Traditionally, women’s experiences formed the basis of respected mothering practices which were seen as either part of a woman’s innate knowledge, or taught her by her own mother and other female relatives and friends. As scientific and technical expertise gained in prominence throughout the nineteenth century, increasingly women were told that they required scientific and medical knowledge in order to raise their children appropriately and healthfully. The ideal model now became the “scientific mother.” This paper analyzes the evolution of scientific motherhood from its earliest manifest in which women were expected to learn from modern scientific and medical knowledge, through the middle decades of the twentieth century during which mothers were viewed as incapable of such learning and were expected to follow the directions of their physicians, through the end of the century when women demanded recognition of their capabilities. Scientific motherhood affected and was affected by particular mothers very differently over time and place, across race and ethnicity, shaped most crucially by women’s economic ability, education, and geographic location. It was not equally available to all women, nor was it totally embraced by all women. What is critical for this analysis of scientific motherhood in international context is the general trend that, overtime, women’s role in decision-making about their children’s health and welfare was increasingly denigrated as the role of scientifically medically trained men was elevated. The paper traces out a number of the historically shifting power and gender relationships as women embraced, resisted, and redefined scientific motherhood.

Throughout history, proper mothering techniques were considered part of a woman’s innate knowledge or were taught by experienced mothers and other female relatives and friends. This tradition changed dramatically as the status
of science and medicine grew through the nineteenth century. Appropriate mothering became scientific motherhood; that is, women were told that they needed to understand contemporary scientific and medical knowledge in order to raise their children appropriately and healthfully. In the twentieth century, the ideology of scientific motherhood gradually changed as women were increasingly told that they were instead to depend on the instruction of scientific and medical authorities, primarily men. Scientific motherhood varied over time and place, but its influence grew around the world as women’s role in decision-making about their children’s health and welfare was progressively disparaged, while the role of scientific and medically trained men was elevated. This essay will begin with a discussion of some of the prominent sources that promoted ideal scientific motherhood in the North. It is critical to note that scientific motherhood was not imposed on passive women; it was supported by a broad cross-section of society, including educators, health-care providers and health reformers, social commentators, and many mothers themselves. The next section of this essay identifies reasons that women turned away from tradition to embrace scientific and medical expertise, and later scientific and medical experts for information about child care. Still, some women questioned and resisted. Examples of their resistance is the subject of the third section of this essay.

**Promoting Scientific Motherhood**

Childcare 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” (“Editorial”). 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 childcare. Early on, one book dominated the market: L. Emmett Holt’s *Care and Feeding of Children*. Originally published in 1894, the manual was often reprinted and revised. By 1930, it had been reprinted 75 times, revised 12 times, and translated into several other languages. It was still in print under the editorship of Holt’s son in 1957. Rivaling Holt in the early twentieth century was the New Zealand physician Sir Frederick Truby King who published a popular magazine column and multiple editions of his *Care and Feeding of Baby*. Authors such as these claimed the authority of science as the basis of their advice.

Another familiar name is Benjamin Spock, whose *Baby and Child Care* was first published in 1946 and today is in its ninth edition in the United States. By 1998, Spock’s book had sold over 50 million copies and had been translated into 39 languages, ranging from Afrikaans and Arabic, through Burmese,
Hebrew, Hindi, and Urdu. Spock’s tone was different from the authoritarian physicians who preceded him. Spock is remembered for reassuring mothers rather than frightening them into compliance. After all, the line that appears in all editions of Spock and that is often quoted is “Bringing up your child won’t be a complicated job, if you take it easy, trust your own instincts.” In this he is apparently crediting the mother with important knowledge. However, Spock ended this sentence with “and follow the directions that your doctor gives you” (3). Again, insisting that mothers require medical and scientific experts to handle their maternal duties correctly.

Doctors were soon joined by a chorus of others. For literate women in addition to physician-authored books, there were a host of pamphlets, often distributed free or at very low cost produced by local governments, by charity agencies, and even by manufacturers of products for children such as infant foods, baby powder, and soap. One of the most popular and often reproduced pamphlets was Infant Care, a brochure of the United States government. It was first published in 1914. By 1940 over 12 million copies had been distributed and by the 1970s over 59 million. The content was revised with each edition to reflect contemporary medical information. 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. Another popular forum for scientific motherhood in the North 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 educational as well as competitive. Doctors would tell mothers about problems they found in the babies; mothers would be instructed in modern childcare techniques.

In other instances, 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 based on current theories of child care. In some regions, the nurses, stand-ins for physicians, reached even more directly into the everyday life of mothers. For example, the Plunket nurses of New Zealand. Inspired by and trained by Truby King, these nurses visited families on a regular basis schedule, supervising mothers in infant and child-care and bringing the latest scientific and medical advice into the home. They maintained a Plunket booklet for each child, records that became cherished mementoes in many families. Though these nurses rarely visited indigenous communities (and this is crucial since it says something about the politics of race there), they visited nearly every other New Zealand family, regardless of geographical or financial circumstances.
The Influence of Hospitals

Mothering practices changed substantially as more and more urban women birthed in hospitals through the twentieth century. 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 was typically a domestic affair: the laboring mother was attended in a home setting, surrounded by female relatives and friends and often a midwife familiar with her life. Even as male physicians began to replace female midwives in this domestic 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, some wards tended to duplicate 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 ever more popular and as doctors and hospital administrators saw epidemics sweeping through their maternity wards. Our knowledge about the spread of diseases grew in the late nineteenth and early twentieth centuries as scientists and doctors developed a greater understanding of the germ theory of disease. However, knowledge of transmission did not immediately lead to knowledge of prevention. With the era of sulfas drugs and antibiotics decades away, hospitals fearful of epidemics would quickly take newborns from their mothers and care for them in sterile nurseries. Mothers saw their babies only for feedings, every three or four hours, at which time 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 spends most of her seven to ten days in the hospital after childbirth peering through the window of the nursery looking at her child. Every several hours, a nurse brings the baby to the mother, who carefully unwraps the baby for feeding. Within a few minutes, the nurse is back to whisk the baby away again. These procedures left little time for the mother and baby to interact 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 and 1950s, most new mothers in the North birthing in the hospital did not breast feed. Instead they were taught by nurses the most modern, “scientific” form of infant feeding: bottle feeding. This situation was repeated again and again around the world over the next three or four decades,
especially under the influence of international baby food companies which sent representatives to instruct mothers in modern infant 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. This form of feeding was a far cry from breast feeding, separating the mother once again from more traditional mothering practices.

**Scientific Motherhood in Popular Culture**

The promotion of scientific motherhood was not limited to popular literature and institutions like government agencies, charitable organizations, and hospitals. What made the ideology so powerful was that it was also championed in less focused, and many ways more pervasive, forums, namely popular culture. For example, as the text of late nineteenth- and early twentieth-century magazines fostered the spread of scientific motherhood, so too did their advertisements. Some advertisements were crystal-clear. A 1938 advertisement for Libby’s Baby Food is archetypical. It shows a new father telling a new mother, “But your mother says he is much too young for vegetables.” The mother’s response: “Well, dear, you’d better argue that with Dr. Evans. He says babies do better if they have vegetables early in life.” Advertisements with such messages appeared in many parts of the world. The modern mother follows the directions of her physician, not her relatives or previous generations. Some manufacturers were even more pointed about the dangers of knowledge that lacked the imprimatur of medical authority. A 1936 advertisement for Lysol shows a worried mother looking over a sick child. The headline is given to the physician who stands next to her: “Madame, you are to blame!” (emphasis in the original.) The male physician is accusing the mother of causing her child’s illness. Her child would not be ill if only she had known the difference between “clean” and “hospital clean,” if only she had used modern, scientifically-inspired Lysol. Advertisements like this portrayed a mother who disregards a physician’s advice as a bad mother.

**Why Mothers Increasingly Turned to Scientific and Medical Expertise and Experts**

We cannot homogenize women’s responses to scientific advice and the demand that they heed the directions of their physician. Only by understanding the specificities of their lived conditions can we see the complexities of the decisions they made. As cultural theorists remind us, there is a concrete politics of reception, one that is an essential determinant in how messages from experts are received and used. Mothers’ decisions about child care were highly personal, shaped by a woman’s experiences, beliefs, values, and situations.
We do know that as women read, heard, and saw more of scientific motherhood, they gradually turned away from traditional female sources and their own experiences and more and more to an authoritarian, patriarchal physician. We find evidence for this in the letters sent by iterate women to childcare magazines and to physicians they knew only through publications. Thousands of mothers from around the globe wrote to Spock in appreciation for his advice, as well as soliciting his directions. The U.S. government received hundreds of thousands of letters in response to pamphlets such as *Infant Care*. In many societies, regular visits to physicians and clinics became the norm as women sought trustworthy answers to their health questions. Women acted on the basic tenets of scientific motherhood: women maintained primary responsibility for infant and childcare, but they were dependent on experts to tell them and to teach them how to best raise their children. By the second half of the twentieth century, most women believed that the best childrearing was done under scientifically informed medical supervision.

There are many reasons why mothers turned more and more frequently to medical experts and expertise. The weight that they gave to scientific motherhood varied among nations and classes, and across racial and ethnic groups, but we can draw some generalizations. As the prestige of science and medicine grew, the expanding 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 altered women’s domestic tasks as housekeepers were taught to battle germs to protect their families. Developments in domestic technology, like electricity, plumbing, the stove, the refrigerator, and the washing machine, which were spreading around the globe, also dramatically transformed the scope, content, and status of women’s work, and not only for middle-class women. Other social and cultural factors influenced this trend. 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 door to an expanding medical practice.

Some women chose 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. Antibiotics, insulin, surgery, and the like—benefits of modern medicine—provided women with tools to protect the health and the welfare of their children. Scientific developments in
sanitation and nutrition explained previously inexplicable ill-health. Mothers were willing to follow the directions of physicians because of the promise of health. Similarly, mothers who lacked self-confidence, who felt that they lived in a fearful world over which they had no control, gratefully accepted the rules of authoritative counselors. They believed that modern medicine provided health-giving options in a dangerous world and that it led them to gain some control over their frenetic lives and the many family and household demands they faced each day. They understood the benefits of medical counsel and the need to manage their intense 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 continues to influence mothers’ lives.

For many, scientific motherhood was the height of modernity. Especially during periods of high immigration, modern motherhood, scientific motherhood became an important symbol of acculturation. As one sociologist found in interviews with the adult children of immigrants describing their lives in the 1930s and 1940s in the U.S., “the faith in modern medicine and the desire to become modern mothers were taken for granted, commonly accepted and understood.” One of the women she spoke with vividly recalled the contrast between her mother’s way and the modern, scientific way. Her physician insisted that babies were fed on a strict schedule. If her daughter awoke before her next scheduled feeding time, the mother would let the baby cry. This behavior horrified the grandmother, but the woman explained that she would not feed her daughter before the scheduled time. “This was the way it had to be,” she said. “If [the doctors] said every four hours, every four hours. It was the right thing to do.” In her eyes, this practice constituted “perfect” motherhood (Litt 55–56.) Following doctor’s directions separated her generation from previous immigrant generation; it made her American and modern.

The element of gender is a fundamental component to understanding this transition in scientific motherhood. 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 element 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.

Mothers offered numerous explanations for doing as they did for and with their infants, demonstrating that women were not, and by extension are not, merely passive recipients of medical advice. This diversity suggests that in-
individual women had agency and were active participants in decision-making about their children's health. Listening to their voices illuminates a complex and more nuanced picture of everyday life and highlights the interaction of material conditions and scientific advice literature that shaped women's lives and the ideology of scientific motherhood.

How Some Individuals Resisted Elements of Scientific Motherhood

Despite the strong faith of many mothers in the power of modern medicine, not every woman around the world subscribed to scientific motherhood. Some we know simply ignored the whole issue. They did not take their children to physicians; they could not or would not read the vast literature available to them. Many others were more accommodating. They believed in the benefits of scientific motherhood, but retained for themselves some of the decision-making in childcare. For instance, when infants were subjected to rigidly scheduled feedings (typically 6:00 am, 10:00 am, 2:00 pm, 6:00 pm, 10:00 pm, and sometime 2:00 am), a mother might switch to 7:00 am, 11:00 am, 3:00 pm, 7:00 pm, and 11:00 pm, in order to fit in better with other family routines. Another example is the case of Mrs. A. J. Johnson. Her doctor insisted that Johnson 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, Johnson decided that her son appeared hungry and that she was willing to try anything to help him. So she fed him as much as he wanted, after which he slept well. Soon Johnson reported that her son was sleeping well every day and was growing as well. Johnson’s doctor had 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 mesmerized by his expertise that she ignored her commonsense and powers of observation.

We don’t know how many women had the self-confidence of Johnson. But anecdotal evidence points to others who reshaped the advice of health-care practitioners in light of personal circumstances. Pacifiers, “dummies,” were another frequent accommodation that mothers would make. In the early to mid-twentieth century, pacifiers were universally condemned by physicians. Plunket nurses entering New Zealand homes would lecture clients they found using pacifiers. Yet, many desperate mothers realized that sucking on a pacifier calmed their infants. Consequently, just before the Plunket nurse was due to visit their homes, these mothers would race around hiding all the pacifiers, rather than confronting the nurse. Mothers respected and appreciated the
help and instruction provided by Plunket nurses. But that didn’t blind them to the fact that pacifiers can pacify an irritable baby. These mothers valued their physicians and their nurses, but these health-care providers were not part of their everyday experiences. They could not understand how useful a pacifier was, or a slight re-arrangement of a feeding schedule.

Then, there were other mothers who accepted the crucial importance of physician supervision, but who also recognized that not all physicians were the same. Consequently, these, often more affluent women, were willing to challenge their own physician, if they found the practice of another that they preferred. The most dramatic example of this was the rise and spread of the natural childbirth movement. By the 1930s and 1940s in the North, typically women birthed in hospitals. There they were placed in a sterile environment, alone without their friends, and frequently birthed under anesthesia. Women who preferred different circumstances, most particularly who wanted to be awake during labor and delivery, were considered difficult patients. Yet, a few doctors, such as Ferdinand Lamaze in France and Grantly Dick-Read in Britain, championed what became known as “prepared” or “natural” childbirth.

Despite some stark difference between their practices, these men shared two importance characteristics. First and foremost, both were medical practitioners: a most crucial characteristic in scientific motherhood. Second, they both stressed the importance of women’s active, aware participation in the birth process. Dick-Read wrote a very popular book which helped to spread his ideas far beyond Britain. Women from around the world wrote to him asking where they could find a local doctor who practiced the Dick-Read method and soliciting advice on how to persuade their physician to do likewise. Reading his book gave others the courage to challenge the medical system directly. With book in hand, committed women could confront doctors who talked down to them like uneducated patients. Such women sensed that there was a problem with contemporary, highly medicalized childbirth, but they needed the validation of a medical practitioner to give themselves the confidence and the credibility to insist on what they believed they needed. In so doing, they modified hospitalized childbirth, but still within the parameters of scientific motherhood.

Organized Resistance Reshapes Scientific Motherhood

Scientific motherhood is continuously being transformed. Its content shifts with new medical and scientific developments, with technological innovation, with available resources. Scientific and medical expertise remain the hallmark of modern mother, but in the second half of the twentieth century mothers were not subservient in the light of medical authority. Take, for example, The International La Leche League, a grass-roots organization devoted to
encouraging mothers to breast feed their infants. On the surface, this movement could be considered 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. Doctors actively encouraged women to bottle-feed. By resisting this advice, La Leche leaders appeared to be defying contemporary science and medicine. But, the very rationale that they used to support their arguments for breastfeeding grew out of contemporary scientific research. They did not dismiss the importance of science and medicine; they did insist that doctors listen to their interpretations of the research. Viewed from one perspective, these women were promoting women’s knowledge against the dictates of the masculine, highly scientific medical system. However and most critically, the League was not rejecting medical knowledge. True, they did not believe that individual doctors were necessarily the best sources for advice on infant feeding and they elevated the role of the experienced nursing mother. Still, they reminded the public and their members that doctors considered “breast best.” The League justified its stance both with traditional arguments for maternal nursing and with medical arguments drawn from contemporary scientific literature. Actively soliciting the support of physicians, La Leche leaders promoted a scientific motherhood shaped by physicians and mothers.

In the past four decades, a still greater challenge to the authoritarian medical profession has arisen through publications such as Our Bodies, Ourselves. First published in the United States in the early 1970s, since then it has been translated and widely adapted in English language editions for Britain, South Africa, and India (there is also an Indian edition in Telegu), as well as editions in Hebrew, Japanese, Russian, Arabic, Tibetan and other languages. The genesis for such publications often come from women’s desires to learn more about their bodies and their health. Similar impulses created Ourselves and Our Children, in which the authors clearly do not dismiss medical knowledge, but warn against the “mystique of professionalism, in which the “true nature and importance of the professionals’ knowledge and skills become inflated, so that they are seen as more powerful, more expert, more broadly knowledgeable than they either are or should be” (Boston Women’s Health Book Collective 271). Authors of such publications value contemporary medical knowledge, but they require a readjusting of the balance between medical provider and patient. Recognizing the validity and significance of their own experiences, experiences based on cross-class and -race histories and struggles, they do not repudiate scientific and medical expertise. They do reject the idea of an authoritarian practitioner and insist that women are capable of evaluating this information for themselves. They push for a more equal partnership between medical practitioners and patients.
Conclusion

Women are very aware of the significance of their childcare activities. They looked (and look) 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. Where mothers have the education, the finances, and the time to insist on their involvement, health-care providers 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. In many parts of the world, women and children continue to struggle with patriarchal authority, an unresponsive state, insufficient health care, live in geographically isolated areas or lack the financial resources or the time to visit practitioners or clinics. And where the health care system is accessible, it often aims to process patients as efficiently as possible, leaving little time for meaningful discussion between health-care providers and mothers. Pressures on mothers make it difficult, if not impossible, for them to find the time to acquire and digest the information they need from a confusing array of contemporary sources. Mothers (and other childcare providers) and practitioners need a supportive social and cultural network that will enable them to learn from each other.

Partnership, the twenty-first-century ideal form of scientific motherhood which benefits from the knowledge and experience of both practitioner and patient, both physician and mother, is merely that, an ideal. Just as the earlier forms of scientific motherhood were ideals, never universally attained, partnership is a goal. We need to establish flexible health-care systems that acknowledge the reality of mothers’ situations and that are capable of responding to the diverse needs and realities of women’s experiences. Most critically, we need to go beyond our health care system and admit that it is an entire society’s responsibility for child welfare. Such efforts will take time and money and education as we prepare providers and patients with the tools they need to build, rebuild, expand, and defend a health-care system that is truly responsive to all mothers.

An earlier version of this essay was presented as a keynote paper at the May 2012 MIRCI Conference. Much of the material has been drawn from my earlier work: Perfect Motherhood: Science and Childrearing in America (2006); “Training the Baby: Mothers’ Responses to Advice Literature in the First Half of the 20th Century” (2006); and “Seeking Perfect Motherhood: Women, Medicine and Libraries” (2012).
By the North, I mean Europe, North America, and those parts of the work in which dominant groups aligned themselves with the North.

References


Johnson, Mrs. A. J. “How I raised my baby.” *Farm, Stock, and Home* 1 October 1917, 33: 602.

