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# ”Natural” and ”Artificial” Infection: Host-Specificity in Mid-20th-Century Parasitology and its Implications for Evolutionary and Disease Biology

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## Abstract

Session: Historical and Philosophical Perspectives on Disease Biology (Corinne Bloch, Nicholas Bonneau, Katherine Liu, and Rachel Mason Dentinger) In the mid-20th century, experimental cross-infection was a standard method for investigating the parasites of animals. Within the laboratory, barriers to infection could be overcome, leading some researchers to suggest that virtually any animal might be susceptible to any parasite. But outside the laboratory, highly specific host-parasite relationships were common, leading researchers to distinguish between ”natural” and ”primary” infections on the one hand, and ”artificial” and ”accidental” infections on the other. At the heart of these distinctions were attempts to use parasites’ host-specificity to solve problems both in evolutionary biology and in disease biology. Resolving host-specificity allowed evolutionary biologists to infer evolutionary histories, addressing gaps in the fossil record and correcting overreliance on morphological characters in phylogenetics. At the same time, host-specificity also helped parasitologists better predict the conditions under which particular diseases might emerge or switch hosts, suggesting potential methods for disease prevention. Parasitologists T.W.M. Cameron (McGill University), P.C.C. Garnham (London School of Tropical Hygiene and Medicine), and J.G. Baer (University of Neuchâtel) led the effort to use evolutionary insights to inform disease prevention and vice versa. This paper examines their work from the 1930s to the 1960s, arguing that the study of parasites’ host-specificity affected both evolutionary and disease biology, and contributing to studies of the interplay between lab and field biology and basic and applied biology.

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