THE CONTRADICTIONS OF SCIENTIFIC MOTHERHOOD: WOMEN, CHILDCARE, AND THE POLITICS OF EXPERTISE

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Abstract

Throughout history, the overwhelming proportion of women have been mothers. Most significantly, worthy womanhood has been equated with motherhood. This apparent constancy masks dramatic transformations in the role of mothers and mothering practices over time, and particularly over the past 150 years, in the United States and other indus- trialized nations. Traditionally, women's experiences had formed the basis of respected mothering practices; proper mothering techniques were considered either part of a woman's innate knowledge, or taught her by her own mother and other female relatives and friends.

Key words

Scientific Motherhood - Childcare - Politics on Matherhood- United States of America.

As scientific and technical expertise gained in prominence throughout the 19th century, increasingly women were told that they needed scientific and medical knowledge to insure healthful pregnancies and births and in order to raise their children appropriately and healthfully. The ideal model now became the "scientific mother." As it grew in popularity in the 20th century, this ideology of "scientific motherhood" was modified. Over the decades, women were increasingly told that they needed to follow the lead of scientific and medical experts. In other words, rather than actively learning for themselves, women were to depend upon the instructions of scientific and medical authorities.

Earlier historical studies of the increasing intervention of health-care providers termed this process the medicalization of child birth and child care; analysts frequently examined the particular ways in which physicians extended their supervision of pregnancy and children's health. True, from the mid-19th century onwards doctors maintained with ever greater urgency that women needed medical supervision to insure successful births and child-rearing. Yet a wide range of other interested parties also broadcast this message of

scientific motherhood and with equal stringency directed mothers to experts and expert advice. Today I will explore some of the most distinctive elements of the cultural milieu through which medical, cultural, and social factors re-configured. I will focus on the mothering experiences of American women and mothers' responses, though the history is similar in many other parts of the world.

The origins of "scientific motherhood" can be dated from the 1840s with the publication of Catharine Beecher's *Treatise on domestic economy*. In this highly celebrated monograph, Beecher used contemporary science to explain the best methods for accomplishing a whole range of household tasks. Beecher was not a scientist or a physician; nor did she claim these titles. Her book did, however, insist that women needed to utilize new scientific discoveries and medical knowledge. As a vocal proponent of women's education, Beecher expected mothers to seek out and evaluate the required information.

As scientific advice for successful childrearing gained in prominence, the counsel slowly changed. By the twentieth century, women were not just told that they needed to learn from scientific and medical expertise. Instead, they were told ever more frequently and with greater and greater urgency that they needed to *follow* the direction of experts. This transformation presented women with a serious contradiction: it made them responsible for the health and well-being of their family, while at the same time it denied them control over childrearing. In other words, women were both responsible for their families and incapable of that responsibility.

Child-care journals and general women's magazines were among the leading proponents of scientific motherhood from the late nineteenth century onwards. As the magazine *Babyhood* stated in 1893, "there is a science in bringing up children and this magazine is the voice of that science."

and *Babyhood* was one of many magazines designed to instruct mothers in scientific childrearing. The largest women's magazine of the late 19th and early 20th centuries was *The Ladies Home Journal,* which in 1912 proudly announced that the modern young mother was rapidly learning to ignore the advice of neighbors and families and turning instead " a higher authority for help in solving nursery problems." In this case, and increasingly, that higher authority was the science and the medical expert.

Physicians wrote child-care books extolling the virtues of scientific motherhood. These books were aimed at a literate, middle-class mother who had the education and the money to support the ideals of modern child care. Doctors were soon joined by a chorus of others that spread the ideal of scientific motherhood, of mothers following the directions of health-care providers, to less fortunate women.

State departments of health developed unique methods for reaching different classes of mothers. One popular way was the Well-Baby contest. Similar to agricultural fairs, and often held in conjunction with them, these competitions had babies examined by medical

practitioners with the winner being awarded a blue ribbon and medal. The contest was promoted as educational as well as competitive. Doctors would tell mothers about problems they found in the babies; mothers would be instructed in modern childcare techniques.

For literate women there were a host of pamphlets, often distributed free or at very lost cost produced by local governments, by charity agencies, and even by manufacturers of products for children such as infant foods, baby powder, and soap. The most popular and often reproduced pamphlet was Infant Care, a brochure of the Unite States government. It was first published in 1914. By 1940 over 12 million copies had been distributed and by the 1970s over 59 million. People could and did write in for the pamphlet, but it was also frequently sent unsolicited by Congressional representatives. Women often wrote of their gratitude for such publications.

In other instances, the government and charitable organizations sent public health nurses into the homes of women, often poor, illiterate women and immigrant women. These nurses would inspect the home, making suggestions for healthful improvements and would inspect babies and children, making suggestions for their health and welfare. Initially public health nurses were located in urban areas, where they could reach a large number of mothers with relative ease. Poor mothers in rural areas faced a different situation.

In the 1920s, concern for high rates of maternal and infant mortality generated a targetted federal program with funds for maternal education in modern childcare. The government officials aimed to reach women of all classes, but especially poorer, rural mothers who lacked regular access to health-care providers. One of their methods was the use of an educational trailer. Vehicles like this Child Welfare Special travelled from small town to village to churches, over muddy and rocky country roads. They brought public health doctors and nurses into remote communities to examine children and provide women with the education they needed to be “modern” mothers.

Including information for preparing an appropriate wardrobe for the family. This program ended in 1929. A few years later it was replaced by another program that funded public health nurses to travel to the homes of the rural poor.

Some mothers embraced these women, eagerly awaiting their visits and their advice, pleased to have a health-care provider with the most up-to-date information. Other mothers were less eager. But on the whole, mother appreciated the help that public health nurses gave them. Most especially appreciated were the infant baths.

Mothering practices changed significantly as increasingly women birthed in hospitals. These institutions provided a prime educational situation for isolated, nervous mothers who looked to modern, scientific childcare to ensure the health of their families. Previously, childbirth in the United States was a domestic affair. Even as male physicians began to

replace female midwives in the birthing room, the room was still in the home in which the mother was surrounded by her female relatives and friends and the baby was kept close to the mother.

As childbirth moved into the hospital, the wards tended to duplicate some of the home atmosphere. Bassinets for the newborn were placed near the mother's bed; infants were often settled into bed, next to their mothers.

This dramatically changed as hospitalized childbirth became increasingly popular and as doctors and hospital administrators saw epidemics sweeping through their maternity wards. With the era of sulfa drugs and antibiotics was decades away.

Fearful of epidemics, hospitals would whisk newborns from their mothers and care for them in sterile nurseries. Mothers saw their babies only for feedings, every three or four hours, when they were instructed to prepare themselves carefully to prevent the spread of germs. Subtly, then, mothers were taught that they were a danger to their babies. The only way to protect their babies was to keep them in a sterile environment, cared for by scientifically trained nurses.

Envision the situation: a new mother spending most of her 7-10 days in the hospital after childbirth, peering through the window of the nursery looking at her child. Every several hours, a nurse would bring the baby to the mother, who carefully unwrapped the baby for feeding. Within a few minutes, the nurse would be back to whisk the baby away again. These procedures left little time for the mother and baby to get acquainted or for the mother to feel comfortable caring for her child. What mothers did learn about childcare was usually confined to hospital classes, in which mothers would watch a nurse change, or bath a baby.

Thus mothers would learn about childcare from a professional, a scientific and medical expert, a masked professional who handled the baby with confidence and ease.

By this time, the 1940s, most new mothers birthing in the hospital did not breast feed. Instead they were taught by nurses the most modern, scientific form of infant feeding: bottle feeding. Preparing the baby's bottle was a complicated affair involving sterilizing all the equipment, precisely measuring the milk, the water, and the sugar, carefully heating the bottle, and then feeding the infant. Note again the nurse who is demonstrating bottle feeding is wearing a face mask.

Lest you think that face masks were only for hospitals: Mothers learned that when they took their babies home, they needed to continue to protect the child from germs, even the germs of the mother. They were urged to buy face masks for use at home, to protect the baby "the hospital way."

So far we have seen how popular literature and institutions like government agencies, charitable organizations, and hospitals intently promoted scientific motherhood. What made the ideology so powerful was that it was also championed in less focused, and many

ways more pervasive, forums, namely popular culture. We have seen how the text of late 19th and early 20th century magazines fostered the spread of scientific motherhood. But it was not only the text of these journals, but also, most significantly, their advertisements.

Some advertisements were crystal-clear. As this one announces: "Add science to love and be the perfect mother." A wide range of manufacturers were quick to recognize the power of the image of scientific motherhood. They produced advertisements that stressed the value of scientific and medical advice, and their advertising campaigns mirror the transformation of scientific motherhood.

This is a typical 1885 advertisement for Mellin's Food, a popular infant food. The advertisement is dense with text, warning the mother of the "swelling tide of infantile disease and mortality, resulting from injurious feeding," in other words, bad feeding is killing many children. However, modern science has the answer to this problem: "Men of the highest scientific attainments of modern times... have devoted themselves to careful investigation and experiment in devising a suitable substitute for human milk." Whether or not mothers read all the scientific text, it reflects the tone of scientific motherhood: women should learn all they could and use that knowledge to make decisions about their childcare.

This advertisement for another infant food, SMA, from 1921, demonstrates how the ideology of scientific motherhood had changed over nearly 4 decides. It is still somewhat wordy, but the text and illustration are dominated by the headline: "To be used only under the direction of a physician." By the 1920s, manufacturers use the power of the scientific expert, in this case the physician, to convince women that their products are the most up-to-date and scientific

This advertisements for Libby's food is even more direct; the modern mother follows the directions of her physician, not her relatives or previous generations. Though the father's mother believes that the baby is too young for vegetables, the mother is confident in heeding the advice of her physician, Dr. Evans, who recommends vegetables early in life.

By the 1930s, manufacturers further re-inforced the ideology of scientific motherhood in their advertising campaigns with the addition of the element of fear. Even in the 1885 Mellin's advertisement, we had seen a manufacturer using fear as a tactic to attract consumers. But this fear tactic predominates in the advertising of the 1930s and 1940s. "The little spendthrift" of energy needs her mother's protection, that is the protection of her mother feeding her Cream of Wheat, a product supported by contemporary science. Similarly, what mother would not want her child to have a doubly safe product from Libby's.

In the twentieth century, more and more advertisements depicted scientific and medical experts, usually men, to sell a variety of consumer products to mothers, and they weren't always for food products. For example, in 1928, Scott Tissue, a bathroom tissue, used the

image of a male physician to explain "the three requirements doctors say toilet tissue must have." Sometimes, as in the other Scott Tissue advertisement, manufacturers used a surrogate for the male practitioners, in this case a nurse.

Some manufacturers were even more pointed about the dangers of "old-fashioned" knowledge, knowledge that lacks the imprimatur of medical authority. What mother dares risk the health and well-being of child? Here the male physician is blaming the mother for her child's illness. If only she had known the difference between "clean" and "hospital clean," if only she had used Lysol.

And what about the mothers in all this. Evidently women came to accept the essence of the ideology: that successful and healthful child-rearing should be informed by scientific expertise. Women acted on the basic tenets of scientific motherhood, namely that while women maintained primary responsibility for infant and child care, they were dependent on experts to tell them and to teach them how to best raise their children. By the 1950s and 1960s, women believed that the most successful childrearing was done under scientifically informed medical supervision. There are many reasons why mothers turned more and more frequently to medical experts and expertise in the 20th century. The weight that they gave to scientific motherhood varied among classes, and across racial and ethnic groups, but we can draw some generalizations. As the prestige of science and medicine grew in American culture, the growing authority of science and our increasing dependence on technology shaped child-care advice and women's responses to it. For example, the emerging science of bacteriology in the late nineteenth century altered women's domestic tasks as housekeepers were taught to battle germs to protect their families. Developments in domestic technology, like the stove, the refrigerator, the washing machine and the vacuum cleaner, also dramatically transformed the scope, content, and status of women's work as did the creation of new institutions such as the supermarket. Other social and cultural factors need to be integrated into this analysis. Declining family size along with a fear for continuing high infant mortality and morbidity rates made each child that much more precious; one sought out the best, most up-to-date information for the sake of one's children. Then too economic considerations encouraged the spread of scientific motherhood in both commercial and professional worlds. Manufacturers found that promoting "science" helped to sell products; since scientific motherhood remained a popular theme for advertisers, they must have believed it was a successful tool for advancing a variety of products. Doctors found that pediatrics provided a lucrative portal to an expanding medical practice.

The element of gender is a most critical component in this analysis. Experts addressed women on the basis of their biological capacity to bear children and because they were seen as acting "out of instinct" when an overlay of social control was needed. The experts were most frequently depicted as male, usually physicians; science, medicine, and professionalism in general were described in male terms. Yet, this does not mean that

scientific motherhood is merely a case of male physicians intervening in the lives of female patients. Whether viewed as passive recipients or self-directed searchers of medical knowledge, mothers were actively involved in caring for their children, negotiating between the instructions of medical practitioners and scientific experts and the realities of their own lives.

A closer look at one aspect of child care will provide a better understanding of how individual women made choices about their mothering practices.

Ruth Williams Thompson began to toilet train her daughter Evelyn Mae at three months of age. The mother placed "very small toilet, more like a large cup, but easy to handle" on her lap and sat the infant on it, holding her there for ten to fifteen minutes. Some times the child would reward her mother's efforts, but more often than not nothing would happen. As Thompson admitted, "Of course at first it was just a game of Luck- or not Luck, and there were times when I felt perhaps it was a waste of time." Perhaps it was a waste of time, but this modern mother of the 1920s was convinced that early training was the best mode of infant care and therefore she "was determined to give the thing a fair trial, so kept at it day after day." By the time Evelyn Mae was 6 months old, Thompson found that she was putting the child on the toilet about 45 minutes during the day when she was awake and once at night. The mother proudly reported "fewer and fewer diapers to wash." Though she admitted that her daughter was not completely toilet trained with this routine, Thompson considered the practice thoroughly successful. So successful, in fact, that she embarked on toilet training her second daughter, Dorothy, at an even younger age, when she was six weeks old. However, having learned from her experiences with Evelyn Mae, Thompson modified the routine of the second. "It does not pay to hold the baby on the toilet for several minutes at a time and does not make the training any easier," she noted. Instead, "as soon as the baby becomes accustomed to the sitting posture the organs will act immediately if there is a desire to urinate." In the late 1920s, when her children were toddlers, Thompson, ignoring the many months of patient attention she had lavished on her daughters' toilet training, concluded that "My babies learned to urinate as soon as they touched the toilet."

Thompson's experiences mirror the popular culture of infant care in the early 20th century. In initiating toilet training early and following stringent routines, Thompson quite conscientiously followed the directions laid out in the U.S. Children's Bureau's Infant care. Mothers heard similar advice from their doctors, their friends, and their relatives. They read of the importance of scheduling in trade books, and women's magazines. Often linked with the behaviorist Watson, this system demanded rigid scheduling and regularity.

Yet, it would be simplistic and cavalier to conclude from the concordance of Thompson's routines with behaviorism that mothering practices, even this mother's practices, merely reflected contemporary scientific and medical pronouncements.

What convinced mothers such as Thompson? In her 1926 book, Training my babies, Thompson explained that a "genetic psychology"course she took in college provoked her belief in the critical importance of regularity to mold the child and to teach "the little baby the first lessons of patience." This led her to study a variety of child care books, including publications of the Children's Bureau. Thus, for Thompson training was the epitome of modern medical science. The most-to-update college curriculum and child-care literature taught mothers the scientific basis for infant care. Thompson does not tell us the detailed content of the genetic psychology course that inspired her, though it may have been influenced by psychologist J.B. Watson. However, the counsel to stringently train infants predates Watson by many decades and was not confined to the medical profession.

"I believe that a little care and trouble in earliest infancy would, in almost all cases, save the mother a world of vexation in after-years," advised H.E.W., of Brooklyn, NY, in the popular child-care journal Babyhood in 1886. Addressing other mothers through the magazine's "The mother's parliament," she cautioned that "no time should be lost, for there is nothing more difficult to cure if a child has once become accustomed to the habit." The bad habit was bed-wetting, the solution was a routine to train the infant. As H.E.W. relates her experience:

> If a baby of a few days old is held over a vessel at regular periods, say before or after each nursing, there will soon be no need for diapers. I know of one case where, by laying a piece of paper under a babe every morning and evening, he became so regular in his habits that at the end of three months his mother boasted that she had never had a soiled diaper to wash.

Bed-wetting or even soiled diapers were, to H.E.W., a sign of moral weakness on the part of the infant in the form of stubbornness, or, worse yet, resulted from the "laziness of its elders." The benefits of rigorous attention to this early toilet training routine was a "nice and dry" infant and none of the "extra and disagreeable work" of diapers. H.E.W. does not say where she learned of the importance of early training her children but her letter implies that this was simply common knowledge. Though training could be time-consuming and tedious, its compensations were great. A mother should carefully train her child both for the good of the child's future and to ease her own labor.

The pragmatic needs of everyday life continued to influence mothers' perspectives on scheduling into the 20th century. Mrs. Max West, the author of the 1914, first edition of Infant care, had such a practical approach. West considered a system of schedules

> not only one of the greatest factors in keeping the baby well and in training him in a way which will be of value to him through life, but it also reduces the work of the mother to a minimum and provides for her certain assured period of rest and recreation.

For West this was not mere rhetoric. She scattered through Infant care examples of her own experiences that demonstrated her practices and belief in the benefits of scheduling. Moreover, when responding to worried mothers writing into the Children's Bureau, she used the same rationale for advising that they establish schedules. For example, Mrs. N.W., of Seattle, wrote in 1920 of her troubles with her three children, ages 3 months, 20 months, and 3 years. Her life was so frantic that she is exhausted all the time and surrounded with unfinished housework. She did not want to leave anything important undone, she understood the importance of "all these scientific and hygienic duties for babies," but how could she accomplish everything? West sent two pages of detailed practical advice that included feeding and nap schedules and, most particularly, a fixed bedtime of 6:00. As she explained:

> If you have not tried putting away your children at six o'clock, you have no idea what a relief it will be to you. It can be done: I have done it myself with three boys, and no mother who knows the satisfaction of having the care of her children cease before her own evening meal, and the quiet comfort of a still household in the evening, would fail to immediately begin the training necessary to make it possible.

In later editions of Infant care, as a panel of physicians replaced West as author, the pamphlet continued to advocate scheduling but its rationale shifted. Now, as in Watson's behaviorism, mothers became the obstacle to the scientific care of children, even a threat to their health and well-being. Scheduling not only trained the infant but also, the revisions implied, kept the mother's potential harmful influences in check by giving her detailed rules to follow.

In the writings of many mothers, foremost in their minds was that belief that scheduling eased their burdens of infant care. Author Kathleen Norris was most enthusiastic about her promotion of carefully scheduled infant care. She considered it important to release women from the drudgery of child-rearing in order to eliminate their dread of child raising. From her experience, she assured readers in her 1927 book, modern motherhood eliminated such fears. The prescriptions for scientific motherhood "with regular hours, baths and meals on schedule..." had changed mothers' tasks and had actually made motherhood "fun."

While many mothers believed that scheduling facilitated their infant-care practices, they had other reasons to follow the rigorous time-tables of feeding, sleeping, and eliminating. For Thompson, West, and others, the practice of scientific motherhood with its carefully timed routines enhanced their self-confidence. For others, the detailed instructions led them to doubt their own observations and sapped their self-confidence. In one such case, Mrs. L. J. R., of Anaconda, Montana, contacted the Children's Bureau in November 1923. She reported that she dutifully followed the infant-care practices outlined in the agency's

pamphlet. Still, she was insecure enough to visit a well-baby clinic, where the nurse gave her a diet schedule suitable for the infant. Mrs. L.J.R. was pleased to announce that her year-old son appeared "in excellent health." Yet, despite her close adherence to an approved schedule, and her observation that her son was healthy, she needed still further confirmation from a recognized medical expert. She took the child to be "examined by a baby specialist here simply to assure myself that there is nothing wrong with him." On the one hand, Mrs. L.J.R. had confidence in the advice she was given; on the other hand, that advice undercut her trust in her own observations. Mrs. L. J. R. needed medical experts to verify her results. Another mother in rural Wisconsin felt a similar need for a health-care practitioner to affirm her practices. In 1938, Mrs. H. was adhering to a three-hour feeding schedule for her one-month old infant. When she noticed that the baby often slept longer than three hours, she queried the public health nurse about using a four-hour schedule. This mother obviously had been convinced of the importance of regularity in feeding and also the importance of regular bowel movements because she had been giving her very young child enemas. Endorsing the four-hour schedule and reassuring the mother that "a stool every other day is all right with the breast fed baby," the nurse suggested prune juice, orange juice and cod liver oil, rather than an enema. Mrs. L.J.R. and Mrs. H. believed in the medically-sanctioned rules on regularity, but doubted their ability to carry out the program without outside confirmation.

For immigrants and their children, modernization often went hand in hand with Americanization. In her interviews with Jewish-American women who birthed in the 1930s and 1940s, Jacquelyn Litt also found that "the faith in modern medicine and the desire to become modern mothers were taken for granted, commonly accepted and understood." One of her interviewees recalled vividly the contrast between her mother's way and the modern, scientific way. If her daughter awoke before her next scheduled feeding time, she would let the baby cry. This behavior horrified her mother, but the interviewee would not feed her daughter before the scheduled time. "This was the way it had to be," she said. "If [the doctor] said every four hours, every four hours. It was the right thing to do." In her eyes, this practice constituted "perfect" motherhood. The practice of modern infant care with its fixed scheduling served to separate this generation from previous immigrant generations; it made them modern, it made them American.

Viewing fixed schedules as a pragmatic solution to their maternal work-load, mothers could and would modify schedules, or parts of schedules, if it meant that their homes would run more smoothly without compromising the health of their children. Household requirements and experience influenced what schedule Thompson established for her children, for example. When she came home from the hospital, she continued the schedule she had observed there, feeding the babies at 6 am, 9 am, 12 noon, 3 pm, 6 pm, 10 pm and in the first month also at 2 am feeding. Shortly thereafter she found several reasons for altering the schedule She discovered that the infant was nearly always asleep

at 10 pm and she "hated to disturb her." Also, Thompson was ready to retire before 10 pm. She considered her rest important as well as the child's. She decided not to awaken the baby, but to let her wake up if she needed to feed. The first night, baby did not awaken until midnight and following her feeding, she slept until 5 am, nearly the time for her first morning feed. Thompson found that gradually the night feeding came later and later. By five months of age, the baby went from 6 pm to 6 am without feeding. Yet, during the day Thompson would not deviate from the schedule and "never hesitated to awaken [the infants] either for their bath or bottle." In this process, we can see how at least one mother managed to maintain confidence in her own sense of appropriate child care—she determined that "it was more important that our baby learn the art of sleeping all night than that she should get an extra feeding"—while at the same time upholding her belief in the medical directions of the day—she was very rigid about the day-time feeding scheduling.

Mothers' decisions about child care were highly personal, shaped by a woman's experiences, beliefs, values, and situations. Consequently, not all mothers of the period rigorously scheduled their infants as contemporary infant care literature and health-care practitioners advised. Mrs. A.J. Johnson's physician had insisted that she feed her infant son "just so much and no more" and at regular hours. Under this regime, the baby "got cross and fretted a lot more than he should; acted as tho he was hungry, but [according to the doctor's orders,] he shouldn't have any more...and not oftener than two hours." This left a crying baby and a frustrated mother. "Then one day his mother thought he can't no more than fuss, so she was going to give him a fill. He had all he wanted to eat, went to sleep and slept like a good boy." Thereafter, Johnson fed her son as much as he wanted when he wanted; consequently, she relates, "he slept and grew like a weed in summer." Her doctor suggested one routine, but her lived experience indicated another, one that provided a solution to a starving infant. She trusted the physician because he was a medical authority, but she was not so cowered by his expertise that it blinded her commonsense and powers of observation.

Clearly some women elected to care for their children according to the directions of child-care experts because as mothers they were convinced that modern medicine offered the best and most healthful counsel; health-care practitioners advised rigorous scheduling, so these women carefully and conscientiously scheduled their infant's lives. But, mothers voiced a host of other explanations for doing as they did for and with their infants. This demonstrates that women were not, and by extension are not, merely passive recipients of medical advice. Rather, this diversity suggests that individual women had agency and were active participants in decision-making about their children's health. Listening to the voices of these mothers illuminates a complex and more nuanced picture of everyday life in the first half of the 20th century and highlights the interaction of material conditions and scientific advice literature that shaped women's lives. Some women heeded medical

counsel because of their faith in contemporary medical science; others because they believed that training would result in the child's physical and moral health. For some women, following fixed schedules enhanced their confidence in their own abilities; for others, their lack of self-confidence convinced them to adhere to doctor-recommended schedules for the sake of their child's well-being. In the early decades of the 20th century, many considered rigorous training the epitome of modern child-care. And for still others, scheduling enabled them to gain some control over their frenetic lives and the many family and household demands they faced each day.

This case of scientific infant-care advice and its appropriation and use provides us with an important instance of how women then, and now, strategically deal with the material conditions of their lives. Women who rigorously and religiously followed strict infant-care schedules were not mindlessly following the directions of their doctors. Rather, they understood the benefits of medical counsel and the need to gain control over their frantic lives. In making their decisions, they considered both the medical and the pragmatic. It was the conjunction of these that molded mothers' practices, a conjunction that still continues to influence mothers' lives.

Scientific motherhood is still undergoing critical transformation. Scientific and medical expertise remain the hallmark of modern mother, but in the late 20th century mothers are not passive recipients of medical authority. Take, for example, La Leche League, a grass-roots organizations devoted to encouraging mothers to breast feeding their infants. On the surface, this movement could be consider highly traditional; what could be more traditional than a breastfeeding mother? Yet, in the 1960s when the organization was gathering strength, its activities were quite radical. At this time, doctors were actively encouraging women to bottle feed. By resisting the advice of physicians, La Leche leaders appeared to be resisting contemporary science and medicine. Yet, the very rationale that they used to support their arguments for breastfeeding grew out of contemporary scientific research. They were not so much dismissing the importance of science and medicine, as insisting that doctors listen to their interpretations of the research.

In the same period, in the United States we saw a push for "natural childbirth." Hospitalized child births frequently involved anesthesia. Medical practitioners such as the British Grantly Dick-Read and the French Ferdinand Lamaze developed other birthing routines that avoided the use of anesthesia and allowed the mother to stay awake during labor and delivery. Women heard about these practices and pressured their physicians and their hospitals to implement them. Again, it was not women dismissing contemporary science, but using it to push doctors and medical institutions to hear them.

Women are very aware of the significance of their childcare activities. They looked to experts because they wanted to fulfill the job given to them and this quest for knowledge reshaped the collective and individual acts of scientific motherhood. Today modern

motherhood is tightly intertwined with medicine, but it is a medical practice that is slowly changing. Mothers and health-care providers now talk more often of a "collaborative partnership." Such cooperation between mothers and experts is not easy to attain. It requires respect for the knowledge of scientific and medical experts, and for the knowledge of mothers. Today a majority of our health system aims to process patients as efficiently as possible, leaving little time for significant discussion between health-care providers and mothers. Pressures on mothers make it difficult for them to find the time to acquire and digest the information they need from a confusing array of contemporary sources. Mothers (and other child-care providers) and practitioners need a supportive social and cultural network that will enable them to learn from each other. Most critically, we need to go beyond our health care system and admit society's responsibility for child welfare.

The modern scientific mother is one who protects her family with the most up-to-date developments in science and medicine, who seeks medical advice when appropriate. It is not be easy to provide the conditions necessary to insure this ideal for all mothers, but it is a goal we must attain for our mothers and for our future.