

HISTORY OF SCIENCE

The politics of epigenetics

Maternal bodies are more than mediators of fetal environments, cautions a historian

By **Abril Saldaña-Tejeda**

Filled with research findings and vivid accounts from reproductive biologists, geneticists, epidemiologists, and other scientists immersed in the study of reproduction and heredity, *The Maternal Imprint* offers an outstanding depiction of the mutual constitution of science and society. Cleverly unpacking the complex history of scientific debates on so-called “maternal impressions” (later, “maternal effects”) on offspring and future generations, author Sarah Richardson unveils the epistemological origins of concepts we take for granted today—human plasticity, for example, and the biosocial

tation. With this belief came a conception of the female body as a porous, unstable, and irrational entity—ideas that were used to justify the denial of women’s political and social rights. Weismann’s theory challenged these views, but it also challenged some epistemological premises of the time, as it was based on the idea that scientific knowledge should be formed by deep insights and not merely reflect an accumulation of observations.

Richardson situates turn-of-the-century debates about maternal imprinting in the context of environmentalist approaches to eugenics and the emergence of prenatal culture. At the beginning of the 20th century, she notes, prenatal culturalists homed

**The Maternal Imprint:
The Contested Science
of Maternal-Fetal Effects**
Sarah S. Richardson
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more flexible, term soon arose to take its place: “maternal effects.” As Richardson shows, the fuzziness of the science underlying this notion and its shaky theoretical underpinnings soon became its virtue. Entangled with economic pursuits, including efforts to increase livestock productivity, maternal effects became an enduring term to explain all maternal influences that fell outside cytoplasmic transmission. As they had during debates about maternal imprinting, fetal environments once again took center stage, but this time with an explanatory power that accounted for traits that seemed to be fixed in place over generations.

Birth weight became the favored metric for tracing and studying maternal effects during the 1960s and 1970s, a period when maternal science also became entangled with studies of racial inequality. Richardson illuminates the complex debates that framed the maternal body as the mediator of all sorts of social ills, including the biosocial inscription of racism on the bodies of generations to come, and explores their technical and epistemological underpinnings. She critically explores the science of fetal programming and the study of methylation as it relates to intergenerational epigenetic effects. Using a series of studies on the effects of hardship (i.e., hunger, trauma) on pregnant mothers and their offspring, Richardson rightly points to the potentiality and limitations of grand epigenetic claims based on limited human samples and technologies, a phenomenon she calls “cryptic causality.”

In the book’s closing chapters, Richardson illustrates the social and political implications of scientifically assigning women’s reproductive bodies the enormous task of ensuring a healthy future for humankind and invites readers to reflect on the stigmatizing and deterministic discourse that often accompanies studies of maternal intrauterine effects. The book is an epistemological provocation, a reminder that science is a political enterprise, and an invitation to produce knowledge that empowers women instead of knowledge that makes them solely responsible for our collective future. ■



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body—and describes how these concepts emerged as artifacts of competing views on sex, heredity, childhood, and other ever-changing social pillars.

At the end of the 19th century, writes Richardson, a German biologist named August Weismann dared to propose that maternal and paternal contributions to heredity were equal, colliding with long-held folk beliefs and scientific premises. Until that time, it was widely believed that a mother’s every emotion and experience was imprinted on her offspring during ges-

in on the intrauterine period as being of utmost importance for race improvement, with some using this view to assert women’s agential role in the future of humanity. However, the spotlight on women’s reproductive bodies was swiftly translated into prescriptions for everyday life, restraining women’s autonomy over their own behavior, emotions, and other aspects of their lives. In contrast, adherents to Weismann’s theory, many of whom were eugenic scientists, were surprisingly egalitarian, perceiving both parents as equally responsible for the health of future generations.

By the 1930s, the concept of maternal imprinting was generally deemed anti-scientific and superstitious, but another,

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