Assessment of Infant Behavioral Organization during the First Five Months of Life" April 13, 1978, 5, Box 40, Folder 522, WTGFR, RAC.
[47] Brazelton, "Progress Report: Mother-Infant Reciprocity in Normal and Failing Pairs, October 1975 - October 1976," 30.

we realized that he had 'slipped' on several times in a predicable way." Moreover, "the very items he'd unconsciously changed were the most critical to his research" since they "were at the base of the most important but subtle differences between the Navajo group and our U.S. group of neonates."[48] The slipping was a testimony for both the scale's power to enact reciprocity and the challenge to control and standardize its use.

Another problem concerned the very essence of the scale: its design to assess the interactive capacities of babies. Visiting research groups at other institutions in the mid-1970s, Brazelton became worried that "many psychologists" used the scale "as a Stimulus-Response System," and not "as a process-oriented window into the infant's capacity to respond to an examiner."[49] Brazelton urged that each group using the scale "must keep in touch and get an annual check" to guarantee that the administration was not only comparable but also in tune with the underlying psychological perspective on infants.[50]

The maintenance of reliability and uniformity in the use of the scale had not only a scientific and diagnostic but also a therapeutic interest. The scale was designed as an instrument not only for doctors but also for parents.[51] Early on Brazelton highlighted its use for "introducing babies to their mothers" and, occasionally, to their fathers, and he stressed its utility for helping parents to adjust to their children by noticing their newborns' individual strengths and needs.[52] In the 1970s

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[48] Brazelton, 30–31.

[49] T. Berry Brazelton to Joy Osofsky, July 24, 1975, Box 41, Folder 8, TBBP, FCLM; Brazelton, "Progress Report: The Analysis of Mother-Infant Social Interaction, October, 1976 - August, 1977."

[50] Brazelton to Osofsky, July 24, 1975.

[51] There was some disagreement among researchers about the clinical usefulness of the scale. While Horowitz saw it, for example, exclusively as a research tool, Brazelton was more interested in its clinical applications: Frances Degen Horowitz, SRCD Oral History Interview (Original Interview), interview by Irving Sigel, April 21, 1995, 9, accessed May 17, 2018, https://www.srcd.org/about-us/oral-history-project.

[52] T. Berry Brazelton, "The Role of Research in the Training of Child-Developmentalist Pediatricians" November 7, 1975, 7, Box 41, Folder 528, WTGFR, RAC; T. Berry Brazelton, Heidelise Als, and Barry M Lester, "Final Report to the W. T. Grant Foundation" March 15, 1982, Box 40, Folder 526, WTGFR, RAC. On fathers see also Brazelton, "Progress Report: Mother-Infant Reciprocity in Normal and Failing

and 80s various studies at the Development Unit and collaborating infant research centers further explored the effect of the administration of the scale on parents, arguing, among others, that it fostered bonding, attachment, and cognitive development.[53] In the early 1980s, Brazelton and Parker could thus look back on a growing body of literature that indicated that the "greatest potential" of the scale laid in its use "as a clinical tool." It showed great promise in "facilitating the parent-child relationship": "In seeing the baby's behavioral style demonstrated, parents begin to individuate their infant from the outset and are sensitized to his status as an individual in his own right."[54] The scale increasingly figured as a tool not only for changing doctors' but also parents' perspectives on their babies.

Scores, Graphs, and Video-Screens: The Face-to-Face Paradigm

The utility for changing both professional and public perception of infants was also the driving force for the development of the second assessment tool of the Child Development Unit, the Face-to-Face Paradigm. The Paradigm grew out of Brazelton and Tronick's earlier work on mother-infant reciprocity at Harvard's Center for Cognitive Studies, but aimed at improving the former approach and making it clinically applicable.[55] This entailed important conceptual and

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Pairs, October 1975 - October 1976."

[53] Heidelise Als, "Assessing an Assessment," in *Organization and Stability of Newborn Behavior: A Commentary on the Brazelton Neonatal Behavior Assessment Scale*, ed. Arnold J. Samerhoff (Chicago, IL: University of Chicago Press, 1978), 14–28; S. Parker and T. B. Brazelton, "Newborn Behavioral Assessment: Research, Prediction and Clinical Uses," *Children Today* 10 (1981): 2–5; Susan M. Widmayer and Tiffany M. Field, "Effects of Brazelton Demonstrations for Mothers on the Development of Preterm Infants," *Pediatrics* 67, no. 5 (1981): 711–14; T. Berry Brazelton and J. Kevin Nugent, "Preface," in *Neonatal Behavioral Assessment Scale* (London: Mac Keith Press, 2011).

[54] Parker and Brazelton, "Newborn Behavioral Assessment: Research, Prediction and Clinical Uses," 4–5.

[55] See *Chapter Two*.

technical modifications, including the development of detailed coding system and a shift from film to video equipment.

In the early 1970s, the use of video for psychological research was still in its early years. The recording of moving images on magnetic tape had been developed in the late 1950s, but it only became financially and practically manageable for institutional and private settings with the development of portable devices in the late 1960s. The so-called "portapaks," portable video recorders that weighted approximately 15 pounds and could be purchased for an amount of $1500 upwards, gave, among others, rise to a vivid artistic subculture of video art that joined the counterculture of the 1960s and 70s.[56] Starting in the mid-1960s, video tape recording also found entrance into medical and scientific education and was occasionally used for therapeutic purposes, notably in the new field of family and group therapy. Especially, the New York psychiatrist and psychotherapist Milton M. Berger advanced videotape playback as a method for generating a "more profound awareness of pathological interaction" and assessing non-verbal aspects of social behavior. The easy set-up of video and the possibility to immediately replay sound and images was seen as an opportunity to incorporate a mediated reflection about oneself into the therapeutic process. Patients could "re-experience their interactions," reflect about their gestures, mimics, and expressions, compare their mental images of themselves to the images on the screen, and thus, the video-therapists argued, gain distance to their selves, which was seen as a necessary element of the therapeutic process.[57] This therapeutic use could be enhanced by special effects such as split-images and mirroring.[58]

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[56] Peter Sachs Collopy, "The Revolution Will Be Videotaped: Making a Technology of Consciousness in the Long 1960s" (PhD diss., University of Pennsylvania, 2015).

[57] Milton M. Berger et al., "The Use of Videotape with Psychotherapy Groups in a Community Mental Health Service Program," *International Journal of Group Psychotherapy; New York, N.Y.* 18, no. 1 (January 1, 1968): 508. On the therapeutic use of video see also Deborah Weinstein, *The Pathological Family: Postwar America and the Rise of Family Therapy* (Ithaca, NY: Cornell University Press, 2013),

The ability of video to improve observation and self-observation also played a pivotal role for its scientific, pedagogical, and therapeutic uses at the Child Development Unit.[59] For these purposes, the most important scientific instrument that the Unit developed was the face-to-face analysis of adult-infant interaction. The setting is shown in *Figure 3.1*. The infant was "seated in a small alcove formed by curtains to restrict distractions" and the mother, or, occasionally, the father, or a stranger, was placed on a seat facing the infant. The procedure concentrated on direct interaction during a period of three minutes, but also included other experimental conditions such as the presentation of objects to the infant and conscious modification of the mother's performance. "Two cameras and a special effects generator" allowed "for the simultaneous recording of the mother and the infant" on videotape. "For the purpose of scoring," playback could "be accomplished in either slow motion (1/7 speed) or with still frames." Sound was "also recorded simultaneously on the video system."[60] In comparison to the formerly used cinematographic method (see *Chapter Two*, *Figure 2.3*), video simplified the spatial set-up, replacing a rather complicated mirror construction by two synchronized cameras, and allowed visualizing the reactions of both partners of the dyad on a split screen and in real time. The audiovisual images provided an interface upon which the reciprocal interplay of mimics, gestures, and sounds could directly be read. Slow motion enabled an analysis of interaction on a

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157–58; Collopy, "The Revolution Will Be Videotaped."

[58] Ian Alger, educational film, "Time-Mirror," 1974. I am very grateful to Robin Simpson for pointing me to this material. Robin is currently working on a PhD about the history of video-therapy and its connections to contemporary video art at the University of British Columbia.

[59] The therapeutic use of video in family therapy tended to be restricted to a small group of specialized practitioners in adult psychotherapy who were not closely connected to infant research and their work was not referenced in the publications and reports of the Child Development Unit. See also Collopy, "The Revolution Will Be Videotaped," 170–80, 190–93.

[60] "Carnegie Program for the Training of Clinical Scholars in Child Development: Progress Report, July, 1972 - June, 1973," 20. The video equipment was purchased from the Japanese producer Shibaden: "Detailed Budget for the Frist 12-Month Period" 1972, Box 39, Folder 2, TBBP, FCLM.

"micro level" that concerned both "the size of the behavior components scored" and "the time interval (one second) used."[61]

During the 1970s, research at the Unit focused on the development of a framework for scoring and analyzing the audiovisual images. The basic idea was to develop a system of scoring that allowed diagnosing the quality and nature of adult-infant interaction on the basis of short video registrations. Yet, real life dyadic interaction was extremely rich and complex. It exhibited "rhythms and patterns" that changed over time and were difficult to formalize.[62] Former systems of ethological description, as the one they used in Jerome Bruner's lab, could account for some of the micro-behaviors that infants exhibited, but it did not convey information about the affective and intentional content of these behaviors. Hence, the former use of narrative accounts to describe patterns of attention and withdrawal.[63] The goal of the work at the Unit was to provide a scoring system that captured both the micro events that were the components of interactive behavior and the macro rhythms and patterns that emerged from these events and characterized the nature of the relationship.[64] At the same time, it had to be amenable to statistical analysis, consistent across different observers, and feasible in a clinical setting.

In a huge collaborative effort, Brazelton's team progressively developed a sophisticated system of scoring that put the interactive vision of infancy on a firm scientific footing, while also reshaping important aspects of that vision. The point of departure was an effort to establish a

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[61] Brazelton, "Progress Report: The Analysis of Mother-Infant Social Interaction, October, 1973 - October, 1974," 21. For a detailed description of the microanalytic system see E. Tronick, H. Als, and L. Adamson, "A System for the Analysis of Mother Infant Social Interaction" January 8, 1976, Box 41, Folder 529, WTGFR, RAC.

[62] Brazelton, "Progress Report: The Analysis of Mother-Infant Social Interaction, July, 1972 - July, 1973," 14–15.

[63] See *Chapter Two* and T. Berry Brazelton, Barbara Koslowski, and Mary Main, "The Origins of Reciprocity: The Early Mother-Infant Interaction," in *The Effect of the Infant on Its Caregiver*, ed. Michael Lewis and Leonard A. Rosenblum (New York, NY: Wiley, 1974), 49–76.

[64] Brazelton, "Progress Report: The Analysis of Mother-Infant Social Interaction, July, 1972 - July, 1973," 14–15.

reliable microanalytic basis for an interpretation of behavioral cues in infant-adult interaction. To this end, the team carefully selected over the course of several years a set of "micro-behaviors" that had "interactive significance."[65] The researchers drew on contemporary taxonomic systems for the ethological analysis of human behavior, but adapted these systems to the specificities of mother-infant interaction. The movements of tiny infants were thus segmented into even tinier spatiotemporal units. The temporal basis for scoring was a repeated viewing of a "dynamic second", one real time second stretched with slow motion to seven seconds.[66] The specific behavioral items differentiated between adult and infant and included scores for various modalities, including vocalization, direction of gaze, head orientation, facial expression, and body position.[67] These modalities were divided into various categories such as number, size, and place of limb movements, or expression of cheeks, mouth, and face, as well as position of eyebrows and of tongue in facial expressions. The microanalytic description was meant "to retain information about an interactor's communicative display."[68] Importantly, it also provided the "base for training observers to reliability in all other layers of analysis."[69] It provided the microscopic basis that underlay the morphology of social interaction in infancy and thus constituted the ground upon which scientific observation was to be trained.

The next challenge was to translate the micro scores into "a macro level of description."[70] Previous research had shown that micro-descriptions poorly matched the richness of narrative

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[65] Brazelton, "Progress Report: The Analysis of Mother-Infant Social Interaction, October, 1973 - October, 1974," 21.

[66] E. Tronick, H. Als, and L. Adamson, "A System for the Analysis of Mother Infant Social Interaction," 1.

[67] For the adult, they also included movement and position of the head.

[68] Brazelton, "Appendix A of Research Proposal (The Development of an Assessment of Infant Behavioral Organization during the First Five Months of Life)," 18.

[69] Brazelton, "Progress Report: The Analysis of Mother-Infant Social Interaction, October, 1976 - August, 1977," 14.

[70] Brazelton, "Progress Report: The Analysis of Mother-Infant Social Interaction, October, 1973 -

accounts of mother-infant interactions. They did not sufficiently account for the temporal quality of interaction, its "cycles" of attention and withdrawal.[71] Brazelton's team sought to establish an analytic framework in which the micro behaviors could directly be translated into macro rhythms and that was amenable to statistical analysis and applicable in various scientific and clinical settings. To develop such a framework, Brazelton's team solicited help from both engineers from MIT and infant researchers from other institutions, including the physicist Alan Natapoff of Massachusetts Institute of Technology, the child psychiatrist Daniel Stern a of Columbia Medical School, and the developmental psychologist Frances D. Horowitz (1932-2014) of the University of Kansas.[72] From 1976 to 1980, the researchers were able to propose three interrelated ways of how to link the ethological micro-behavioral data to macro scores that are schematically shown in *Figure 3.2*. The importance of these scores for our purpose is that they operationalized an interactive and communicative vision of infancy, anchored this vision in a training of scientists and clinical researchers, and contained the promise of making the face-to-face interaction a clinical tool. Moreover, they underlined the importance for video as a medium of synchronization of adult-infant interaction. In the following paragraphs, I will analyze in detail how the three systems worked and then return to the implications for clinical and scientific observation.

All three macro systems relied on judging the affective quality of one-second behavioral units and contextualizing them in the temporal flow of three-minute periods of interaction.[73] The first

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October, 1974," 22.

[71] Brazelton, 22; Brazelton, Koslowski, and Main, "The Origins of Reciprocity: The Early Mother-Infant Interaction."

[72] Brazelton, "Progress Report: The Analysis of Mother-Infant Social Interaction, October, 1973 - October, 1974," 32.

[73] T. Berry Brazelton, "Research Proposal: The Development of an Assessment of Infant Behavioral Organization during the First Five Months of Life" April 13, 1978, 18, 30ff., Box 40, Folder 522, WTGFR, RAC.

scale of "macro behavioral synthesis" ranked the units on a continuum of affective involvement, ranging from "withdrawal or refusal" (most negative), through "neutral attitude", to "total engagement" and "intense and positive affect" (most positive).[74] The scale took into account the interdependence of the behavioral modalities by modifying the ranking according to the context in which the behavior took place. For example, the same limb movements could express either positive or negative involvement. The coding system therefore scored limb movements in function of the accompanying facial expression, with laughing as positive and crying as negative extreme.[75]

Brazelton's team then argued that correlations between the summary scores for mother and infant allowed judging the quality of interaction. The reasoning followed the previously established view that "a successful interaction" was "characterized by a mutual cycling of affective and attentional involvement."[76] In plotting the affective involvements of parent and infant over the time of interaction, the group could visualize the amount of positive interaction and the degree of "mutuality" or "synchrony" of the two partners. *Figure 3.3* shows a graph from a 1977 paper by Tronick, Als, and Brazelton that presents the approach for three mother-infant pairs who exhibited varying degrees of involvement. It is important to note that the defining aspect of successful interaction was not simply the amount of mutuality but the cyclic or temporal quality of synchronic interaction:

> "This cyclic quality reflects the ability of both the mother and the infant to modulate their stimulus uptake during these periods of intense interaction and to regulate their stimulus output to match their partner's receptivity. This regulation is especially necessary for the

[74] Brazelton, "Progress Report: The Analysis of Mother-Infant Social Interaction, October, 1976 - August, 1977," 15.
[75] E. Tronick, H. Als, and L. Adamson, "A System for the Analysis of Mother Infant Social Interaction."
[76] E. Tronick, H. Als, and L. Adamson, 35. See also Brazelton, Koslowski, and Main, "The Origins of Reciprocity: The Early Mother-Infant Interaction."

> infant whose immature physiology makes it necessary that he or she maintain attention via a cyclical process that parallels the homeostatic limits of his or her immature systems. There is a successful mutual management of the amount and quality of the stimulus output which keeps the interaction within a defined homeostatic range."[77]

The paper contrasted the "successful mutual management…of the stimulus output" of "Interaction II" in *Figure 3.3* with the mother-infant pair of "Interaction I" that showed periods during which the interactants were "out of phase with each other," for example, when the infant was moving toward a negative involvement while the mother was attempting to elicit positive involvement (points a, b, and g on the graph). The authors argued that these periods expressed "genuine mismatches of intentionality between mother and infant."[78] The macro scores thus translated the synchronous cycling of affectivity, based on a microanalysis of synchronized video images, into a score and a curve that characterized the quality of dyadic interaction.

However, the scoring was complicated and very time consuming, taking up to 20 hours for a single tape of three minutes of interaction, and therefore hardly feasible in a scientific and not at all in a clinical context.[79] To both simplify analysis and further inquire into the nature of interactional synchrony, Brazelton team developed two "resynthesis systems."[80] The systems were as well based on the micro-behavioral taxonomy but meant to speed up the scoring by focusing on underlying phases of affective involvement rather than the affective content of each behavioral element. It was these systems that contained for the team the promise of making the face-to-face paradigm a clinical tool. The systems were called dyadic and monadic phase

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[77] Edward D. Tronick, Heidelise Als, and T. B. Brazelton, "Mutuality in Mother-Infant Interaction," *Journal of Communication* 27, no. 2 (June 1, 1977): 78.
[78] *Ibid.*, 79.
[79] Brazelton, "Progress Report: Mother-Infant Reciprocity in Normal and Failing Pairs, October 1975 - October 1976."
[80] Brazelton, "Progress Report: The Analysis of Mother-Infant Social Interaction, October, 1976 - August, 1977," 14.

analyses. The "dyadic analysis" reformulated and operationalized the suggestion that mother-infant interaction went through specific phases of mutual regulation. It was designed to capture the "joint state of the interactants" and consisted of "sets of clusters of behavior of both partners." Rather than judging the contribution of the partners separately, it attributed to each second of interaction one of the operationally defined phases of "initiation," "mutual orientation," "greeting," "play dialogue," or "disengagement."[81] As the names suggested, the phases were meant to describe the cyclic quality of interaction, containing different degrees of mutuality in affective involvement.

Each phase could be met by different combinations of behavior but also required some necessary conditions. For instance, "in the initiation phase the infant may be turned away, and the mother attempts to orient him by tapping or by urgent talking, or by moving into his line of vision, or by a combination of these." Yet, it required "one partner's averting and the other partner's attempts to elicit his or her orientation."[82] The dyadic phase model allowed analyzing "the level of organization, the rhythmic attention-withdrawal aspects, the degree of differentiation and the unique characteristics of the joint regulation of the particular adult-infant interactive system as a whole," whether, for example, an interaction was "well modulated" and showed "the full range of phases" with "prolonged periods in the more demanding phases" such as "greeting and play dialogue," or whether it was "less well developed" and showed "many missed opportunities." The dyadic phase analysis thus enabled a rough evaluation of the adult-infant relationship.

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[81] Brazelton, "Appendix A of Research Proposal (The Development of an Assessment of Infant Behavioral Organization during the First Five Months of Life)," 13–14.

[82] Brazelton, "Progress Report: The Analysis of Mother-Infant Social Interaction, October, 1976 - August, 1977," 16, emphasis in original. See also E. Tronick, H. Als, and L. Adamson, "Structure of Early Face-to-Face Communicative Interactions," in *Before Speech: The Beginning of Interpersonal Communication*, ed. Margaret Bullowa (Cambridge, UK: Cambridge University Press, 1979), 349–72.

However, it did "not allow one to look at the two partners separately nor at the behavioral ingredients making up a phase."[83]

For this purpose, the team designed the "monadic analysis" that specified "the individual interactant's contribution in the interaction," shown in *Figure 3.4*. It provided an operational basis for judging the quality of an interaction and the "level of organization of reciprocity" in directly visualizing synchronic and dyssynchronic behavior between mother and infant. As the macro behavioral synthesis, the monadic phases expressed the degree of affective involvement, but instead of summing up behavioral elements into separate scores, it attributed to one-second intervals specific behavioral units or "signatures." These ranged, as well, from negative to positive involvement. They were operationally defined as "protest, avert, monitor, set, elicit, play, and talk."[84] Rules of recombination allowed translating the micro-scores into the monadic phases and using a computer for parts of the analysis. At the same time, the phases could directly be scored on the basis of dynamic seconds of the video registration, if the researchers had obtained reliability training, thus replacing a detailed segmentation of behavior by a fine-tuned audiovisual judgment. In the case of doubt, the assessment could then be double checked on a micro-level.[85]

The monadic score analysis improved and simplified the audiovisual analysis of the interaction between infant and adult that was first introduced by the macro-scores. It showed the "baselines" of affective involvement for each partner in relation to each other over time, thus translating the

[83] Brazelton, "Appendix A of Research Proposal (The Development of an Assessment of Infant Behavioral Organization during the First Five Months of Life)," 15.
[84] Brazelton, "Research Proposal: The Development of an Assessment of Infant Behavioral Organization during the First Five Months of Life," 33.
[85] *Ibid.*, 33. See also Edward Tronick, Heidelise Als, and T. Berry Brazelton, "Monadic Phases: A Structural Descriptive Analysis of Infant-Mother Face to Face," *Merrill-Palmer Quarterly of Behavior and Development* 26, no. 1 (1980): 3–24.

synchronized images from the video screen into graphs that were supposed to mirror each other in successful interaction:

> "Comparing the partner's baseline provides information about their fit as an interacting couple. As a pair develops over time, their monadic scores should show baselines, which are similar to one another and should become increasingly more positive on the affective level of involvement continuum. In addition, an interacting pair should demonstrate increasing differentiation, i.e. use of a variety of affective levels from actions against the interaction to actions of engagement […] Finally, the individual regulation and organization of reciprocity should become apparent by ascertaining the pattern of monadic scores (e.g. cycling reciprocally or synchronously) throughout an interaction."[86]

Brazelton team felt now confident of having found a framework for appropriately describing the interactional dynamics of adult-infant interaction. In 1979, they summarized their findings in a paper for the *Psychoanalytic Study of the Child*, showing how their notion of dyadic interaction as a "reciprocal feedback system" added to an understanding of ego development in the earliest age.[87] Videotaping and analyzing the interaction of a mother with her infant during the first three months of life, they argued that the monadic phases allowed tracing how the infant gradually progressed in negotiating the tension between internal homeostasis and "his capacity to take in and respond to information."[88] Most importantly, it visualized the role of the caregiver in fostering the social competency of the infant:

> "Within the dyad or triad, the baby is allowed to demonstrate and incorporate a sense of his own autonomy. At the point where the mother or nurturing parent can indeed permit

[86] Brazelton, "Research Proposal: The Development of an Assessment of Infant Behavioral Organization during the First Five Months of Life," 36.
[87] Brazelton and Als, "Four Early Stages in the Development of Mother-Infant Interaction," 353.
[88] *Ibid.*, 365.

> the baby to be the leader or signal-giver, when the adult can recognize and encourage the baby's independent search for and response to environmental or social cues and games — to initiate them, to reach for and play with objects, etc. — the small infant's own feeling of competence and of voluntary control over his environment is strengthened. This goal of competence harks back to the first stage and completes at a more complex level of awareness the full circle of feedback to self-competence in dealing with inner and outer feedback systems."[89]

The diagnostic use of the face-to-face situation included experimental situations designed to test "the limits of the reciprocal feedback system" of mother and infant.[90] In 1974 the group at the CDU presented for the first time an experimental set-up that would later become to be known as still face paradigm. The paradigm explored some of the dramatic effects of disrupting feedback cycles in mother-infant interaction. Instead of returning to the infant for normal interaction after brief disappearance, the researchers asked the mother to "become completely unresponsive" and look at him "silently with a still face for three minutes."[91] The effects on the baby were dramatic. After some attempts to animate the motionless face of his mother, he looked "utterly helpless and hopeless" until the mother's face synchronized back in motion. The conclusion was clearly visible. Good interaction depended on synchronous rhythms, while "painful facial communication, eye-to-eye contact, and asynchrony of rhythms" were both sources and signs of clinical problems.[92] The tasks were, on the one hand, to further inquire into the interactive etiology of disorders and, on the other hand, to develop means of early intervention. But this also

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[89] *Ibid.*, 365.
[90] *Ibid.*, 359.
[91] T. Berry Brazelton et al., "Early Mother-Infant Reciprocity," in *Ciba Foundation Symposium 33: Parent-Infant Interaction*, ed. Ruth Porter and Eve O'Connor (Hoboken, NJ: John Wiley & Sons, Ltd., 1975), 145.
[92] *Ibid.*, 148.

required a re-training of the clinical vision of practitioners and parents: they had to see in the clinic what seemed now evident on scores, graphs, and video-screens.

Seeing the Infant 'As He Really Is': Therapeutic Intervention

During the early 1970s, the staff at the Child Development Unit came to realize that the face-to-face "model of studying interaction may well be a powerful form of intervention in itself": "it allows the parent to step back and observe herself or himself in interaction with the infant" and "articulates and highlights the current capacities the infant brings to the interaction, on which the parent can build."[93]

The possibility to gain distance to one's own behavior and expectations was especially helpful for parents with infants who had experienced "insults to their central nervous system." In these cases the "videotaped observations" provided "the link that [closed] the feedback loop of the parent-infant interaction system, and [gave] the parent the opportunity to observe the infant at his present stage of functioning."[94] According to Brazelton, it furthered the establishment of "a grief reaction" in the parents and supported them in "the efforts to 'make' it with a damaged baby in spite of their own defense systems […] (eg. denial, distancing themselves from the baby, anger, guilt, frustration, projection […])."[95] In order to adjust to the infant that did not correspond to their expectations, the parents had to remodel both their expectations and their perception of him "to see him as he really is."[96]

[93] Brazelton, "Progress Report: Mother-Infant Reciprocity in Normal and Failing Pairs, October 1975 - October 1976," 5.
[94] *Ibid.*, 7.
[95] *Ibid.*, 29.
[96] "Technical Proposal: Harvard Institute for Parents and Infants," 2.

In the progress reports of the Unit, Brazelton showed with many examples how the video-based interventions allowed the parents to change the perception of their infants and attune their interactional behavior to his capacities. Brazelton describes, for instance, the case of a "rubella infant" who had "abnormal postural reflexes," "limited control over his head," as well as poor vision and restricted hearing. Due to these limitations, the infant had difficulties to organize his state behavior, notably to "achieve a calm, quiet state." The parents watched themselves, assisted by members of Brazelton's team, in the face-to-face setting. On the basis of this assisted self-observation, they could attune their behavior to the needs of the baby and develop "a modulated set of activities" to calm him down such as "holding both his hands, cycling rhythmically for prolonged periods or patting him firmly." They were thus "able to help the infant achieve a wider range of successful behaviors" such as smiling, vocalizing, and "periods of rhythmicity."[97]
But also in infants with "limited biological insult," the face-to-face paradigm helped to reshape the parents' vision and perception of their infants. For example, Brazelton tells about the case of an "albino" infant who was "intact neurologically" except of a "severe limitation of distant vision." His mother raised the child alone. According to Brazelton, "by 8 weeks the mother had already made appropriate adjustments to the baby's appearance and behavior," providing him with "a great deal of social stimulation" and enjoying "playing with him." However,

> "it became apparent to us and to the mother from the videotaped interactions [that] in spite of this rich social behavior, by 5 months this infant did not show any attempts to reach for an object, nor to look for a fallen object, or to locate a sound… It puzzled us and it puzzled the mother. Consequently the mother became a more sensitive observer of her infant at home and learned that this limited vision did not seem to allow him to

[97] Brazelton, "Progress Report: Mother-Infant Reciprocity in Normal and Failing Pairs, October 1975 - October 1976," 8–9.

> realize trajectories of objects in space… On the basis of these observations, the mother was able to utilize this insight and set up a reaching schedule for the infant, first touching his hand with an object, then touching it and moving it away only slightly, encouraging his grasping for it, just holding it in front of him and encouraging him to reach it."[98]

In the work at the Unit, the video-based observational setting increasingly figured as a therapeutic interface that allowed parents to gain distance from their own actions and emotions and to modify both perceptions and representations of their children. The parents became infant observers themselves, trained to see and approach their babies in new ways. The medial basis for this new vision relied on a manipulation of lived time, a re-working of perception, and a re-articulation of experience. In the words of Brazelton, the setting allowed the parents to "modulate their expectations, at least for the immediate future, by an articulation of the present."[99]

Re-Training Clinical Perception

Rearticulating experience and remodeling expectation was also central to the main goal of the Unit to train "leaders in the fields of teaching, research, and the delivery of health care who will be able to bring to the problems of the child and his environment a preventive approach."[100] Every year, the Unit admitted for a two years program four to six pediatric fellows, who had completed their basic clinical training. The "one major task" of the fellowship was, as Fox noted in 1974, "to affirm that an entity called child development, in the field of pediatrics actually existed." This included the "building of an identity" within the program, beginning with "a

[98] *Ibid.*, 19.
[99] *Ibid.*, 12.
[100] "Program for the Training of Clinical Scholars in Child Development."

summer 'initiation rite.' The fellows "spent much of their day volunteering at a daycare center or conducting nondirective interviews with mothers in their last trimester of pregnancy." Confronted with "healthy children", the trainees were to realize that, "in the absence of any illness or defined patient, much of their medical training had little relevancy."[101] Educated in what Brazelton called a pediatric "deficiency model", the fellows had to retrain their professional identity and clinical perception. Brazelton stated in the progress report: "we attempted to construct a new, practical model of normal development for pediatricians, which encompasses the mechanisms and models available from pediatrics, psychology and psychiatry. This is one of the major goals of the program and we had to struggle against repeating the pathological models in which we have been indoctrinated in the past in medical school teaching."[102]

The struggle against old models included not only an exposure to healthy children, but also supervised clinical activities in outpatient and inpatient settings, reading and research seminars, as well as the development of research projects. The seminars were meant to lay the theoretical and methodological basis for the new model. The introductory sessions focused on "the philosophical framework" and included a careful reading of Thomas Kuhn's *Structure of Scientific Revolutions* with the aim "to remove many of the misconceptions about 'science' that non-scientists have about doing research, such as science is the TRUTH or that it is able to explain EVERYTHING."[103] Kuhn's theory of scientific revolutions and paradigm change ought

[101] "Carnegie Program for the Training of Clinical Scholars in Child Development: Progress Report, July, 1974 - June, 1975," 68–69.
[102] "Carnegie Program for the Training of Clinical Scholars in Child Development: Progress Report, July, 1972 - June, 1973," 12.
[103] "Carnegie Program for the Training of Clinical Scholars in Child Development: Progress Report, July, 1974 - June, 1975," 2619; "Carnegie-Johnson Program for the Training of Clinical Scholars in Child Development: Progress Report, July, 1975 - June, 1976" 1976, 11, Box 40, Folder 2, TBBP, FCLM. The philosophical readings included also Arthur Koestler's 1972 book *The Case of the Midwife Toad*, which situates the research of the Austrian biologist Paul Kammerer in the contemporary debate between neo-Darwian and Lamarckian approches. According to Koestler, Kammerer made a great case for Lamarckian

to help fellows to notice their own deficient pediatric "paradigms" and prepare the ground for introducing them to the new model at the Child Development Unit. Consequently, the reading was accompanied with an evaluation of the "self-paradigm" of the fellows, clarifying "the individual Fellow's theoretical position."[104] It followed a discussion of changing "paradigms" in developmental research, using the "exemplars" of the behaviorist model of Skinner and its recent criticism by the cognitive psychologist Noam Chomsky. The sessions culminated in the presentation of the Brazelton Neonatal Behavior Scale as an instrument for the articulation of a new interactive view of child development.[105]

The theoretical training went hand in hand with an intensive training in both live and mediated infant observation. The fellows participated in teaching rounds in the Children's Hospital, offered advice on the management of behavioral problems to hospital patients, taught child development to medical students, and staffed a multidisciplinary "Early Childhood Problems Clinic", first as "helper-observer[s]" and then as consultants.[106] The clinic provided advice on a variety of developmental problems in children from birth to the age of three years, clustering "in areas such as sleeping, feeding, aggression, over-activity, growth and development, and parenting issues."[107] Patients came to the clinic either on their own request, or upon referral from the Children's Hospital, or by community pediatricians. Every child received a quick, routine pediatric check-up and then went through a "thorough developmental evaluation of linguistic,

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principles but was the victim of a scientific conspiracy.

[104] "Carnegie Program for the Training of Clinical Scholars in Child Development: Progress Report, July, 1974 - June, 1975," 26.

[105] "Carnegie Program for the Training of Clinical Scholars in Child Development: Progress Report, July, 1974 - June, 1975," 26–27.

[106] "Carnegie Program for the Training of Clinical Scholars in Child Development: Progress Report, July, 1973 - June, 1974," 32. The Early Childhood Problems Clinic was formally established in 1974, but the fellows conducted already outpatient work in facilities of the Children's Hospital since the foundation of the Child Development Unit.

[107] "Carnegie Program for the Training of Clinical Scholars in Child Development: Progress Report, July, 1974 - June, 1975," 8.

social-affective, cognitive and motor functioning."[108] Subsequently, a treatment plan was proposed that could include therapeutic and counseling sessions up to several months. For the training of fellows, pediatric residents, and medical students, the clinic was equipped with a one-way mirror and many of the consultations were videotaped. The fellows discussed live observations and tapes in the research seminars, weekly group meetings, and individual supervisions.[109]

The analysis and discussion of the observations played an important role in adjusting the fellows' perception to the Unit's perspective on child development. According to Winifred B. Parker, a part-time fellow from 1973-75, at the heart of the pedagogical program were the skills of "looking at a child's growth and development" that were related "only minimally to familiarity with developmental tests, but much more profoundly to an ability to 'see' behavior, to observe subtleties of what the child does and try to put it into a conceptual framework."[110] Similarly, Michael Yogman, a full time fellow from 1974-76, emphasized how the observational work in the clinic was "most valuable in demonstrating the subtleties of observing children, the complexity of the social matrixes in which children exist and the depth of adult feelings around the issue of parenting."[111]

Next to teaching and clinical work, the transmission relied on research as "a critical way of making all the pieces of the interdisciplinary jigsaw fit."[112] Each fellow was trained in the two

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[108] "Carnegie Program for the Training of Clinical Scholars in Child Development: Progress Report, July, 1974 - June, 1975," 9.
[109] "Carnegie Program for the Training of Clinical Scholars in Child Development: Progress Report, July, 1974 - June, 1975," 9, 30–31.
[110] "Carnegie Program for the Training of Clinical Scholars in Child Development: Progress Report, July, 1973 - June, 1974," 41.
[111] "Carnegie Program for the Training of Clinical Scholars in Child Development: Progress Report, July, 1973 - June, 1974," 59.
[112] "Carnegie Program for the Training of Clinical Scholars in Child Development: Progress Report, July, 1974 - June, 1975," 74–75.

assessment tools of the Unit, the Brazelton Neonatal Behavioral Scale and the videotaped interaction analysis, and developed, upon that basis, his or her own research project that extended and added to the agenda of the faculty. Throughout the 1970s, the fellows conducted projects that ranged from an examination of "the effects of hyperbilirubinemia on the behavioral organization of the newborn" to an investigation of "the differing responses [of young infants] to their mothers, fathers, and strangers" and a videotaped "analysis of doctor child interaction."[113] The research projects solidified both observational approach and focus on social interaction. For the 1974-76 fellows, Michael Yogman and Suzanne Dixon, "the training in observing and recording behaviors of interacting humans" became "a real fascination" and they developed "great sensitivity to fine nuances of behavioral displays, configurations and rhythms."[114] Parker emphasized how the combined activities at the clinic had taught him "how to observe, how to listen, what to look for and listen for, what questions to ask, how to get about getting answers and the limitations of these techniques."[115] His use of the Brazelton Scale has made him "increasingly convinced of the importance of the early postnatal days - and even hours - in the establishment of the parent-infant bond."[116] The 1977-79 fellow Joel Snyder noticed "I now see children and their parents very differently than before. Their play, speech, struggles, and interactions are a symphony of action-reaction, and growth that I now hear in stereo instead of monoral."[117] Fox cunningly summarized:"[…] we realize above all, we are transmitting a point

[113] "Carnegie-Johnson Program for the Training of Clinical Scholars in Child Development: Progress Report, July, 1975 - June, 1976," 28, 22; "Carnegie Program for the Training of Clinical Scholars in Child Development: Progress Report, July, 1974 - June, 1975," 47.
[114] "Carnegie Program for the Training of Clinical Scholars in Child Development: Progress Report, July, 1974 - June, 1975," 29.
[115] "Carnegie Program for the Training of Clinical Scholars in Child Development: Progress Report, July, 1974 - June, 1975," 37.
[116] "Carnegie Program for the Training of Clinical Scholars in Child Development: Progress Report, July, 1974 - June, 1975," 40.
[117] "Johnson-Carnegie Program for the Training of Clinical Scholars in Child Development: Progress

of view. Whatever occupational slot our graduates move towards, they are marked by the experience they have had with us. What can be more subtle than an attitude, a new way of looking at children."[118]

Conclusion

Towards the end of the 1970s, the missionary tone of the progress reports of the Child Development Unit slowly faded away. The program was no longer a 'revolutionary paradigm' but became increasingly part of the 'normal science' of pediatrics and child psychiatry. The "major conflicts" were no longer "the struggle to prove ourselves" but "those of a kind of success."[119] Thomas Kuhn disappeared from the reading list, giving way to recent books on statistics and the design of research projects.[120] By 1981, the Unit had trained 27 fellows, of which 17 held faculty positions in the newly founded child development research units that were spreading around the country.[121] Brazelton himself appeared on television and lectured about child development and child rearing to parents and doctors at home and abroad as the "new Dr. Spock" of the 1980s.[122]

Report, July 1, 1977 - June 30, 1978" 1978, Appendix A8, 1, Box 40, Folder 7, TBBP, FCLM.

[118] "Carnegie Program for the Training of Clinical Scholars in Child Development: Progress Report, July, 1974 - June, 1975," 74–75.

[119] "Johnson-Carnegie Program for the Training of Clinical Scholars in Child Development: Progress Report, July 1, 1977 - June 30, 1978," 1.

[120] "Johnson-Carnegie Program for the Training of Clinical Scholars in Child Development: Progress Report, July 1, 1979 - June 30, 1980" 1980, 16–17, Box 40, Folder 9, TBBP, FCLM; "Program Summary: Training of Clinical Faculty in Child Development" April 15, 1981, Appendix D, Box 40, Folder 10, TBBP, FCLM.

[121] "Program Summary: Training of Clinical Faculty in Child Development"; Brazelton, Als, and Lester, "Final Report to the W. T. Grant Foundation."

[122] Brazelton produced over thirty books that targeted both professional and lay audiences. Several of them were translated into Spanish, Italian, and French. From 1984-1995, he featured in the award winning and highly popular Lifetime television series *What Every Baby Knows* and he produced in the 1990s the video series *Touchpoints* that is still available through the Brazelton Center. For a 1990 review of

The increasing recognition of child development in university programs and public media went hand in hand with the rise of national and international professional associations. Already in 1977, leading practitioners in the field, including T. Berry Brazelton, Sally Provence, Selma Fraiberg, Reginald S. Lourie, Leon J. Yarrow, and Stanley I. Greenspan founded the National Center for Infant Programs that advocated preventive approaches to mental health on local and federal levels.[123] Throughout the 1980s, the Center worked on diagnostic guidelines for developmental disorders, leading to the publication of an own diagnostic manual for infancy and early childhood (DC:0-3) in 1994, now including an assessment of caregiver-infant interaction into the diagnostic workup.[124]

On an international level, too, infant mental health increasingly found recognition. The World Association for Infant Psychiatry (later World Association for Infant Mental Health) was founded in 1980 and held its first two congresses in Cascais (Portugal) and Cannes (France) in 1980 and 1983, respectively. The congress united old and new approaches to infancy and, for many, it was indicative of a new way of seeing infants. The French child psychiatrist Philippe Mazet, later chief physician at the prestigious Salpêtrière hospital in Paris, remembered a telling anecdote. During the second congress, two lectures took place in parallel: "In one room, there

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Brazelton's media popularity see Hilary De Vries, "The Media Pediatrician", *New England Living* (12):1990, 73-79, Box 71, Folder 20, TBBP, FCLM. On professional and public speeches as "the new Dr. Spock" see Box 50, Folders 11-32, TBBP, FCLM.

[123] On the National Center for Infant Programs and advocacy see T. Berry Brazelton, interview by Felix Rietmann, October 30, 2016; Steven Maron, Interview with T. Berry Brazelton, February 19, 1997, Pediatric History Center, American Academy of Pediatrics; Sally Provence, "A Proposal for a Clinical Infant Mental Health Center" 1978, Box 1, SPP, YU; Eleanor Szanton to Herschel Saucier, December 13, 1979, Box 39, Folder 22, TBBP, FCLM; Eleanor Szanton to Reginald S. Lourie, Robert A. Nover, and Stanley I. Greenspan, July 17, 1980, Box 39, Folder 23, TBBP, FCLM; Sally Provence and Emily Schrag to T. Berry Brazelton, September 15, 1980, Box 39, Folder 23, TBBP, FCLM; Brazelton, interview, May 25, 1978; "Our History," Zero To Three, accessed May 17, 2018, https://www.zerotothree.org/about/our-history.

[124] Zero to Three, *Diagnostic Classification of Mental Health and Developmental Disorders of Infancy and Early Childhood* (Arlington, VA: National Center for Clinical Infant Programs, 1994); Zero to Three, *Diagnostic Classification of Mental Health and Developmental Disorders of Infancy and Early Childhood*, Revised edition (Washington, D.C: National Center for Clinical Infant Programs, 2005).

was Brazelton" using video and "showing images of the interaction of babies almost from birth on. In the lecture room next to him, there was Margaret Mahler, projecting films in black and white" to illustrate her "sad" concept of a normal autistic phase of development in infancy. According to Mazet, "it was caricatural."[125] The contrast between Mahler's vision of newborns, focused on their intrinsic physiological processes, and Brazelton's neonates, lively interacting with their environments, was underlined by the contrast between Mahler's black and white films and Brazelton's videos.[126]

It is no accident that video figures here as a signifier of change: the medium was paradigmatic for a new vision that relied as much on a change of perception as on a change in technologies of observation. We have seen in this chapter how the use of video at the Child Development Unit co-conditioned the emergence of infant-adult interaction as a setting for both psychological research and therapeutic intervention. Video made analytically tangible the temporal dynamics of social interaction in providing an interface for the visualization, segmentation, and modification of synchrony. It also provided a medium that allowed both practitioners and parents to perform work on themselves, to observe, listen, and reflect about their social interactions and to adjust their own behavior accordingly. The work at the CDU played a pioneering role in advancing the clinical and scientific tools that stabilized and operationalized the interactive vision of infancy

[125] Philippe Mazet, interview by Felix Rietmann, March 28, 2016; Margaret Mahler, "Indicators of the Emergence of the Sense of the Self" (Second World Congress on Infant Psychiatry, March 30, 1983), Box 56, Folder 1022, MMP, YU.

[126] Mazet's contrast is, of course, also a caricature, given that Mahler's concept refers to a theoretical framework of individuation and separation in infancy and does not deny interactive capacities. Accordingly, she did not consider her work in contrast to, but rather in harmony with Brazelton's view. However, many practitioners criticized her concept of normal autism that came, to an extent, to stand in for an outmoded way of seeing infants. Note also that Mahler was personally connected with and appreciated by Brazelton as well as Daniel Stern. See e.g. Daniel N. Stern, Reminiscences of Daniel N. Stern, 1982, IDP, CCOHA; T. Berry Brazelton to Margaret Mahler, 1982, Box 5, Folder 115, MMP, YU; T. Berry Brazelton to Margaret Mahler, 1983, Box 5, Folder 115, MMP, YU; T. Berry Brazelton to Margaret Mahler, 1985, Box 5, Folder 115, MMP, YU; Mahler to Brazelton, 1985, Box 78, Folder 165, TBBP, FCLM; Mahler to Brazelton, 1985, Box 67, Folder 168, TBBP, FCLM.

and in promoting a use of video that has since become increasingly common. In the 1980s and 90s, mircoanalytic assessments of mother-infant interaction have spread and diversified; the Brazelton Neonatal Assessment Scale, now in its fourth edition (2011), is widely used in research and clinical settings; and videotaping and replay have become common tools in clinical diagnosis and therapeutic intervention in early childhood.[127] The next chapter will investigate in detail some of the implications of the extension of video to clinical settings and explore how recent changes to digital devices have further modified vision and approach to early childhood.

[127] On the further evolution of the Neonatal Assessment Scale as therapeutic tool see T. Berry Brazelton and J. Kevin Nugent, *Neonatal Behavioral Assessment Scale* (London: Mac Keith Press, 2011); J. Kevin Nugent et al., "The Effects of the Newborn Behavioral Observations (NBO) System on Sensitivity in Mother–Infant Interactions," *Infants & Young Children* 30, no. 4 (2017): 257–68; J. Kevin Nugent and T. Berry Brazelton, "Preventive Intervention with Infants and Families: The NBAS Model," *Infant Mental Health Journal* 10, no. 2 (1989): 84–99. The literature on microanalytic assessments of adult-infant interaction is vast. Relevant reviews include Lauren B. Adamson and Janet E. Prick, "The Still Face: A History of a Shared Experimental Paradigm," *Infancy* 4, no. 4 (2003): 451–73; Chloë Leclère et al., "Why Synchrony Matters during Mother-Child Interactions: A Systematic Review," *PloS One* 9, no. 12 (2014): e113571; Barry M. Lester and Joshua D. Sparrow, eds., *Nurturing Children and Families: Building on the Legacy of T. Berry Brazelton* (Malden, MA: Wiley-Blackwell, 2010).

Chapter Four

Between Care and Surveillance: Video and Computational Technologies in the Parisian Outpatient Clinic *Vivaldi* (1990s-2010s)

Figure 4.1 shows the view from a video installation in the consultation room of a child psychiatric outpatient clinic, specialized in early infancy (zero to three years), in Paris. The video was taken in 1998. Both style and content encapsulate important shifts in child psychiatric theory and practice over the last fifty years. They also foreshadow some of the larger arguments of this chapter.

Note first the technological set-up. A screen of the brand "VD Tech" frames the photo. We are not in a position of direct observation, but of reviewing videos made in the past. The gap between the scene of production of the image (the child psychiatric consultation) and the scene of viewing (the mobile video screen in a separate room of the clinic) points to questions of technological mediation and selective visibility that have become ingrained in daily clinical practice in the early twenty-first century.[1] Part of the work of this chapter will be to uncover some of these issues, look at their most recent transformations, and reflect on their importance for both child psychiatry and childhood today.

The image provides some cues. We see a corner-sofa spanning the left-hand side and background of the photo. During consultations, the parents are usually sitting on the couch at a 90-degree angle to each other. The infant is placed on the carpet in front of the sofa. Newborns and young

[1] For a related discussion of technological mediation in medical imaging see Joseph Dumit, *Picturing Personhood: Brain Scans and Biomedical Identity* (Princeton, NJ: Princeton University Press, 2004); and Barry F. Saunders, *CT Suite: The Work of Diagnosis in the Age of Noninvasive Cutting* (Durham, NC: Duke University Press, 2008).

infants are installed in a baby seat facing the parents. Toddlers may play alone or with their caregivers, as in the case shown in the figure, indicated by the white silhouettes that I have added to the image. The child may use the toys that are distributed in the room and on the windowsill. An additional mirror in the background allows the viewing of the scene from behind. The therapist's seat is situated underneath the camera, not visible on the screen. The seating and playing arrangements are meant to both facilitate observation and encourage interaction between parent and child. An emphasis is put on face-to-face contact and play.

As I have argued in the previous chapters, the emphasis on parent-child interaction has been one of the most important transformations in the understanding of infancy during the second half of the twentieth century. The infant and the newborn are no longer seen as passive victims of their environment but as active players in the formation and dynamics of family relationships. This chapter explores how the interactional view of infancy informs clinical and scientific practice in the late twentieth and early twenty-first century. We will see that videotaping and computational image technologies have become pivotal tools for articulating particular aspects of parent-infant interaction and intervening in the relationships within and in-between health practitioners and families.

While the previous chapters have primarily explored historical developments in the United States, the present one focuses on the recent history and present practices at an outpatient clinic in France, called *Unité Vivaldi.* The change of location allows tracing the international impact and the ubiquity of the formerly described intellectual and technological changes. We will thus revisit many of the pioneering figures, scientific practices, and theoretical concepts that we have encountered in the earlier chapters: The theoretical ammunition of French practitioners comes from the works of the international pioneers in infant psychiatry, including Rene Spitz, Donald

Winnicott, Selma Fraiberg, Daniel Stern, and T. Berry Brazelton. The practical approach at the clinic is directly based on the micro-analytic techniques that came to the fore in the preceding decades. Its key analytics move within the confines of the new interactional framework, highlighting mutual regulation, synchrony, and intersubjectivity in infant-parent relationships. Indeed, one of the main arguments of this chapter is that the clinic provides an example of how the interactive view of infancy became normalized on an international level through a spread of both theories and practices.

Another central theme that runs throughout this chapter concerns the meaning of this normalization for infants and families. In the early 1990s, *Vivaldi* was designed as public health facility for observing, investigating, and intervening into the relational field of the young child, incorporating video-based observation into its architectural layout and clinical procedures. I argue that this commitment to technologically mediated observation staged a set of tensions between sight and insight, panoptic "fantasies" and supportive services, and medical surveillance and care. On the one hand, the focus on the observation of infant-caregiver interaction allowed epistemically and therapeutically accessing the infant's mind. On the other hand, it raised questions about how to navigate between a medical interest in public health action and potentially conflicting demands for protecting patients, and about where to draw the line between good and 'bad parenting,' and between normal and pathological development in infancy. These questions have gained further acuity with the rise of digital and computational technologies that both promise new insights into the understanding of the infant' mind and further blur the border between child psychiatric practices and contemporary media economies of surveillance.

While the practices at *Vivaldi* provide a window on these larger intellectual, social, and media-historical issues, there are some national particularities that need to be considered for a full

understanding of the function and mission of the clinic. I will discuss these particularities in detail in the following sections and only flag here the two most important ones: First, mental health care in France is public and covered by social security. For *Vivaldi,* this means, on the one hand, that care can be offered free of charge, and, on the other hand, that its mission is directly linked to broader sociopolitical agendas. Second, French child psychiatry has a distinct historical tradition that plays a role for how infant mental health was received as a new medical field in the 1980s and 90s. While a comprehensive discussion of the field's history in France lies outside the scope of this chapter, I will begin with a brief overview of how institutional developments in psychiatry differed and how they were linked to international intellectual and technological shifts.

Finally, a methodological note is necessary. To link the intimate practices at the outpatient clinic to larger historical, cultural, and technological developments, this chapter draws not only on scientific publications, oral history interviews, and archival documents, but also on internal administrative documents, architectural layouts, patient files, research and clinical videos, and participant observations. From 2015 to 2016, I had the opportunity to accompany the medical team at *Vivaldi*, observe their daily interactions, participate in discussions of medical cases, and review recent and old videotapes. From the outset, my role as a historian-observer was clearly stated. Yet, access and engagement were significantly facilitated by the fact that I am also a licensed medical doctor with pediatric training. Due to my professional background, I was granted privileges that would have been difficult to obtain for a lay observer: I could sit in in clinical consultations, participate in staff meetings, and review confidential files and video recordings. This privileged access allowed me to intimately study how the intellectual and technological transformations of the last fifty years have shaped present child psychiatric

practice. At the same time, it comes with an ethical responsibility towards both practitioners and patients that reaches beyond the collection of consent. In order to protect confidentiality, all patient data included in this study has been modified to prevent any potential identification. More importantly, I have tried to give voice to both practitioners and patients and to capture some of the tensions between the sincere motivations of my primary informants and the broader social, intellectual, and technological histories in which they take part.

The chapter begins with a description of the institutional, political and cultural background leading to the founding of *Vivaldi*. I will give a brief overview of the history of child psychiatry and infant mental health in France, relate it to international trends in the field, and show how the birth of the outpatient clinic marked a new stage in the interactional view of infancy, demarcating early childhood as a site for public health intervention and medical surveillance. The second and third sections will analyze in detail how interactive approach and public health mission are inscribed in architectural design of and video practices at the clinic. The fourth section and the conclusion will focus on the rise of digital and engineering technologies. I will consider how these technologies build on and transform earlier visions of infancy and how they re-stage tensions between sight and insight, and surveillance and care.

Early Childhood Psychiatry in France and the Medical Mission of *Vivaldi*

The *Unité Vivaldi* was founded in 1993 as a pioneer project for perinatal and early childhood psychiatry in Paris. The clinic was a novelty from an institutional point. It was the first outpatient facility in France exclusively dedicated to the age span of zero to three years and marked a cornerstone in the demarcation of infancy as an epistemic and clinical space in its own right.

Yet, its foundation was inscribed in a longer history of efforts at extending psychiatric services to children and adolescents, dating back to the 1950s. In this context, there are some particularities of child psychiatric care in France that are important for an understanding of the functioning of the clinic. In contrast to the United States, child psychiatry has never been a specialty in its own right in France but instead is constituted as a sub-specialization within psychiatry. Its sub-disciplinary identity was slowly negotiated in the post-World War period with the implementation of the first child psychiatric chair in 1948, the development of child psychiatric journals in the 1950s, and the establishment of research and treatment centers in the late 50s and early 60s. Specialized structures of care developed somewhat later than overseas and with different cultural connotations. For instance, child guidance clinics, which had been a tradition in the United States and in Britain reaching back to the interwar period, were established in France only after the Second World War, embedded in political efforts at a postwar renewal of French society.[2]

On an administrative level, the framework for special psychiatric consultations for children and adolescents was further elaborated in the 1960s and 70s. The immediate impetus was a major reform in the organization of psychiatric care. This reform figures within the broader history of an international shift from institutional to community care, but its color was decidedly French.[3] Since the post-World War II period, French health care had been covered by social security and

[2] Jean-Christophe Coffin, "La construction d'une identité professionnelle: l'exemple de la psychiatrie de l'enfant dans la France des années 1950," *Revue d'histoire de l'enfance « irrégulière »*, no. 12 (2010): 65–83; P. Jeammet, "Child and Adolescent Psychiatry in France," in *Child and Adolescent Psychiatry in Europe* (Dresden: Steinkopff, 1999), 105–16; Pierre Geissmann and Claudine Geissmann-Chambon, *A History of Child Psychoanalysis* (New York, NY: Routledge, 1998), 248–57. The first psychoanalytic journal of child psychiatry in France was founded by Julian de Ajuriaguerra, Rene Diatkine and Serge Lebovici in 1958. See: Rosine Crémieux, "Serge Lebovici et la revue 'Psychiatrie de l'enfant,'" *Carnet/Psy* 58 (2000): 46–47.

[3] Gerald N. Grob, *From Asylum to Community: Mental Health Policy in Modern America* (Princeton, NJ: Princeton University Press, 1991); Geissmann and Geissmann-Chambon, *A History of Child Psychoanalysis*, 248–57.

provided by the state. Treatment for mentally ill had traditionally been organized in public hospital centers, such as the famous *Salpêtrière* or the *Sainte Anne* hospital in Paris. The social and medical role of these institutions came under increasing attack in the 1940s and 50s, leading to a nationwide reorganization of psychiatric care to be based on geographic and administrative sectors, each covering a population of 70,000 - 80,000 inhabitants. As the historian Nicolas Henckes has pointed out, one major change in the new system was that it facilitated the collaboration among various health care professionals, now organized in multidisciplinary teams.[4] The organization in teams also eased the introduction of special consultations for children and adolescents since they often depended on coordination among various experts, including speech and psychomotor therapists, social workers, educators, psychologists, and physicians. The new administrative framework for child psychiatry was called "intersector," since each covered the population of several psychiatric sectors (usually three, corresponding to 210,000 - 240,000 inhabitants).[5] *T*he 6th intersector, of which *Vivaldi* would be part, was implemented in 1975.[6]

Early childhood psychiatry as a special subfield within child psychiatry gained increasing recognition in France in the 1980s, following its rise in the United States (see *Chapter Three*). One of its earliest and most important promoters was Serge Lebovici (1915-2000), a major figure in French psychoanalysis in the last third of the twentieth century. Lebovici's engagement with infant psychiatry roughly followed the international development of the field. Like many other

[4] Nicolas Henckes, "Réformer et soigner: l'émergence de la psychothérapie institutionnelle en France, 1944-1955," in *Psychiatries dans l'histoire*, ed. J. Arveiller (Caen: PUC, 2008), 277–88; Nicolas Henckes, "Le nouveau monde de la psychiatrie française: Les psychiatres, l'état et la réforme des hôpitaux psychiatriques de l'après guerre aux années 1970" (PhD-thesis, Ecole des Hautes Etudes en Sciences Sociales (EHESS), 2007), esp.11-49.

[5] Klein, F., M. Beverina, R. Moreau, A. Veaux, and L. Chazalet. "Qu'est-ce que l'intersecteur de pédopsychiatrie?" *Entretien De Bichat, Tables Rondes* 219 (1983): 1–5.

[6] Elisabeth Aidane, "L'Unité Petite Enfance Vivaldi et le réseau" December 1998, Presentations and Publications, Folder 1, UV.

early practitioners interested in infancy, Lebovici was fist trained in pediatrics in the 1940s before he specialized in child psychiatry and psychoanalysis. In 1946, while still a resident, he got in touch with Anna Freud, seeking additional training in child psychoanalysis at the Psychoanalytic Institute in London.[7] From that time on, he was in frequent contact with British and American practitioners of child and infant psychiatry. Among others, he initiated translations of works of Anna Freud, Donald Winnicott, Margareth Mahler, and Rene Spitz, furthered the formation and maintenance of an international network of practitioners in infant psychiatry, and was personally acquainted with many of the leading figures in the field, including T. Berry Brazelton, Daniel N. Spitz, and the Swiss child psychiatrist Bertrand Cramer.[8] Lebovici's own theoretical work followed the international tides of infant psychiatry and psychology, moving from psychoanalytic theories of drive tensions in early childhood in the 1950s to 70s to an analysis of parent-infant interactions in the 1980s.[9] Throughout his life, he was influential in psychoanalysis and infant mental health on an international level. Among his many positions, he was secretary of the International Psychoanalytic Association in Paris from 1973 to 1977, president of the World Association for Infant Psychiatry and Allied Disciplines (later World Association for Infant Mental Health) from 1989 to 1992, and expert advisor on child mental health for the World Health Organization. In France, Lebovici initiated the foundation of one of the first medico-psychological centers, the *Centre Alfred Binet*, in 1958, and established a child

[7] On Lebovici's relationship with Anna Freud and his request for training in child psychoanalysis see "Correspondence with Serge Lebovici" (1946-1980), Box 64, AFP, LC.
[8] On Freud: Anna Freud, "Letter to Serge Lebovici," November 21, 1955, Box 64, AFP, LC; Anna Freud, "Letter to Serge Lebovici," June 6, 1957, Box 64, AFP, LC; Serge Lebovici, "Letter to Anna Freud," June 17, 1957, Box 64, AFP, LC. On Mahler: Margaret Mahler, "Correspondence with Serge Lebovici" (1960-1977), Box 11, Folder 283, MMP, YU. On Brazelton and Cramer: Brazelton, T. Berry, "Draft of Obituary for Serge Lebovici," 2000, Box 76, Folder 132, TBBP, FCLM; Brazelton, T. Berry, "Letter to Serge Lebovici," November 1998, Box 76, Folder 84, TBBP, FCLM.
[9] For an overview of Lebovici's work: Bernard Golse, "Réflexions sur l'oeuvre de Serge Lebovici," *La psychiatrie de l'enfant* 44, no. 1 (2001): 5.

psychiatric service at the *Avicenne de Bobigny* hospital in 1978. His consultations gained considerable fame for their educational use of one-way mirrors and video, and many of the leading French practitioners in child psychiatry of the early 21st century were trained by him to some degree.[10]

Simultaneously with the efforts of Lebovici and others to establish early childhood psychiatry as field of special medical expertise, the French intersectors were confronted with growing demands from parents, maternity wards and prenatal clinics to provide better structures for psychiatric care in infancy. This demand was further highlighted by the implementation and positive public reception of independent parenting facilities, such as the *Maison Verte*, founded by the psychoanalytic psychiatrist Françoise Dolto in 1979.[11] Clinical teams intervening in perinatal relationship problems followed suite and, in the early 1990s, there was a small but growing landscape of teams and units specialized in the peri- and postnatal period. It was against this background that the *Assistance Publique* [the public health services] in Paris turned to the physicians of the Parisian intersectors to propose projects that could guarantee continuity of care

[10] A historical study of Lebovici's work is still lacking. Useful references from medical practitioners include: Françoise Coblence, *Serge Lebovici* (Paris: Presses universitaires de France, 1996); Geissmann and Geissmann-Chambon, *A History of Child Psychoanalysis*, 245–48; Alain de Mijolla, "Serge Lebovici dans l'histoire du mouvement psychanalytique," *Carnet/Psy* 58 (2000): 15–18; Françoise Coblence, "Quelques Éléments de La Vie et de l'oeuvre de Serge Lebovici," *Carnet/Psy* 58 (2000): 19–21; Marie-Rose Moro, "L'âme de Bobigny, Serge Lebovici, le visionnaire," *Carnet/Psy* 58 (2000): 24; Pierre Cornillot, "Serge Lebovici à Bobigny (1978-2000)," *Carnet/Psy* 58 (2000): 24; Guedeney Antoine, "Serge Lebovici's Creativity: A Student's Point of View," *Infant Mental Health Journal* 16, no. 1 (Spring 1995): 64–67; Lebovici Serge, "Some Notes about My Life," *Infant Mental Health Journal* 16, no. 1 (Spring 1995): 68–70. The present account is also based on: Philippe Mazet, interview by Felix Rietmann, March 28, 2016; and Didier Rabain, interview by Felix Rietmann, January 14, 2016. Didier Rabain attended Lebovici's teaching as a medical student. Philippe Mazet led the child psychiatric service at *Avicenne* after Lebovici's retirement in the mid-1980s and became head doctor of the child psychiatric department at the *Salpêtrière* hospital in 1999.

[11] Francine Couétoux, "Présentation clinique par l'equipe Petite Enfance" November 5, 1994, Presentations and Publications, Folder 1, UV; Aidane, "L'Unité Petite Enfance Vivaldi et le réseau." On Dolto: Annick Ohayon, "Françoise Dolto, le sacre de l'enfant," *Sciences humaines* N°199, no. 12 (December 1, 2008): 20–20.

during the first years of life.[12] The child psychiatrists of the 6th intersector proposed the *Unité Petite Enfance Vivaldi* as an outpatient clinic and research facility that allowed both responding to the clinical demands and gaining new knowledge about early childhood development. The choice of its location was strategic: Not only was it affiliated with the prestigious child psychiatric department of the *Salpêtrière* hospital and integrated into a well-established network of perinatal care, but it was also located in the 12th arrondissement of Paris, which was densely populated with young children from a variety of economic and social backgrounds.[13]

The clinic was thus founded with clearly defined objectives that included both a public health mission and a specific psychopathological understanding of infancy. Clinical work was primarily meant to focus on relationship disorders, highlighting the importance that had been attributed to the interactive and communicative capacities of infants during the preceding decades.[14] In a 1998 talk about the practices at *Vivaldi,* the responsible physician of the unit, Didier Rabain explained:

> "The new theories about child development increasingly show the role of the baby and his biological competences in the triggering of paternal behavior and the establishment of the parent-baby relationship and its regulation… This consideration of the new psychopathology of the baby in the context of the interaction with his parents modifies and enriches our view of him, as much as it is the source of a formidable challenge in the field of mental health,

[12] Rabain, interview; O. Cazas and N. M.-C. Glangeaud-Freudenthal, "The History of Mother-Baby Units (MBUs) in France and Belgium and of the French Version of the Marcé Checklist," *Archives of Women's Mental Health* 7, no. 1 (February 1, 2004): 53–58.
[13] Elisabeth Aidane, "L'Unité Petite Enfance Vivaldi et le réseau."
[14] For the reception of the interactive vision at *Vivaldi* see D. Rabain, F. Couétoux, and P. Marie, "Le vécu corporel du bébé dans les troubles de la relation précoce" (Conference presentation, October 1998), Presentations and Publications, Folder 1, UV.

prevention and early care, allowing us to realize veritable programs of early therapeutic intervention…"[15]

The approach relied on both the new awareness of the importance of caregiver-child interaction and a psychoanalytically informed assessment of the parents. On the one hand, Rabain highlighted that "every birth confronts the mother with a profound change in psyche and identity." This change "begins in pregnancy and prepares the meeting between parents and the newborn." In consequence, clinical assessment had to evaluate "the confrontation of the parents with the [mental] representations that they have developed during pregnancy" and "the [life] histories [of the parents]."[16] On the other hand, he stressed that becoming a parent also meant "the discovery of a new being blessed with remarkable competences for exchange and communication." These competences inform and modify "the interactive pattern" of the parents and have equally to be taken into account in the provision of care.[17]

Special emphasis was put on close, video-assisted observation. In a 1995 newsletter, announcing the foundation of the clinic, the medical team highlighted the importance of "a very performative video installation" for the functioning of the clinic, "making possible micro-analytic work on the parent-baby relationship."[18] This work was especially necessary for the diagnosis of problems of "relational order" such as "dysfunction and deregulation of the triadic relationship father-mother-baby." These problems were "more difficult to bring to light on a clinical level but observable with a video-assisted micro-analysis of fine-grained interactions."[19] The multi-disciplinary composition of the team, including child psychiatrists, child psychologists, psychotherapists,

[15] D. Rabain, "Action du bébé sur la parentalité" (Presentation, December 1998), 1, Presentations and Publications, Folder 1, UV.
[16] *Ibid.*, 2.
[17] *Ibid.*, 3.
[18] D. Rabain, M. Beverina, and E. Aidane, "Naissance d'une unité petite enfance rattachée à l'hôpital Pitié-Salpêtrière" (1995), 3, Publications and Presentations, Folder 1, UV.
[19] *Ibid.*, 1.

nurses, educators, psycho-motor therapists, and social assistants, was equally meant to accommodate a multi-sided, observational and therapeutic approach to interactional activity.[20] The criteria for admission were broadly defined and tried to balance between the specific medical mission and an openness for families with young children presenting any kind of psychological concern. According to early descriptions by the medical team, the reasons for consultation could include common difficulties that parents encountered with their infants, "such as sleep disorders, problems of life rhythms, of the regulation of behavior or development", or disorders "of the parent-child relationship [that had been] noted by professionals of infancy in maternity wards, centers of maternal and infant protection, kindergartens, or by pediatricians, nurses or mid-wives."[21] Admission relied on a voluntary commitment, was free of charge, and parents could request a consultation without any medical referral. At the same time, health professionals were encouraged to draw parental attention to the clinic and to urge families to request a consultation, if considered necessary for the infant's development. Ties to maternity wards were especially strong, "allowing articulation and continuity between the history of pregnancy […] and the establishment of the early relationship between parents and child."[22] Reasons for referral could include difficult social circumstances such as teenage mothers, problems due to migration, or families in difficult living conditions; physical conditions such as

[20] *Ibid.*
[21] Rabain, Beverina, and Aidane, "Naissance d'une Unité Petite Enfance rattachée à l'hôpital Pitié-Salpêtrière"; Unité Vivaldi, "L'Unité Petite Enfance: Une stratégie nouvelle de prévention et de soins des troubles de la relation précoce parents-enfants" (March 1996), 1, Presentations and Publications, Folder 1, UV.
[22] *Ibid.*, 2.

prematurity or congenital syndromes; and psychological conditions such as postpartum depression or other psychiatric disorders in the family.[23]

The double mission of the unit reflected a potential field of tension between patient-centered care and medical surveillance. On the one hand, it provided assistance for parents facing difficulties with their offspring and furnished help in dealing with social and psychological issues. On the other hand, it inscribed itself in preventive public health action, extending and tightening a network of mental health surveillance in close collaboration with legal services such as the protection for infants and mothers (*protection maternelle et infantile*).[24] We will see below that the tension between care and surveillance was partly restaged in the use of observational technologies in the clinic. However, it is important to note that, according to Rabain, parents who were seen at the clinic tended to belong to a higher economic status than commonly found in child psychiatric practice. These were "parents who [were] worried about their offspring and what their offspring [would] become."[25] The condition of voluntary commitment further forecloses too simple a reading of the Unit in terms of dispersed medical control.[26]

Setting the Stage: The Architectural Design of Vivaldi

The emphasis on the observation of parent-infant interaction was incorporated into the architectural design of the clinic. The unit was divided in two distinct functional spaces: a

[23] *Ibid.*; Couétoux, Francine, "Ressemblances, rememorations et repetitions dans les relations des parent avec leur bébé" (Conference presentation, 6ème journée des psychologues cliniciens de l'AP-HP, Paris, 1998), Presentations and Publications, Folder 1, UV.
[24] Aidane, "L'Unité Petite Enfance Vivaldi et le réseau"; Couétoux, "Ressemblances, rememorations et repetitions dans les relations des parent avec leur bébé". For a case study: Rabain, D., E. Aidane, J. Wendland, and P. Marie, "Figures de l'atypicité et constructions de la relation thérapeutique précoce," *Bulletin Du Groupe WAIMH Francophone* 9, no. 1 (2002): 13–32.
[25] Rabain, interview.
[26] Cf. Gilles Deleuze, "Postscript on the Societies of Control," *October* 59 (1992): 3.

traditional setting for medical consultations and an area for the reception of families. The reception area in particular sought to incorporate the emphasis on infant-parent interaction into the architectural layout, drawing on new conceptions in the design of nurseries and centers for infant and early childhood care. The designer of *Vivaldi*, Bernard Franjou, was member of a commission that was convened by the ministry for social services of the city of Paris [*Ministère des Affaires Sociales de la Santé et de la Ville*] in 1990 to reflect on "the material conditions of the layout of centers for the care of children under the age of 6 years." The commission was established due to the law of December 18, 1989 (Article 180), which promoted the creation and extension of early childhood facilities, especially for day care but also for short-term activities and clinical care.[27]

At that time, Franjou had already obtained considerable experience in the design of such spaces and was a proponent of an architectural approach that was heavily influenced by recent theories of early childhood psychiatry. For example, in 1990, Franjou published an article entitled "Thinking the Space of the Young Child" in *Devenir*, a European journal for child development, in which he argued for a re-conceptualization of centers for infant care on the basis of the "relational field" of the preverbal child. His starting point was informed by a fundamental epistemological tension: he argued that the preverbal child could not represent itself in a space structured by language, but representations of and contemporary architectural approaches to the child assumed a separation of interiority and exteriority that only came about through linguistic development. According to Franjou, contemporary approaches postulated "a sensorimotor

[27] Ministère des Affaires Sociales de la Santé et de la Ville, *L'espace d'accueil de la petite enfance, éléments de programme des établissements d'accueil des enfants de moins de 6 ans: Guide pratique* (Paris: Collection FNCAUE, L'inédite, 1993); Cadart, Marie-Laure, "L'enfant et la PMI, d'hier à aujourd'hui," *Informations sociales*, no. 140 (2007): 52–63; Assemblée nationale et sénat, "Loi n°89-899 du 18 décembre 1989 relative à la protection et à la promotion de la santé de la famille et de l'enfance et adaptant la législation sanitaire et sociale aux transferts de compétences en matière d'aide sociale et de santé," *Journal Officiel de la République Française*, décembre 1989, 15735–39.

coordination, which [did] not immediately exist in the infant" and relied on "geometric principles that [were] inappropriate for guiding us to a better understanding of the child." They remained in an old paradigm that simply extended scholarly and hospital spaces to care centers for infants and little children. In contrast, Franjou argued for "the necessity of finding in early childhood itself the resources of its architecture" and proposed, drawing on the work of Donald Winnicott, to understand the infant in "his process of separation," acknowledging the "integrality of the [parent-child] dyad" and considering the child a "product of interaction": "An appropriate approach to the first age, that is careful not to project any image upon the infant, should satisfy itself with two single noticeable facts […]: the physical presence of the infant and the relationships that he maintains with his affective environment."[28]

In practical terms, the design had to respect the "rhythm of life" of infants, taking into account the oppositions between autonomy and intimacy, free play and privileged relationship, and observation and support. The guide of the ministry proposed the layout on *Figure 4.2* as a spatial blueprint for accommodating this "relational structure" of newborns and infants. The layout was designed for a center taking care of up to ten newborns and toddlers (until the age of two years). After an entrance (*entrée)* follow two central units that allowed for free, supervised play (*libre jeu*) and contained posts for cleaning (*poste de toilette*) and feeding (*repas*). To this common space, small individual units were attached for sleeping (*sommeil*) and relaxation. The outline of centers for children from two to four years was identically structured, but contained only one large room for sleeping and quiet play, assuming that the need for an individual sleeping pattern had decreased at that age. The design thus located the "relational triangle" of "parent-child-adult who represents institution" in a central space that allowed for observation and relative autonomy

[28] Bernard Franjou, "Penser l'espace du petit enfant," *Devenir* 2, no. 2 (1990): 76–94.

of the child and his relational partners, but could quickly be transitioned into a space for more intimate exchange.[29]

The planning of *Vivaldi* followed these architectural conceptions with the exception that it was not only a space for accommodating families but also dedicated to the generation of medical knowledge and therapeutic intervention in parent-child relationships. Franjou designed the clinic in close collaboration with the responsible child psychiatrists.[30] The unit was constructed in two apartments of an already existing building. *Figure 4.3* shows the layout after reconstruction. The unit consisted of two separated spaces of 98 and 144 square meters, divided by a short bridge (indicated by the grey space next to the staircase). The two apartments were designed to serve the two different key functions of the clinic: The unit that we see on the left (*Ensemble A*) was the clinically oriented section for child psychiatric consultation and therapy; the unit on the right (*Ensemble B)* also contained rooms for consultations but was mostly dedicated to the reception (*accueil*) of the families. Parents could come without appointment and, if desired, simply sit in the *Atrium* (room 15) without any formal registration or child psychiatric follow-up. In spite of these functional differences, an effort had been made in both units to create open spaces that accommodated the *relational field* of the infant and allowed for fluidity between autonomy and intimacy. The reception area in *Ensemble B*, called the *Atrium* (room 15)*,* evoking the central space of the ancient roman domus, provided a collective space for play and exchange. It was furnished with toys and the educational staff of *Vivaldi* assisted parents with their children. The *Atrium* was bordered by more intimate spaces for care such as a room for bottle-feeding (*biberonnerie*, room 28), one for washing (*salle d'eau,* room 16), and three alveoli for resting

[29] Ministère des Affaires Sociales de la Santé et de la Ville, *L'espace d'accueil de la petite enfance, éléments de programme des établissements d'accueil des enfants de moins de 6 ans: Guide pratique*.
[30] Marianne Vermesch, "Architecture, Ciment de La Relation Parents-Enfant," *Enfant D'abord* 191 (June 1995): 51–52.

(rooms 17, 26, and 25). The consultation unit *Ensemble A* similarly attempted to implement Franjou's conceptions of open and closed spaces through a reception room (*salle d'accueil,* room 1) that was separated from the rooms for private consultation (rooms 2-4). Even though these latter rooms were not freely accessible, their rendering emphasized the "relational triangle", showing, somewhat stylized, a trifold, face-to-face seating arrangement with the therapist sitting behind a desk.

While the design thus highlighted the "relational field" of the child, an apparent friction emerged due to the medical and scientific mission of the clinic. In both ensembles the units for reception were separated from the spaces reserved for medical intervention by both walls and doors (between room 1/5 and 2/8/4 in A, and 17/27/25 and 18/20/24 in B). The layout of the medical section followed a more classical pattern of a clinical unit with closed rooms rather than the openness and fluidity of Franjou's relational structure. Even within the spaces dedicated to the reception of the families the medical mission was clearly perceivable. The *Atrium* was not only a collective space promoting play and interaction, but also a field of constant observation. The reception desk (*bureau d'accueil*, room 29) played an important role in the medical functioning of the clinic. As indicated by the arrows in the layout, it had a view to the *Atrium*. In addition to the educational staff, psychologically trained professionals staffed the desk and took notes on observed behavior and interactions. The architecture conditioned an interactive behavior that, in turn, could become the object of medical and scientific study.

The Clinical Epistemology of Video

From the outset, video was considered key for the study and observation of parent-child interaction. Initially, the team planned to use video installations in almost all of the rooms of the clinic. "In the beginning we had the fantasy of putting cameras everywhere… Everything seemed important. Nothing was to be missed… We thought that we had to understand, in the different locations of the clinic, what happened to the baby, the way he apprehends the environment which he was to inhabit," explained Didier Rabain retrospectively.[31] The architectural design included video outlets in rooms for both reception and consultation, being accessible through portable cameras.[32] The room for video direction (*régie video*, room 19) was planned in the far right corner in the medical section of the reception unit, constituting a remote control center for evaluation and analysis of the recordings effectuated throughout the entire clinic.

The desire to observe and register underlined the spatial friction of the clinic as both an open space for free interaction and a clinical and scientific site for observation, therapy, and research. The health practitioners were not unaware of this friction. A public announcement of the clinic in a journal for health professionals clearly stated a tension between an architecture, which sought to "promote the relationship between a child and his parents," and a "dispositive of cameras," which needed deontological awareness and of which "the future would tell whether it was compatible with a confidential reception of families."[33] In the initial draft of the article the author

[31] Rabain, interview.
[32] Outlets are in rooms 2, 4, 15-18, and 22. Bernard Franjou and Groupe Hospitalier Pitié-Salpêtrière, "Unité d'accueil de la petite enfance: Définition du programme" March 10, 1993, Presentations and Publications, Folder 1, UV.
[33] Vermesch, "Architecture, Ciment de La Relation Parents-Enfant."

even evoked a military metaphor in talking about "an arsenal of cameras at disposition in the different modules and in a room planned for this effect in the consultation part."[34]

We can read this "fantasy" of ubiquitous observation within a history of surveillance. Both the camera angle from above and the blurry quality of the analog video image of the consultation room (*Figure 4.1*) evoke the aesthetic codes of CCTV cameras.[35] This formal resemblance was not simply an artifact of cultural practice and imagination, but also stemmed from a partly shared purpose: a comprehensive and constant observation that belonged to, or did at least not disturb, ordinary routine. Indeed, the implantation of the cameras in the ceiling and their direction from a separate room minimized their presence during clinical consultations. However, in contrast to surveillance cameras, the recording was not meant to prevent or modify unwanted behavior. Rather, it inscribed itself in an epistemic practice that attempted to describe, classify and analyze from the position of an independent observer. This was not necessarily in tension with a reading within a broader history of medical control, but, to understand the conception of childhood that was advanced, it is important to further consider the specific scientific and medical functions of video and follow its inscription in the practices at *Vivaldi*.[36]

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[34] Vermesch to Rabain, Fax, May 3, 1995, Presentations and Publications, Folder 1, UV.

[35] The literature on surveillance and visual technologies is extensive. Relevant works include Gilles Deleuze, "Postscript on the Societies of Control"; Paul Virilio and Patrick Camiller, *War and Cinema: The Logistics of Perception*, Radical Thinkers (London New York: Verso Books, 2009); Michel Foucault, *Power/Knowledge : Selected Interviews and Other Writings, 1972-1977* (New York, N.Y.: Pantheon Books, 1980); Jean-Louis Comolli, "Machines of the Visible," in *The Cinematic Apparatus*, ed. Teresa de Lauretis and Stephen Heath (New York, 1982); Catarina Frois, *Peripheral Vision: Politics, Technology, and Surveillance* (New York: Berghahn Books, 2013); Torin Monahan, *Surveillance and Security: Technological Politics and Power in Everyday Life* (New York: Routledge, 2006); Farocki, Harun, Susanne Gaensheimer, Volker Pantenburg, and Westfälischer Kunstverein, eds. *Harun Farocki: Nachdruck, Texte*, Berlin: Vorwerk 8, 2002.

[36] Thinking with Deleuze's control societies (rather than Foucault's disciplinary systems), we may conceptualize the outpatient clinic as being part of a dispersed system of medical control. As mentioned above, not necessarily in contradiction to such a reading, but important to consider are the conditions and aims upon which the clinic operates. The consultation is voluntary; parents often come because they are looking for help, and, most importantly, it is an empathetic practice, e.g. the aim of the therapeutic intervention is self-understanding of behavior and enhancement of autonomy.

As I have mentioned in the *Introduction*, the early 20th century drive to "see the child" grew out of a new status of the visual, conditioning and conditioned by an exploration of pre-linguistic children. In a sense, the late 20th century situation is not so different.[37] It is, in the words of a consulting physician of the clinic, "the lack of language" and a desire to understand the interiority of the infant through observation that drives the use of the moving image.[38] Didier Rabain elaborated: "The younger the infant, the more video is a tool that lets me dive to a place under the sea, to speak with Jules Verne… This is to say that there is the side of exploring something [using video]. I feel like an explorer..."[39] The metaphor of Jules Verne's *Twenty Thousand Leagues under the Sea* evokes the distance between the outside position of the observer and the elusive interiority of the infant's mind. Video was an effort at transparency: "When we created the unit, we said to the administration that we would like a video system that functions as if we were a radiological service. Thus we had already in mind that we would have to realize a kind of x-ray to undertake a microscopic analysis of interaction and to understand the baby. It was as if we needed to conduct an x-ray, a scanner, to have more reflection."[40]

In practice, it proved difficult to "x-ray" the entire clinic. Videotaping was mostly restricted to the main consultation room (room 2 on *Figure 4.3*) and occasionally the *Atrium* until the change to portable digital cameras in the late 2000s (see below). As mentioned above, the consultation room had a fixed video installation with two S-VHS cameras implanted in the ceiling on

[37] On the drive to see the child in early 20th century visual culture see: Vicky Lebeau, *Childhood and Cinema* (London: Reaktion, 2008); and F. Rietmann, "Visualiser l'esprit de l'enfant : une généalogie de l'image en pédopsychiatrie," *Neuropsychiatrie de l'Enfance et de l'Adolescence* 64, no. 7 (2016): 473–80. Alternatively and additionally, the use of video can also be considered in a longer history of medical hermeneutics. See Curtis, Scott, "Still/Moving: Digital Imaging and Medical Hermeneutics," In *Memory Bytes : History, Technology, and Digital Culture*, edited by Lauren Rabinovitz and Abraham Geil (London: Duke University Press, 2004), 218–54 .

[38] Sylvie Viaux, interview by Felix Rietmann, January 27, 2016.

[39] Rabain, interview.

[40] *Ibid.*

electronically controlled feet (or tours). Also the location of the direction room differed from the initial layout, being instead situated next to the main consultation room (at the intersections of rooms 3 and 8). The direction allowed remote controlling of the cameras and changing of zoom, angle and inclination, as well as splitting and fading of images.[41] Even though some of these special effects have a longer history in child psychiatric video tests, as for example in the Still Face Situation, discussed in *Chapter Three*, they were rarely used in the daily practice of the clinic, being mostly restricted to zoom and changes in camera angle.

In spite of some differences in-between practitioners, the clinical videos from the 1990s to 2000s show specific patterns of use, partly guided by the sequences of the child psychiatric consultation. In a first contact, the camera often featured as an additional observer, the shot corresponding to the one in *Figure 4.1*. The perspective was adjusted from the outside, just before the therapist entered the room. The video then registered the consultation without any modification of angle or any special effects. The practitioners mostly described the use of these images as "help for memory". The video allowed going back to the consultation, listening to the interview, and observing in greater detail the interaction between parent(s) and infant.

Yet, it was more than simply remembering. The aim was to see elements of behavior that had escaped the attention of the practitioner during the consultation. It was a pathological depth that only became readable through a detailed analysis of the audiovisual surface. The elements of analysis were relational and interactive and included positioning and handling of the infant, reactions of the infant to sounds, speech and the behavior of the parents, actions initiated by the infant, and corresponding reactions by the caregivers. Some sections of the consultations were specifically dedicated to evaluating parent-child relationships without the presence of the

[41] Trilog, "Recommandations pour l'installation vidéo" September 9, 1995, Presentations and Publications, Folder 1, UV; UV, "Besoin en matériel vidéo pour l'Unité Petite Enfance de l'allée Vivaldi" 1995, Presentations and Publications, Folder 1, UV.

therapist. For example, if the psychiatrist left the room, then the videotape would capture the interplay between only parent and child. In these situations, an optimal camera shot was sought through modification of zoom and angle. The objective was to achieve an image that enabled microanalysis of concrete situations, focusing on the expressions, movements, and sounds during the dyadic (or triadic) interactions.[42]

The analytic framework followed the propositions of Stern, Tronick and Brazelton, discussed in *Chapters Two and Three,* to explore the "structure, dynamic and spatio-temporal organization" of parent-child interaction. "Early interactions constitute the basis for the representation of the self and the object," Rabain elaborated in a talk entitled "The Model of Interaction" in 2000. "The baby constructs at the same time the interaction that, in turn, constitutes the basis of his subjective experience. We are at the interface of the observable object and the represented subject. But as well on the interface of two mental universes, that of the baby and that of the mother."[43] Interaction was the "observable interface" of mental representations and their behavioral construction. Its observation provided the venue of access to the quality of parenting: it "allowed evaluating the nature and the quality of parental behaviors, of the mother but also of the father, without forgetting the role of the baby in the emergence of those of his mother."[44]

The emphasis on the mother stemmed partly from a social reality: of 102 consultations for infants younger than 1 year in 2005, 58 were only attended by mothers and only 18 included the father in a triadic therapeutic approach.[45] It was also informed by theoretical conceptions and a

[42] Based on discussions with the practitioners at Vivaldi and a viewing of ca. 100 videos and corresponding patient files from 1995-2009.
[43] Didier Rabain, "Le modèle de l'interaction" (November 6, 2000), 1–2, Presentations and Publications, Folder 1, U.
[44] D. Rabain, "La compétence maternelle n'est pas inée," *Métiers de La Petite Enfance* 49 (June 1999): 4-8, 5.
[45] D. Rabain et al., "Epidemiological Data on a Community-Based Infant Unit in Paris" (Conference Poster, 2005).

corresponding focus on "maternal competence," as highlighted by Rabain in a 1999 paper on early childhood development. In the article, Rabain parted from Donald Winnicott's famous dictum "the baby does not exist alone, without his mother" to emphasis the "fundamental role that the person who cares for the baby (*the caregiver* [English in the original]) plays in the development of the child."[46] The insertion of caregiver is important since the emphasis is not necessarily on the biological mother but on the person taking on primary care functions, a shift of meaning that was negotiated in the scientific and medical discourse about infancy in the USA from the 1960s to 80s, discussed in *Chapter Two*. Still, the clinical focus at *Vivaldi* primarily remained based on an observation of mother-infant interaction in both practical and theoretical terms.

In practice, the reading of the audiovisual images included conceptual movements between the "observable interface" of interaction and the "mental universes" of the infant and the mother. In 2016, I asked some of the child psychiatric practitioners to discuss one of the early videos with me. While we will see below that the habits of reading have slightly changed with the proliferation of digital tools, the discussion resonates with the patient dossier and provides a good illustration of the analytic approach that informed its use since the beginnings. The video showed a newborn and her mother during bottle-feeding. The practitioners, a child psychiatrist and a psychologically trained infant nurse who had worked at *Vivaldi* since the early 2000s*,* first approached the video by describing what they were seeing: how the baby was held and placed, how mother and infant watched each other, how they behaved during the act of feeding, including speed and rhythm of movements, sounds etc. These evaluations were not free of value or theory, i.e. what counted as a significant event was, to an extent, pre-determined and criteria for "good" and "bad" interaction played a role. For example, the mother seemed to be in a

[46] Rabain, "La compétence maternelle n'est pas innée," 5.

depressed mood, i.e. she looked sad and was barely reactive to the movements of the infant. During feeding, the newborn seemed "uncomfortable" (i.e. was agitated and cried) and the mother only "noticed" this after a "considerable delay." The therapists thus spoke of "bad holding." However, an attempt was made to keep value judgments at a minimum. The fact that the mother had been diagnosed with postpartum depression was only introduced in a second step into the evaluation. Rather, the aim of the practitioners was to "objectify their observations" to "step out of the narrative of the mother" and "their own feelings" to "see the infant underneath."[47] Interaction attained a superordinate status, prior to the symbolic and narrative order of language. The practitioners drew on Daniel Stern's concept of a "proto-narrative envelop" that the child developed through interactive events:[48] "We now know that a disorder noted in the first months of a newborn's life may only concern the relationship before it even constitutes a psychopathological disorder in the psyche of the infant, and that an intervention and adequate action in the relation of parents-newborn is capable of making this trouble quickly recede."[49]

Video constituted not only a tool to access the interactional interface between parents and baby and the "proto-narrative" reality of the infant but also an instrument for control and self-evaluation of the observer, allowing the countering of both inattention and counter-transference. As in its early use at T. Berry Brazelton's Child Development Unit, discussed in *Chapter Three*, the image made it possible to receive feedback about observational and therapeutic practices.

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[47] Video discussion at *Vivaldi*, February 25, 2016.

[48] Daniel Stern, Serge Lebovici, and Antoine Guedeney, "D'une constellation à l'autre: Une discussion autour du livre de Daniel Stern," *Psychiatrie de L'enfant* XLIV, no. 1 (2001): 307–26; D. Rabain, F. Couetoux, and P. Marie, "Le Vécu Corporel Du Bébé Dans Les Troubles de La Relation Précoce" (Conference presentation, October 1998), Presentations and Publications, Folder 1, Unité Vivaldi; Didier Rabain, "Le Modele de l'interaction" (Lecture, November 6, 2000), Presentations and Publications, Folder 1, Unité Vivaldi.

[49] Didier Rabain, Patricia Marie, and Bernard Franjou, "Reflexions éthiques d'une équipe petite enfance: Bilan de trois ans de fonctionnement" (Conference presentation, congrès SFPEA, Nancy, June 19, 1998).

This opportunity fueled two further applications: collective observation and therapy.[50] Part of the aim of the child psychiatric team at *Vivaldi* was to find "a common language," to see the same elements on the image and to thus dispose of common standards for describing and evaluating clinical situations, in spite of different professional trainings and therapeutic approaches. Video was seen as an "indispensable interpersonal tool." Not only did it facilitate interdisciplinary work but it significantly shaped it: team members watched and discussed videos together to fine tune analysis, control for personal biases, and find a common descriptive-analytic basis for clinical cases.[51] In video feedback, which was little practiced at *Vivaldi*, the most common purpose for the therapeutic application of moving images was a similar one. Watching the videos allowed the parents to gain a distance, to 'objectify' their own behavior in an interactive situation and thus increase self-awareness and eventually modify behavior.[52] For both medical team and parents, its power resided in an ability to "objectively" observe oneself. It was a performed objectivity, not primarily for the construction of general knowledge but for a case-specific critical awareness. It still had a gnostic mission, one that was first directed to the infant, but then from the infant to oneself.

[50] The practices thus figure within the longer histories of collective empiricism: Lorraine Daston and Peter Galison, *Objectivity* (New York: Zone Books, 2007); Lorraine Daston and Elizabeth Lunbeck, *Histories of Scientific Observation* (Chicago: University of Chicago Press, 2011).
[51] Discussions with team of *Vivaldi* from December 2015 to February 2016.
[52] There is an extensive medical literature on video feedback since the 1970s. Recent examples include Sergio Facchini, Valentina Martin, and George Downing, "Pediatricians, Well-Baby Visits, and Video Intervention Therapy: Feasibility of a Video-Feedback Infant Mental Health Support Intervention in a Pediatric Primary Health Care Setting," *Frontiers in Psychology* 7 (2016); Hannah N. Hoffenkamp, Anneke Tooten, Ruby A. S. Hall, Johan Braeken, Marij P. J. Eliëns, Ad J. J. M. Vingerhoets, and Hedwig J. A. van Bakel, "Effectiveness of Hospital-Based Video Interaction Guidance on Parental Interactive Behavior, Bonding, and Stress after Preterm Birth: A Randomized Controlled Trial," *Journal of Consulting and Clinical Psychology* 83, no. 2 (April 2015): 416–29; Magnhild Høivik, Stian Lydersen, May Drugli, Ragnhild Onsøien, Marit Hansen, and Turid Nielsen, "Video Feedback Compared to Treatment as Usual in Families with Parent–Child Interactions Problems: A Randomized Controlled Trial," *Child and Adolescent Psychiatry and Mental Health* 9, no. 1 (2015): 3. See also *Chapter Three*.

The theoretic and cognitive model that stemmed from this practice was strikingly video-graphic: video allowed working on representations in both a literal and a metaphorical sense. The video was a technological representation of a clinical situation. The diagnostic and therapeutic work was performed on a medium, which was considered an appropriate representation of a clinical problem. To be sure, the videotapes had to obey certain standards to be usable, but once these standards were met, they could be used for the evaluation of the infant, the parents and the practitioners themselves.[53]

Social Signal Processing: From Video to Computational Technologies

In the late 2000s digital video devices replaced the analog installation at *Vivaldi*. From the perspective of most of the practitioners, the introduction of digital technologies has not fundamentally transformed clinical practices but eased already established uses. Motion picture still supplements life observation, provides a support to memory, and allows a microanalysis of infant-parent interactions. However, some small but important aspects have changed that bear the promise of significantly modifying not only the clinical landscape of infant psychiatry but also the scientific understanding of infancy. In this section, I will first discuss the changes in the use of video at *Vivaldi* due to the introduction of digital devices and then move to a new field of interdisciplinary research that has emerged at the intersection of computational engineering and infant psychiatry over the last two decades.

A first change to note is that the practice of filming has diversified: now, the camera is mostly hand-held either by the practitioner or by a cameraman who attends the consultation. Angle and

[53] For a proposition of how to integrate the work on "representations" into psychotherapy see Daniel N. Stern, *The Motherhood Constellation: A Unified View of Parent-Infant Psychotherapy* (New York, NY: Basic Books, 1995).

shot can thus be changed at will. An optimal image focuses on both caregiver and child and allows seeing facial expressions and body movements. Accordingly, the framing of the image continues to rely on distant shots, extreme close-ups are only occasionally used. Yet, the shots are less static and the different stylistic modes of filming (zoom, changes in angle) come more frequently into play. Moreover, the characteristic high angle of the camera installation is not present anymore. The film aesthetics show an increasing variety and approach some of the naturalistic and emphatic modes that we have seen in Spitz's work in *Chapter One*. For example, filming is mostly done at eye level of the parents or children and occasionally assumes the perspective of one of the participants. Especially in situations of play, the cameraman often moves in the room to better capture concrete situations or interactions.[54]

Moving from aesthetics to context of use, filming has become a more widespread routine, now employed by almost all of the practitioners at the clinic. For example, video recordings have become a common aid for the educator and the physical therapist at the clinic to both assess the capacities of young children and improve therapeutic practices. When I was attending the clinic, the educator was being trained in the *Early Start Denver Model*. The *Denver Model* is one among many video-assisted international training programs for care in early childhood that have been developed over the last two decades. It was proposed by researchers from the Mind Institute at UC Davis in the 2000s and consists of a behaviorist-informed therapeutic program for infants and toddlers with autism spectrum disorder.[55] It employs digital video technologies for various interrelated purposes: evaluation of practitioners, education of parents, and development of the therapeutic program for the children. It relies on a regular video recording of therapeutic sessions. For instance, the educator followed a two-and-a-half-year-old boy for 9 months, asking

[54] Observations of and discussions with team from *Vivaldi* from December 2015 to February 2016.
[55] Sally J. Rogers and Geraldine Dawson, *Early Start Denver Model for Young Children with Autism: Promoting Language, Learning, and Engagement* (New York, NY: Guilford Press, 2010).

an intern or a nurse to film her interactions with the child during the weekly sessions. She subsequently looked at the registrations, discussed its quality with the intern (framing, camera movement, etc.), paid attention to her own therapeutic performance and that of the child, discussed the performances with the help of selected sequences with the medical team, sent them for evaluation to a branch of the *Denver Model* in Canada, and planned her subsequent sessions on the basis of the feedback. When the parents were present, she also selected and edited sequences to discuss aspects of interactive and communicative behavior with them.[56]

Evaluative tests provide another example for the broad and flexible use of digital video technologies at the unit. Upon the suggestion of a visiting child psychiatry visiting fellow from Portugal, the medical team experimented with a modified version of Ainsworth's "Strange Situation Test." The test was developed in the 1960s and 70s to evaluate attachment behavior in young children and has since become a frequently used video-based assessment method worldwide. The principle of the procedure consists of an observation of a young child during separation from and reunion with his or her mother. The child's behavior during the reunion episode is considered an especially important indicator for his or her quality of attachment.[57] At *Vivaldi* it could easily be integrated into the diagnostic workup by making time for a video-recoreded sequence of maternal separation and reunion in the therapeutic sessions.[58]

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[56] Educator, interview by Felix Rietmann, December 17, 2015; Physical Therapist, interview by Felix Rietmann, January 14, 2016. Again, video helped to find a common language in spite of different therapeutic orientations in the team, ranging from behaviorist to psychoanalytic approaches.

[57] Mary D. Salter Ainsworth, ed., *Patterns of Attachment: A Psychological Study of the Strange Situation* (Hillsdale, NJ: Lawrence Erlbaum Associates, 1978); Mary D. Salter Ainsworth and Silvia M. Bell, "Attachment, Exploration, and Separation: Illustrated by the Behavior of One-Year-Olds in a Strange Situation," *Child Development* 41, no. 1 (1970): 49–67; Paul Holmes and Steve Farnfield, *The Routledge Handbook of Attachment: Implications and Interventions* (London: Routledge, 2014). For historical perspectives see Lenny Van Rosmalen, René Van der Veer, and Frank Van der Horst, "Ainsworth's Strange Situation Procedure: The Origin of an Instrument," *Journal of the History of the Behavioral Sciences* 51, no. 3 (2015): 261–84; Marga Vicedo, *The Nature and Nurture of Love* (Chicago: University of Chicago Press, 2013).

[58] Video discussion at *Vivaldi*, January 13, 2016.

In a sense, the "fantasy" to see and record everything has thus become realized. The ease with which digital technology is used in all of the rooms of the clinic allows the child to be evaluated in almost all therapeutic interactions. On the other hand, the view and the images are not panoptic. They are local, dispersed, and, to an extent, individualized, depending on practitioner, cameraman and clinical situation. As before, agreement is achieved by the way of team reunions and training classes.

A more difficult question is how we understand the relationship between these practices, the images, and transformations in child psychiatric knowledge. In this context, it is important to note that digital technologies have not only led to a more widespread use of moving images in clinical practice but also have participated in the emergence of a new field of research using both 2D and 3D image technologies to analyze child and infant behavior. In Paris, the research emerged through collaboration between the child psychiatric department at the *Salpêtrière* hospital and engineers from the Institute for Intelligent Systems and Robotics (ISIR) at the University Pierre et Marie Curie, notably through the initiative of David Cohen, who became head doctor of the child psychiatric department in 2008 and has a background in both neuroscience and medicine.[59] While the collaboration includes various projects, the sub-field that has achieved most prominence for child psychiatric practice on an international scale focuses on Social Signal Processing and situates itself at the intersection of developmental psychology, child psychiatry, and computational neuroscience. A review of "the emerging domain" from 2009, describes Social Signal Processing as an increasingly popular "research and technological domain that aims at providing computers with the ability to sense and understand human social

[59] David Cohen, "Bio," accessed July 11, 2018, http://speapsl.aphp.fr/diversdocs/bioDC.pdf; David Cohen, "Profile," accessed July 11, 2018, http://www.isir.upmc.fr/?op=view_profil&id=189.

signals."[60] The interest is bi-directional: from the human being to the computer, and from the computer to the human being, the latter for "understanding and modeling social interactions."[61] Key for the field is the notion that social signals are cues specific for interaction "because they are not semantic in nature and occur without consciousness." They include non-verbal cues such as gesture, posture, gaze, facial behaviors, mimics, and body movements, as well as verbal cues such as pitch, rhythm, and intonation.[62]

One major area of research in the field concerns the development of automatized methods for extracting and analyzing social signals in both laboratory and naturalistic settings. It is here that the research at ISIR and *Vivaldi* sets in. The Parisian team has recently conducted various studies that try to evaluate child-parent interaction with audiovisual and computational means and to employ these technologies in clinical settings. In a sense, it is a transformed idea of the x-ray fantasy that we encountered with analog video: the idea to have a clinical tool that let practitioners, so to say, scan the interaction between parent and child. Significantly, interaction is no longer a fact to be established but the defining feature of the child-parent relationship. It is prior to the relationship: "the observable patterns of dyadic interaction provide a 'window' to the social relationship of the interacting partners."[63] The "window" is constructed through an analysis of synchrony, considered the social sign "*per se*" for parent-infant interaction.

The rise to prominence of synchrony may be one of the most significant changes co-conditioned by the development of audiovisual and computational research technologies over the recent

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[60] Alessandro Vinciarelli, Maja Pantic, and Hervé Bourlard, "Social Signal Processing: Survey of an Emerging Domain," *Image and Vision Computing* 27, no. 12 (2009): 1743–59.

[61] Maja Pantic et al., "Social Signal Processing: The Research Agenda," in *Visual Analysis of Humans*, ed. Thomas B. Moeslund et al. (Springer London, 2011). See also Andrew N. Meltzoff et al., "Foundations for a New Science of Learning," *Science* 325, no. 5938 (2009): 284–88.

[62] Marie Avril et al., "Social Signal Processing for Studying Parent-Infant Interaction," *Frontiers in Psychology* 5 (2014): 1437, 2.

[63] Chloë Leclère et al., "Why Synchrony Matters during Mother-Child Interactions: A Systematic Review," *PloS One* 9, no. 12 (2014): e113571, 25.

years. As mentioned in *Chapters Two* and *Three,* the concept was introduced in infant research in the 1960s and 70s to describe and investigate interactive rhythms between mother and infant, such as the synchrony between "neonate movements" and "adult speech."[64] While synchrony has experienced various redefinitions and contingent applications since its early use, it has emerged as an umbrella term for various analytic concepts in the 2000s. For example, a 2002 review of dyadic synchrony traces the concept back to a broad variety of historical predecessors or historically related constructs, including "reciprocal responsiveness," "contingent responsivity," "reciprocity," "mutuality," "social contingency," "affect attunement," "behavior state matching," and "behavioral harmony."[65] In a similar vein, the Israeli psychologist Ruth Feldman, who holds appointments at the Simms-Mann Institute in Herzlia and the Yale University Child Study Center and has closely worked together with the team at *Vivaldi*, argued in 2007 for the overreaching importance of synchrony in infant development ranging from "the maturation of the social brain" to "the development of self-regulation, symbol use, and empathy."[66] Drawing on these approaches, the investigators at *Vivaldi* defined it in 2016 as "a dynamic and reciprocal adaptation of the temporal structure of behaviors and shared affect between interactive partners," or, more descriptively, "as the temporal coordination of micro-level relational behaviors into patterned configurations that become internalized and serve to shape infant development over time and repeated experience."[67] It can be considered a synthesis of the different aspects that have come to characterize the interactional microanalysis at *Vivaldi.* Synchrony has a temporal

[64] William S. Condon and Louis W. Sander, "Neonate Movement Is Synchronized with Adult Speech: Interactional Participation and Language Acquisition," *Science* 183, no. 4120 (1974): 99–101. See also *Chapters Two and Three.*
[65] Amanda W Harrist and Ralph M Waugh, "Dyadic Synchrony: Its Structure and Function in Children's Development," *Developmental Review* 22, no. 4 (December 2002): 555–92, p. 556.
[66] Ruth Feldman, "Parent-Infant Synchrony and the Construction of Shared Timing: Physiological Precursors, Developmental Outcomes, and Risk Conditions," *Journal of Child Psychology and Psychiatry* 48, no. 3–4 (2007): 1.
[67] Leclère et al., "Why Synchrony Matters during Mother-Child Interactions," 1, 4.

structure. Its recording depends on methods that can capture a process over time. This process is composed of verbal and non-verbal cues, hence the importance of microanalysis using audiovisual media. Moreover, synchrony presupposes interaction. It is an "interactional style," and relies on a practice that attributes fundamental importance to an analysis of caregiver-infant interaction.[68]

The broadness of the concept has allowed the inclusion of a dizzying array of disciplines and phenomena under the category of synchrony ranging from the "micro-level of cells, neurons, and genes and intermediate level of interactive partners' brains, to the macro-level of population growth and weather change in addition to the mental realm."[69] The point is not to deny multiple genealogies and uses of the concept but to point to the fact that an ongoing work is being performed on its meaning and scope that helps to forge new alliances and research identities. Interestingly, agreement is partly achieved through common tools and practices.[70]

The research at *Vivaldi* is a case in point. A pilot study realized at *Vivaldi* in 2014 aimed at exploring the potential for using computational technology in a clinical setting. This requires two basic conditions: that interaction is "naturalistic," in spite of the exigencies of video recording, and that it has the potential to differentiate between normal and pathological behavior. For a naturalistic setting, a compromise had to be achieved between an environment that enabled free interaction and a technical arrangement that allowed for robust and efficient data acquisition. As one participant told me, this was all but easy and it took a lot of time to agree upon a set-up that worked for both groups of practitioners. For example, the engineers had never filmed children

[68] Harrist and Waugh, "Dyadic Synchrony."
[69] Leclère et al., "Why Synchrony Matters during Mother-Child Interactions," 3.
[70] Leclère et al. conduct a systematic literature review focusing exclusively on synchrony in publications from 1977-2013, thus yielding 64 papers. On this basis, they distinguish three assessment methods for synchrony: global interaction scales, synchrony scales, and micro-coded time series analysis. Note that all three of them rely on video analysis, used in almost all of the paper they analyzed.

younger than 4 years and were used to laboratories where most parameters could easily be controlled. The clinicians, for their part, were already used to the advantages of hand held cameras that optimized the images from a clinical perspective but were futile from a technological point of view. For these reasons, the group abandoned the work with newborns and decided instead to work with toddlers and to focus on a play situation that demanded continuous attention, allowing for a pre-set 90 degree seating arrangement (*Figure 4.4*).[71]

The technological set-up (*Figure 4.4*, right hand side) included two spatially and temporally calibrated low-cost RGB-D sensors (Kinects) that could extract skeleton and body movement data, as well as depth sensors, color cameras and microphones. Data was processed with a computational analysis that included low-level features such as proximity of shoulder centers and hands, and higher-level features including attention to and involvement in tasks and sound activity. The higher-level features were deduced from the basic features and relied on several assumptions. For example, attention to the task and involvement in the task were assumed to respectively manifest themselves by the proximity of hand and body movements to the task and by a new parameter called "contribution to task," defined as the relative velocity with which a movement to the task was performed.[72] Contribution to task was designed as a measure for the initiation and directionality of interaction. The turns and interplays of the directionalities were considered a measure for synchrony. *Figures 4.5* and *4.6* illustrate the steps from the analysis of features to the extrapolation of synchrony on the basis of a demonstration film from ISIR. *Figure 4.5* shows the view from the video recording and indicates the features extracted with the kinects: the inclination and mobility of the upper body joints of the participants (head, shoulder, arms). The proximity and mobility of these points function as a measure for the direction of

[71] Sylvie Viaux, interview.
[72] Avril et al., "Social Signal Processing for Studying Parent-Infant Interaction."

attention to the play on the table. *Figure 4.6* shows a mapping of the relative movements of the interactive partners to each other (blue for infant, green for parent), plotted against the distance between their heads. Synchronous interaction was seen as an interaction to whose turns and rhythms both partners contributed equally well.

The view of synchrony as an anthropological constant of social interaction and its reduction to basic, measurable features was meaningful for engineers, because it allowed to translate engineering problems to a human scale and vice versa. It was also meaningful for clinicians. The basis for this had already been laid in prior practices. As we have seen above and in the last chapter, much of the video work was designed to define and refine the analysis of good and bad interactions. Various assessment tools, almost all of them relying on videotaping, have formerly been developed to account for qualities of interactional behavior, some directly employing the dichotomy between synchronic and dyssynchronic interactions, others using the above mentioned terms of reciprocal or harmonious interactions; many focusing on only one or two features.[73] The study at *Vivaldi* checked the results of their computational analysis against two clinical assessments both based on multi-dimensional scales that classified behavior in interactional types: the PIRGAS scale (Parent-Infant Relationship Global Assessment Scale, developed for the Diagnostic Classification DC:0-3 in 1994 and updated in 2005) and the CIB (Coding Interactional Behavior).[74] The PIRGAS orders infant-parent relationships on a range from well adapted to severely impaired and involves (next to and above synchrony) concepts such as "involvement," "anxiety," "stress," and "hostility."[75] CIB is a rating-point system of observed and video-recorded behavior that evaluates, among others, "parental sensitivity,"

[73] For a review see Leclère et al., "Why Synchrony Matters during Mother-Child Interactions."
[74] Avril et al., "Social Signal Processing for Studying Parent-Infant Interaction."
[75] Zero to Three, *Diagnostic Classification of Mental Health and Developmental Disorders of Infancy and Early Childhood* (Washington, D.C: National Center for Clinical Infant Programs, 2005), 42-45.

"intrusiveness," "child involvement, withdrawal, and compliance," and "reciprocity."[76] The researchers were aware that these assessment tools did not directly map upon the kinect-method, most importantly because the former constituted a summary assessment and the latter was related to the time flow of particular features, but they nonetheless proposed a cross correlation based on particular aspects of the assessment scale (CIB) and the assumed higher-level meanings of the measured cues. For example, "parental sensitivity" was related to the parents' shoulder distance to the table and the distance between hands. Even though this was a reductive and simplified transfer, it had its rational in the fact that the assessment scale was equally based on video-assisted micro-analytic observations of interactive behavior. The now operationalized concept of synchrony was just a step further.[77]

And it had clinical implications. The study was conducted in the framework of an "early intensive intervention program for dyads in severe child neglect situations."[78] Especially emotional and psychological child neglect had only gained clinical visibility and recognition through the focus on and micro-analytic study of parent-child interaction, leading to its definition as primarily an interactional disorder.[79] The team at *Vivaldi* correspondingly described child neglect as "the persistent failure of the caregiver to meet the child's basic physical and/or psychological needs, resulting in interaction disorders and serious impairment of the child's development with short and long term negative impacts on the child's cognitive, socio-emotional, behavioral and psychological development and emotional regulation."[80] The authors

[76] Leclère et al., "Why Synchrony Matters during Mother-Child Interactions."
[77] Avril et al., "Social Signal Processing for Studying Parent-Infant Interaction."
[78] *Ibid.*, 3.
[79] For an overview see Danya Glaser, "Emotional Abuse and Neglect (Psychological Maltreatment): A Conceptual Framework," *Child Abuse & Neglect* 26, no. 6–7 (2002): 697–714; and Danya Glaser, "How to Deal with Emotional Abuse and Neglect: Further Development of a Conceptual Framework (FRAMEA)," *Child Abuse & Neglect* 35, no. 10 (2011): 866–75.
[80] Avril et al., "Social Signal Processing for Studying Parent-Infant Interaction," 3.

highlighted that "severe neglect presents interaction difficulties and dyssynchrony."[81] The computational assessment confirmed the assumption, contrasting "avoidance of interaction" and "dyssynchronic interaction" in "the pathological dyad" with "synchronic interaction and a smooth interactive dialog" in the "control dyad."[82] The operationalized concept of synchrony promised a screening method for neglected parenting; new computational and engineering approaches as a path to "behavioral" and "interactional imaging."[83]

Conclusion

It is an open question as to what extent the concept of synchrony and the technologies that enabled and promoted its rise will survive the tides of time. As Edward Tronick argued in the late 1990s, synchrony might be too reductive a concept for capturing the complexities of infant-parent interaction.[84] For our purposes, the more important point is that the rise of social signal processing and its corresponding computational tools inscribe themselves into the larger history of a transformation in the understanding of health and illness in infancy. They contribute to a localization of pathology on an interactive level and a vision of the infant as an always already interactive agent.

They also points to the intimate connection between modes of observation and cultural visions of infants and families. The practices at *Vivaldi* are striking for the extent to which video-based observation has become ingrained in daily clinical routine and in diagnostic and therapeutic

[81] Avril et al., "Social Signal Processing for Studying Parent-Infant Interaction," 3.
[82] *Ibid.*, 9.
[83] David Cohen et al., "Intérêts de l'étude des interactions précoces mère-bébé par des méthodes automatisées de traitement du signal social: Applications à la psychopathologie," *Bulletin de l'Académie Nationale de Médecine* 200, no. 6 (2016): 1–18.
[84] See e.g. E. Z. Tronick and M. K. Weinberg, "Depressed Mothers and Infants: Failure to Form Dyadic States of Consciousness," in *Postpartum Depression and Child Development*, 1997, 54–81.

processes. This may seem a quotidian phenomenon if we consider today's media-economy of digital cameras, smart phones and virtual images. From this perspective, the practices in infant psychiatry re-stage broader questions of how to understand our audiovisual culture and how this culture shapes our conceptual apparatus and our ways of living.[85] This chapter shows that we can understand that culture in the context of larger historical shifts. Video and computational tools were indispensable for articulating the interactive vision of infancy and for making interaction an 'observable interface' in clinical practice. At the same time, they inscribe themselves into political and institutional transformations that include the emergence of early childhood psychiatry as a field of medical expertise, the demarcation of infancy as a pivotal period for mental health intervention, and the creation of institutional spaces dedicated to infant-parent interaction. To put it differently, clinical video practices figure within a longer cinematic tradition: they depend on design and take place on a stage, be it an outpatient clinic dedicated to infancy or a consultation room refurnished into an audiovisual laboratory.

The link to the history of visual media is also important for another central theme of this chapter: the tension between medical surveillance and mental health care. The proliferation of records of clinical observation elicits fears and fantasies of mass surveillance as much as it poses difficult questions about data management and privacy. The practices of *Vivaldi* join here a broader cultural discourse about new media, technologies, and information management.[86] While these

[85] The literature on this topic is considerable ranging from concerns about the effect of media on children to historical studies about cultural transformations due to media. Examples include Davies, Máire Messenger, *Children, Media, and Culture* (New York: Open University Press, 2010); Jonathan Crary, *Techniques of the Observer: On Vision and Modernity in the Nineteenth Century* (Cambridge, Mass: MIT Press, 1992); Kittler, Friedrich A, *Discourse Networks 1800/1900* (Stanford, Calif: Stanford University Press, 1990); Marshall McLuhan, *Understanding Media: The Extensions of Man* (Cambridge, Mass: MIT Press, 1994).

[86] For example, big data has led to various ethical debates about confidentiality in medical research. E.g.: Joël Colloc and Bruno Hénocque, *Enjeux du big data et identifications des données médicales* (Paris]; Cachan: Hermès ; Lavoisier, 2016). See also note 35.

concerns are justified, I have argued that the drive to see, observe, and register the child inscribes itself into a longer epistemic history: the elusiveness of the mind of the young child constitutes an almost paradigmatic challenge for a culture that seeks to obtain visual transparency. It may thus appear as less of a surprise that concepts of infancy are deeply embedded in the media-politics of the normal and the pathological.

Conclusion

In 2018, a team at the newly founded baby lab at the university of Geneva published a paper on the ability of human infants to recognize emotions. The group was interested in understanding whether six-month-old babies were able to discriminate between emotions, such as sadness and happiness, rather than simply responding to a specific stimulus, such as a smiling face. In order to explore this question, the researchers investigated the time that babies spent looking at a happy and angry face after having listened to an angry, neutral, or happy voice. The underlying idea was that, if the infants recognized the nature of an emotion by audition, they would be surprised when they saw a facial expression that did not correspond to the expected emotion. Earlier studies had already explored aspects of this question, but they relied on the coding of video recordings, which was suboptimal for following the gaze of young children. In contrast, the team in Geneva used eye-trackers that allowed them to precisely calculate the time and direction of ocular movements and thereby seeing exactly what region of the face a baby looked at and how many seconds he or she spent looking at that region.[1] The temporal and spatial precision of eye-trackers promised, as a recent review summarized, to shift from "the macrostructure of looking behavior to the microstructure of patterns of fixation," and to open new perspectives on perception, learning, mental behavior, and emotions in the earliest age.[2]

The use of eye-trackers is yet another example of how a new technology promises to provide insights into the baby's perspective. It is another chapter in the ongoing negotiation between

[1] Amaya Palama, Jennifer Malsert, and Edouard Gentaz, "Are 6-Month-Old Human Infants Able to Transfer Emotional Information (Happy or Angry) from Voices to Faces? An Eye-Tracking Study," *PLoS One* 13, no. 4 (April 11, 2018): e0194579.

[2] Richard N. Aslin, "Infant Eyes: A Window on Cognitive Development," Infancy 17, no. 1 (February 1, 2012): 126–40, 127. On perception, learning, and mental behavior: Lisa M. Oakes, "Advances in Eye Tracking in Infancy Research," Infancy 17, no. 1 (February 1, 2012): 1–8.

visions of infancy and technologies of visualization and mediation. How do we understand this negotiation? How do we assess the epistemic promises of (media) technologies? What can we learn from them for the history of science and medicine?

Throughout this dissertation, I have argued that media technologies are not innocent. They allow making visible (and audible) certain aspects of behavior and they set limits to what can be seen and what remains obscure. Yet, to fully understand their historical and epistemic roles, we have to evaluate how they work in specific cultural and historical contexts.[3] We have to pay attention to the debates in which they are activated, the uses to which they are put, and the cultural, social, and professional ideas that they embody.[4] This dissertation provides a basis for assessing the role of media technologies in the history of science and medicine. Each chapter has explored a specific moment in the interwoven histories of audiovisual technologies and infant mental health, examining in each case how these technologies have been deployed, what claims they have sustained, and the social and professional aspirations for which they have been activated.

As I have shown in the preceding pages, in the USA in the postwar period, ethnographic and documentary film became a powerful tool for drawing public and professional attention to the emotional life of infants. It allowed psychoanalytic practitioners to show that infants suffered in contemporary institutional conditions and to argue that infancy was a neglected topic in mental

[3] In a similar vein, film and media scholars propose to analyze nontheatrical film in terms of a Foucaultian *dispositif:* a constellation of discourses, technologies, forms of knowledge, practices, institutions, and social organizations. See Vinzenz Hediger and Patrick Vonderau, *Films That Work: Industrial Film and the Productivity of Media* (Amsterdam: Amsterdam University Press, 2009), 9–12; and Scott Curtis, *The Shape of Spectatorship: Art, Science, and Early Cinema in Germany* (New York, NY: Columbia University Press, 2015), 243–51. On *dispositif*: Frank Kessler, "La cinématographie comme dispositif (du) spectaculaire," *Cinémas : Revue d'études cinématographiques* XIV, no. 1 (October 1, 2003): 21; Giorgio Agamben, *"What Is an Apparatus?" And Other Essays* (Stanford: Stanford University Press, 2009), 1–24; Barbara Wittmann, "Bedeutungsvolle Kritzeleien: Die Kinderzeichnung als Instrument der Humanwissenschaften, 1880-1950" (*Habilitation*, Bauhaus-University, 2012), 309–15.

[4] This proposition draws on Keith Wailoo's analysis of medical technology: Keith Wailoo, *Drawing Blood: Technology and Disease Identity in Twentieth-Century America* (Baltimore, Md.: Johns Hopkins University Press, 1999), 188-200. On uses of scientific film see Curtis, *The Shape of Spectatorship.*

health care. Film provided a rhetorical tool for convincing audiences, an epistemic tool for adopting the infant's perspective, and a professional tool for creating research programs. In the 1960s and 70s, a new generation of practitioners grouped around another cinematographic method: film-based microanalysis of mother-infant interaction enabled researchers to argue that the previous focus on institutional conditions did not go far enough. Infants were not simply victims of external influences but actively participated in the dynamics of caregiver-infant interaction. Viewed through the camera lens, the tiny movements of infants became a leveler for constructing a new field of expertise.

The introduction of video technology into infant research and clinical practice in the 1970s and 80s allowed the field to take off. Synchronized cameras and special effects such as split screens and real time playback provided an interface for training physicians, researchers, and parents in a new way of seeing infants. It furnished the material and operational infrastructure for pedagogical, diagnostic, and therapeutic work. It was around these practices that the understanding of health and illness in infancy settled on an interactional level. The video-based analysis of dyadic and triadic interaction formed the new framework for understanding cognitive and emotional development and for approaching infants therapeutically. In the 1990s and 2000s, digital and computational technologies contributed to the international spread and domestication of the interactive vision of infancy and its corresponding scientific and clinical practices. With the ubiquitous use of cameras in labs and clinics, a video-based evaluation of interactive capacities has become a common clinical procedure, and infant mental health has developed into a mature and well-recognized field.

What does the history of infant mental health tell us for thinking about the role of media technologies in twentieth century science and medicine? First of all, it shows that these

technologies matter for science and medicine. They have an impact on the production of knowledge, on processes of professionalization and specialization, and on diagnostic and therapeutic procedures. For example, in the 1960s and 70s, cinematographic microanalysis of behavior sparked the reconceptualization of infancy as a period of significant social and communicative development; the visualization of the infant's social and interactive capacities became, in turn, the operational basis for a new field of research; and, the analysis of the temporal dynamics of infant-caregiver interaction became the therapeutic interface for mental health intervention. It might be tempting to say that the close link between media technologies and infant mental health is a special case. After all, the infant's mind is an elusive object that depends on mediation and representation. Yet, exactly because it is such a vague and ambiguous object, it shows all the more the power that these technologies can obtain for resolving epistemic ambiguities, creating diagnostic clarity, and organizing professional discourse and practice.[5] Second, and closely related, the roles of these technologies in science and medicine are historically specific. Cinematography in the 1940s afforded different practices and opened different opportunities for researchers and practitioners than video in the 1970s and smartphones in the 2000s. This is not simply a question of a quantitative increase of moving image technologies in everyday culture. The differences go to the very heart of what scientists and practitioners were doing, how they generated knowledge, how they intervened in discourses, and how they approached patients. The documentary movies of Rene Spitz and Katherine Wolf allowed an appeal to wide audiences and drew attention to institutional conditions, but only video technology enabled moving images to enter hospitals, labs, and private praxis on a broad scale.

[5] This argument applies to technologies in medicine more broadly. For a clear articulation see Wailoo, *Drawing Blood*, 188-200.

The importance of the shift from film to video technology also suggests that there is a historical rhythm, or, perhaps, there are several historical rhythms to media histories of science and medicine. The story of infant mental health is a story of birth and maturation. It finds its narrative endpoint in a widespread use of audiovisual practices in an established field of expertise. Yet, these practices are not restricted to infant mental health but pervade much of contemporary science and medicine. How do we account for the ubiquity of media technologies in twenty-first century scientific and medical culture? What changes have they brought to medical and scientific practice? How do we understand their presence in such diverse fields as scientific experimentation, medical training, and psychotherapy? What would a media history of science and medicine look like?

While *Seeing the Infant* could only touch on aspects of these questions, it illustrates the versatility of media technologies as sites of analytic and historiographical focus. These technologies are involved in laboratory practices, span the human and the natural sciences, can be found in hospitals and outpatient clinics, and figure in diagnostic and therapeutic procedures. They can shed light on the history of scientific observation, the histories of professionalization and specialization, the history of diseases, and the history of psychotherapy. They bridge disciplines and provide links between the intimate practices of scientists and physicians and larger social, political, and cultural developments. *Seeing the Infant* stands in for broad transformations in both visual culture and visions of infancy.

How does the story go on? Today, infancy is clearly demarcated as an epistemic and clinical space in its own right. At the same time, it continues to constitute a site for the articulation of technological visions and the negotiation of professional and disciplinary identities. Babylabs

have proliferated at universities over the last three decades, moving the "test subject in diapers" into the focus of new fields of psychological inquiry.[6] Computational and neuroscientific imaging technologies promise, among other things, to lay "the foundation of a new science of learning."[7] Eye-tracking and looking time studies reveal previously unimagined cognitive, social, and communicative capacities of babies, ranging from infants' abilities of "communicative mind-reading" to inquiries into their "moral life."[8] As a volume on recent scientific developments in infant research summarizes, the preverbal child has become a "baby sapiens."[9]

On the other hand, mental health professionals seek to expand legal protection and medical services to young children. In 2016, the *World Association for Infant Mental Health* (WAIMH) voiced an urgent call for adopting special *Rights of Infants*. Criticizing the 1990 *United Nations Convention on the Rights of the Child* for "not sufficiently [differentiating] the needs of infants and toddlers from those of older children," the authors warn that all too often "the baby's perspective is […] not appreciated by health professionals and even by parents."[10] While "contemporary knowledge" has underscored "the impact of early experience on the development of human infant brain and mind," policies at both community and societal levels still lag behind.[11]

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[6] Gisa Aschersleben, "Test Subjects in Diapers," *Scientific American*, 2004, 74–77.
[7] Andrew N. Meltzoff et al., "Foundations for a New Science of Learning," *Science* 325, no. 5938 (2009): 284–88.
[8] Nicoló Cesana-Arlotti, Ana Martín, Ernő Téglás, Liza Vorobyova, Ryszard Cetnarski, and Luca L. Bonatti, "Precursors of Logical Reasoning in Preverbal Human Infants," *Science* 359, no. 6381 (March 16, 2018): 1263–66; Tibor Tauzin and György Gergely, "Communicative Mind-Reading in Preverbal Infants," *Scientific Reports* 8, no. 1 (December 2018); Paul Bloom, *Just Babies: The Origins of Good and Evil* (New York: Crown, 2013), 25.
[9] Drina Candilis-Huisman and Michel Dugnat, eds., *Bébé sapiens* (Toulouse: Editions érès, 2017).
[10] World Association for Infant Mental Health, "WAIMH Position Paper on the Rights of Infants," 2016, 1, accessed July 23, 2018, https://www.waimh.org/i4a/pages/index.cfm?pageID=3361.
[11] World Association for Infant Mental Health, "WAIMH Position Paper on the Rights of Infants," 2016, 1, accessed July 23, 2018, https://www.waimh.org/i4a/pages/index.cfm?pageID=3361.

The question of how to represent "the baby's perspective" and how to speak for a human being who cannot speak for him- or herself thus continues to stir public and professional debate. *Seeing the Infant* has shown that this debate is firmly rooted in the media history of twentieth and twenty-first century science and medicine. Whether seen as "baby sapiens" or in need of legal protection, the infant emerges at the interface of technological mediations.

Figures



Fig. 1.1: Depressed infant girl (Spitz, Grief, 11:29min), courtesy of MI, AHAP.



Fig. 1.2: Jane interacting with Spitz (Spitz, *Grief,* 1:34min), courtesy of MI, AHAP.



Fig. 1.3: Jane depressed (Spitz, *Grief,* 2:23min), courtesy of MI, AHAP.



Fig. 1.4: Jane crying (Spitz, *Grief,* 5:11min), courtesy of MI, AHAP.



Fig. 1.5: Jane happy (Spitz, *Grief,* 19:42min), courtesy of MI, AHAP.



Fig. 2.1: Frame from 1965 research film by Anneliese Korner, CDF5388, courtesy of MI, AHAP.

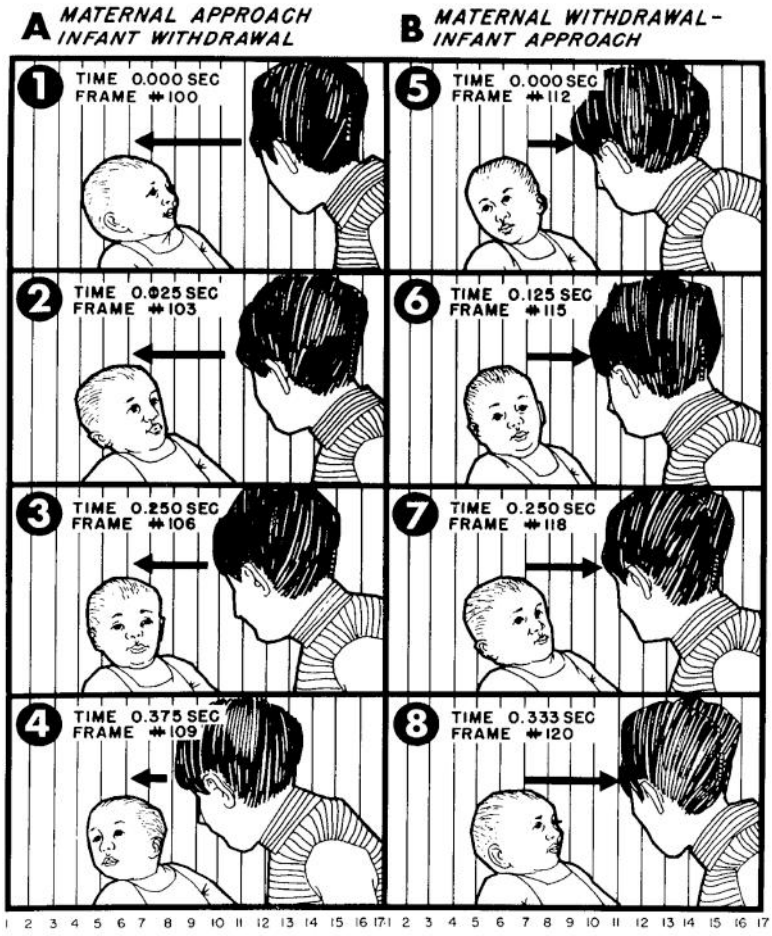


Fig. 2.2: Mutual Approach-Withdrawal Pattern, Reprinted from *Journal of the American Academy of Child Psychiatry* 10, no. 3 (July 1971), Daniel N. M. D. Stern, "A Micro-Analysis of Mother-Infant Interaction: Behavior Regulating Social Contact between a Mother and Her 3 1/2-Month-Old Twins," 509, with permission from Elsevier.

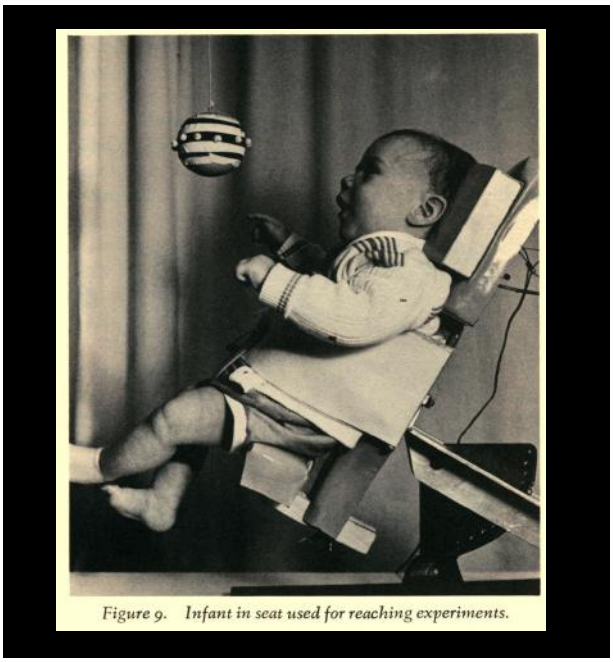


Figure 9. Infant in seat used for reaching experiments.

Fig. 2.3: Jerome S. Bruner, *Processes of Cognitive Growth* (Worcester, Mass.: Clark University Press, 1968), 37. Copyright Clark University Press. Reproduced with permission from Clark University Press.

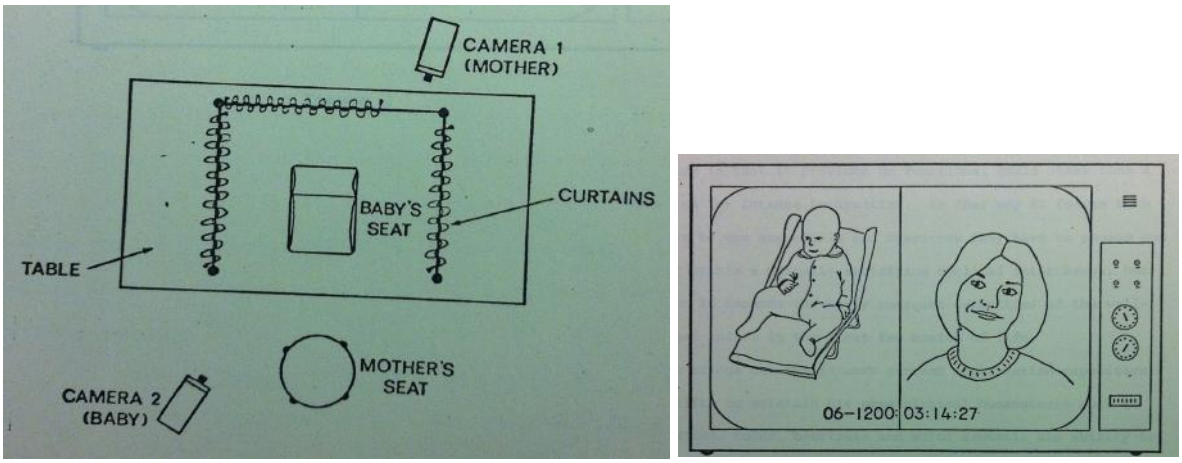


Fig. 3.1: Setup of the Face-to-Face Paradigm, "Research Proposal: The Development of an Assessment of Infant Behavioral Organization during the First Five Months of Life," 1978, pp. 21-22. Box 39, Folder 5. Courtesy of TBBP, FCLM.

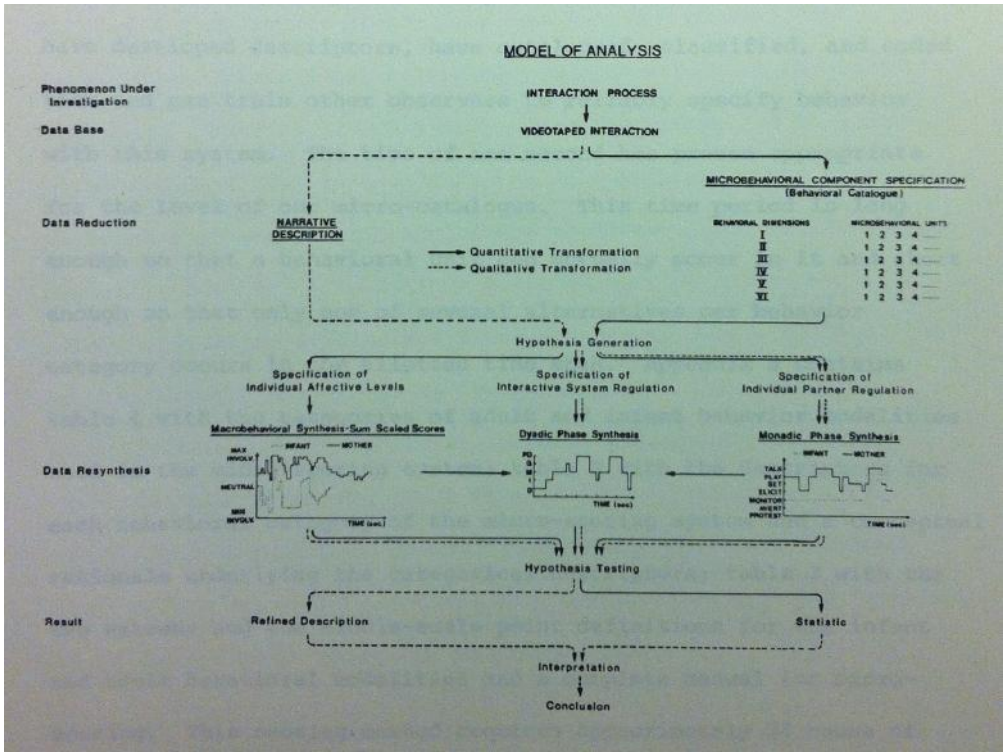


Fig. 3.2: Schematic Overview of Video-based Analysis of Infant-Adult Interaction, "Research Proposal: The Development of an Assessment of Infant Behavioral Organization during the First Five Months of Life," 1978, p.29. Box 39, Folder 5. TBBP, FCLM. Originally published in *Social Interaction Analysis: Methodological Issues*. ©1979 by the Board of Regents of the University Wisconsin System. Reprinted courtesy of The University of Wisconsin Press.

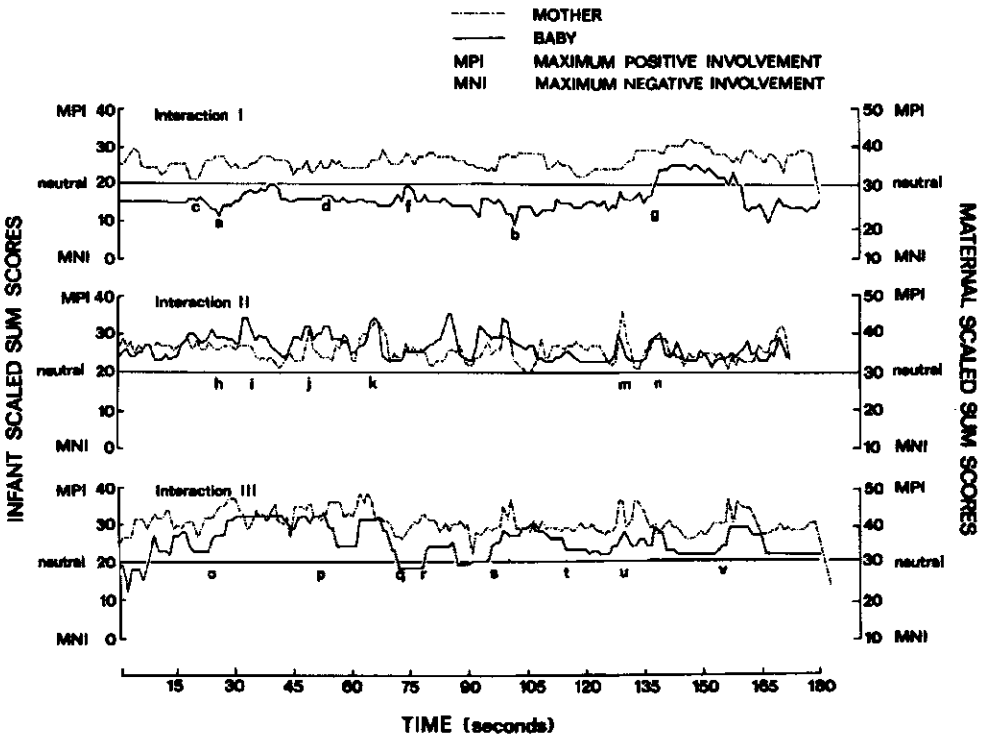


Figure 1: Scaled sum scores for each of the infant-mother dyads
The scores range from maximal positive involvement in the interaction through neutral to maximal negative involvement in the interaction for the infant and mother.

Fig. 3.3: Plot of Macro Scores of Infant-Mother Interaction. Tronick et al. "Mutuality in Mother-Infant Interaction." *Journal of Communication* 27, no. 2 (June 1, 1977): 74–79, p.76. Reprinted by permission of John Wiley & Sons, Inc.

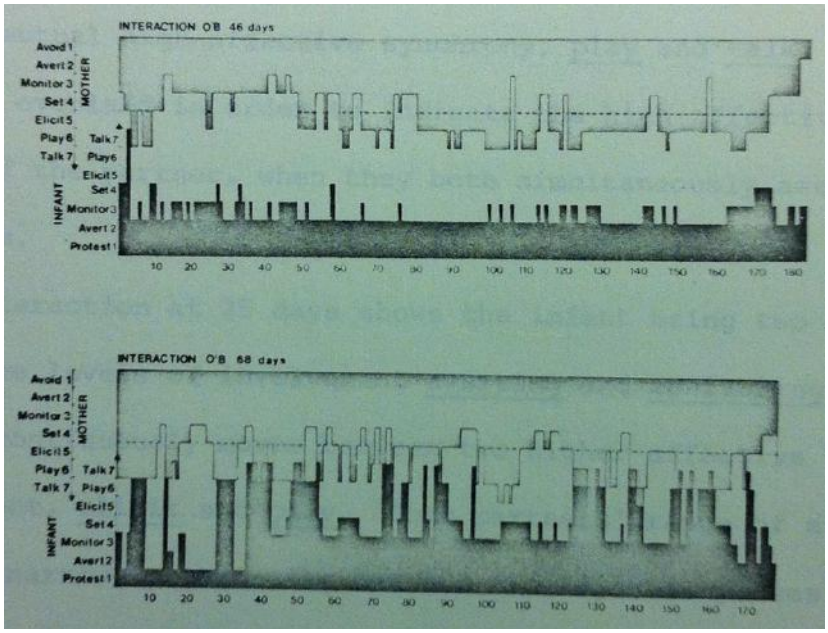


Fig. 3.4: Monadic Scores at 46 and 68 days of life. "Research Proposal: The Development of an Assessment of Infant Behavioral Organization during the First Five Months of Life," 1978, pp. 38. Box 39, Folder 5. Courtesy of TBBP, FCLM.



Fig. 4.1: Photo of screenshot from video Installation at *Vivaldi*. The video was realized in 1998.

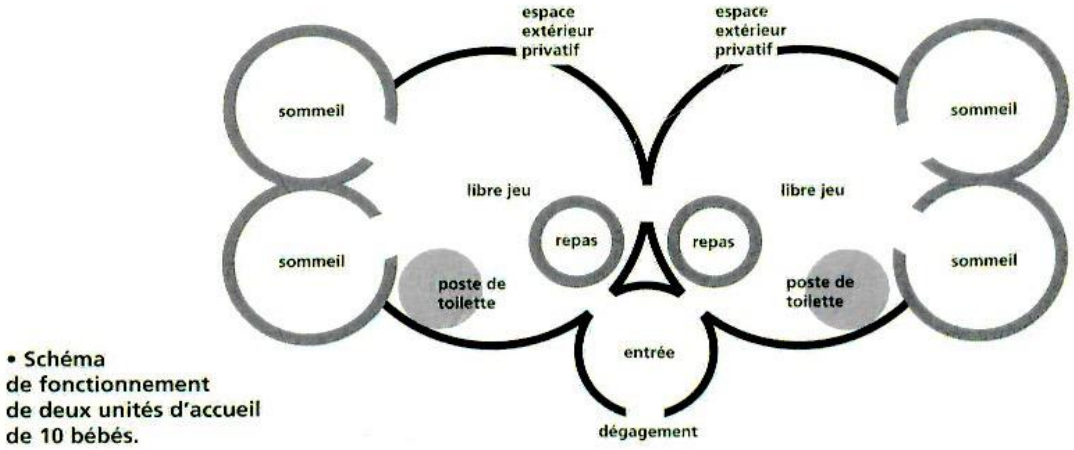


Fig. 4.2: Layout of care unit for infants. Source: Ministère des Affaires Sociales de la Santé et de la Ville, *L'espace d'accueil de la petite enfance: éléments de programme des établissements d'accueil des enfants de moins de 6 ans: Guide Pratique* (Paris: Collection FNCAUE, L'inédite, 1993).

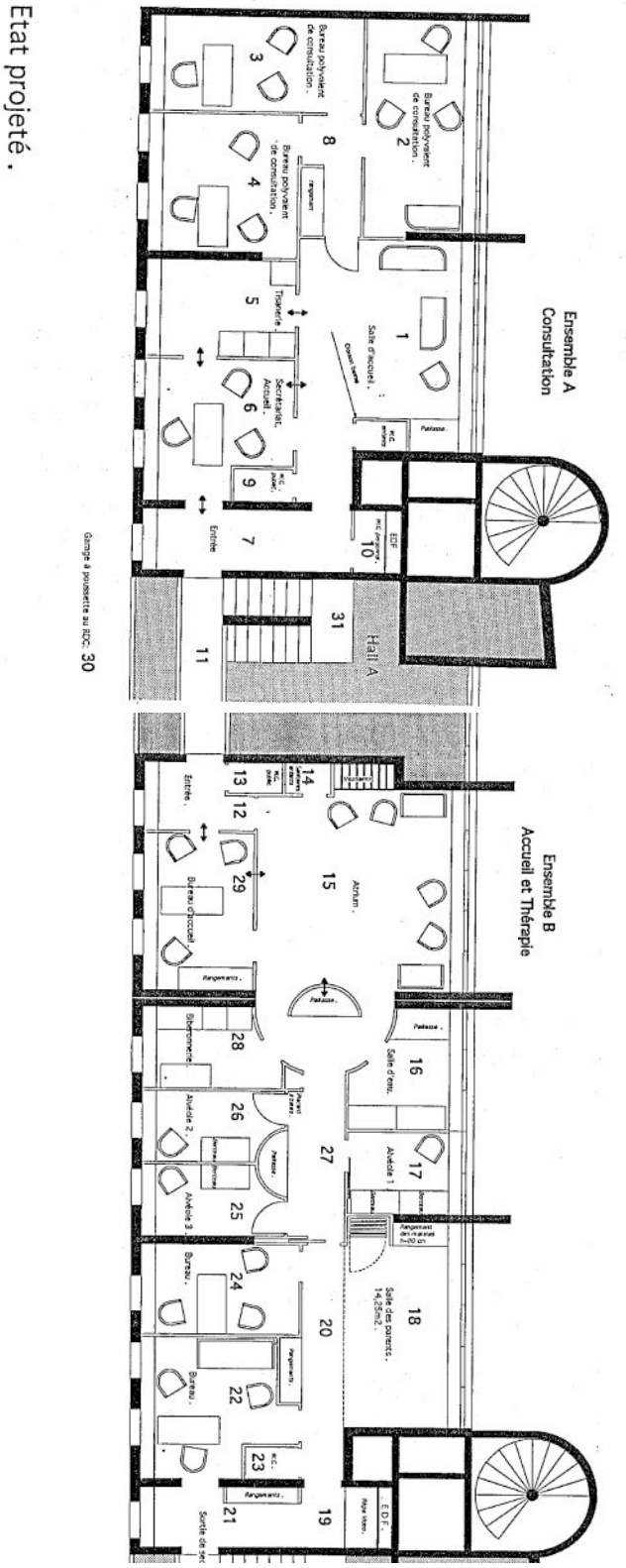


Fig. 4.3: Architectural layout *Vivalidi* after re-furnishing. Bernard Franjou and Groupe Hospitalier Pitié-Salpêtrière. "Unité d'accueil de la petite enfance: Définition du programme," March 10, 1993, Presentations and Publications, Folder 1, UV.

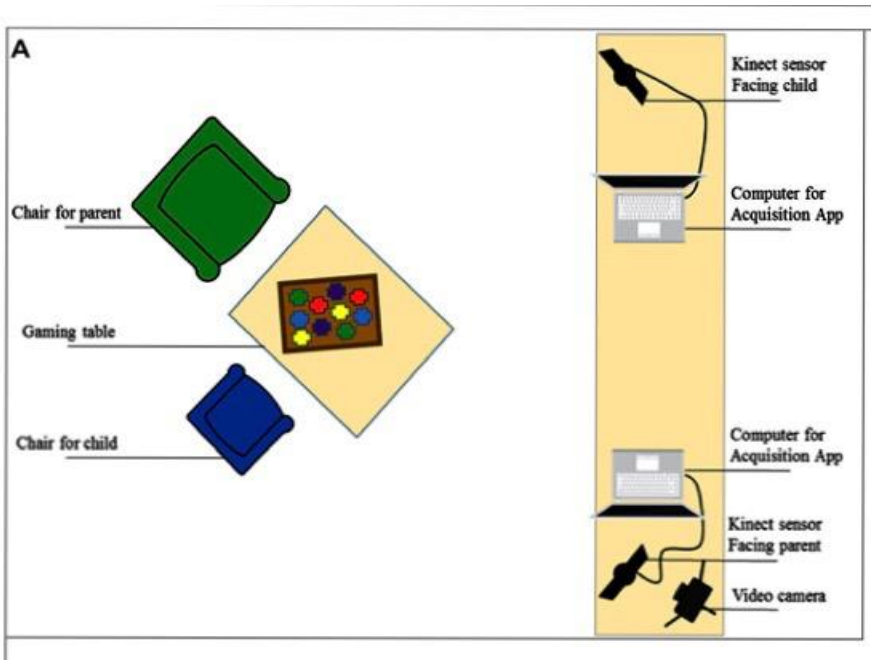


Figure 4.4: Experimental setting for kinect study at Vivaldi. Source: Marie Avril et al., "Social Signal Processing for Studying Parent-Infant Interaction." *Frontiers in Psychology* 5 (2014): 1437, 1-14.



Figure 4.5: Screenshot from demonstration film of 3D scene reconstruction, ISIR, Paris. Leclère, C., M. Avril, S. Viaux-Savelon, N. Bodeau, C. Achard, S. Missonnier, M. Keren, R. Feldman, M. Chetouani, and D. Cohen. "Interaction and Behaviour Imaging: A Novel Method to Measure Mother–Infant Interaction Using Video 3D Reconstruction." *Translational Psychiatry* 6, no. 5 (2016): e816.

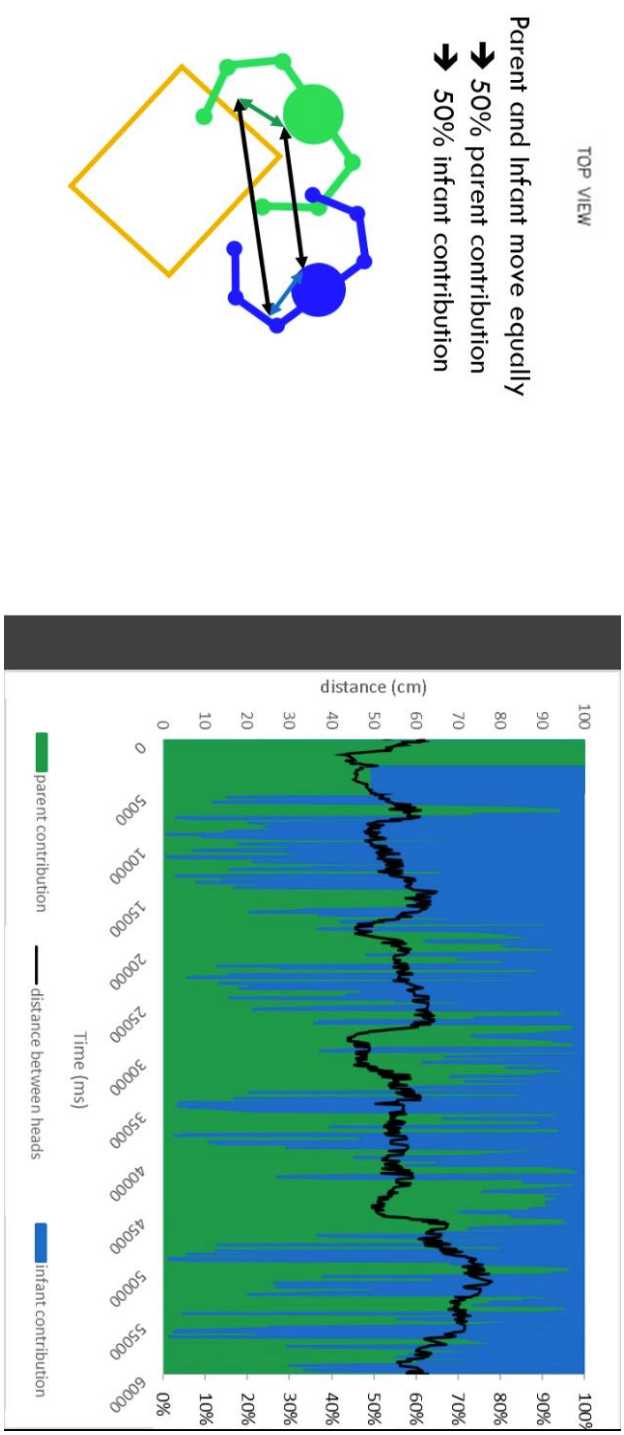


Figure 4.6: Screenshot from demonstration film of 3D scene reconstruction, showing analysis of interaction, ISIR, Paris. [Leclère, C., M. Avril, S. Viaux-Savelon, N. Bodeau, C. Achard, S. Missonnier, M. Keren, R. Feldman, M. Chetouani, and D. Cohen. "Interaction and Behaviour Imaging: A Novel Method to Measure Mother–Infant Interaction Using Video 3D Reconstruction." *Translational Psychiatry* 6, no. 5 (2016): e816.

Archival Collections (Abbreviations)

ACGC, NLM:	American Child Guidance Clinic and Child Psychiatry Movement interview collection, National Library of Medicine, Bethesda, MD, USA
AFP, LC:	Anna Freud Papers, Sigmund Freud Collection, Manuscript Division, Library of Congress, Washington, D.C., USA
AGCPC, YU:	Arnold Gesell and Colleagues Publications Collection, Historical Library, Harvey Cushing/John Hay Whitney Medical Library, Yale University, New Haven, CT, USA
AKKP, SMHP:	Anneliese Korner-Kalman papers, MSS0066, Stanford Medical History Center, Stanford, CA, USA
CCNY, CUA:	Carnegie Corporation of New York Records, Columbia University Archives, New York City, NY, USA
CSC, YU:	Child Study Center (RU 282), School of Medicine, Yale University, New Haven, CT, USA
CCS, HUA:	Records of the Center for Cognitive Studies, Harvard University Archives, Boston, MA, USA
IDP, CCOHA:	Infant Development Oral History Project, Columbia Center for Oral History Archives, New York City, NY, USA
JBP, HUA:	Jerome Bruner Papers, Harvard University Archives, Boston, MA, USA
MI, AHAP:	Moving Images, The Drs. Nicholas and Dorothy Cummings Center for the History of Psychology, The University of Akron, Akron, OH, USA
MMP, YU:	Margaret S. Mahler Papers (MS 1138), Manuscripts and Archives, Yale University Library, New Haven, CT, USA
OHC, LC:	Columbia University Oral History Research Office, Oral History Collection, Sigmund Freud Collection, Manuscript Division, Library of Congress, Washington, D.C., USA
RSP, AHAP:	Rene Spitz Papers, Archives of the History of American Psychology, The Cummings Center for the History of Psychology, The University of Akron, Akron, OH, USA
SPP, YU:	Sally Provence Papers (MS 1660), Manuscripts and Archives, Yale University Library, New Haven, CT, USA
TBBP, FCLM:	T. Berry Brazelton papers, HMS c244, Harvard Medical Library, Francis A. Countway Library of Medicine, Boston, MA, USA
UV:	Unité Vivaldi, Paris, France
WTGFR, RAC:	William T. Grant Foundation Records, Rockefeller Archive Center, Sleepy Hollow, NY, USA

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Educator. Interview by Felix E. Rietmann, December 17, 2015, Paris, France.

Emde, Robert N. Interview by Felix E. Rietmann, April 24, 2017, Denver, Colorado, USA.

Mazet, Philippe. Interview by Felix E. Rietmann, March 28, 2016, Paris, France.

Physical Therapist. Interview by Felix E. Rietmann, January 14, 2016, Paris, France.

Rabain, Didier. Interview by Felix E. Rietmann, January 14, 2016, Paris, France.

Viaux, Sylvie. interview by Felix E. Rietmann, January 27, 2016, Paris, France.

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