
Seymour Benzer, Genetic Maps, and the Junkman's Problem

Yoichi Ishida*¹

¹Department of History and Philosophy of Science, University of Pittsburgh – United States

Abstract

On December 4, 1956, in his biophysics seminar, Seymour Benzer gave a lecture entitled "Mutations and the Junkman's Problem," describing the processes of mutation and recombination and their relevance to his research on genetic fine structure. Benzer said that his research was about "the junkman's problem," whose "objective" was "to determine something about the structure [of DNA] by these operations [mutations and recombinations]" (Papers of Seymour Benzer, Box 82, Folder 1, Caltech Archives). Using materials from the Benzer archive, I discuss how Benzer's uses of genetic maps structured his research on the junkman's problem. In the 1950s and 60s, the day-to-day operation of the Benzer lab consisted almost entirely in making detailed genetic maps. Although Benzer was interested in the physical interpretation of these maps, in his everyday research he frequently used genetic maps in ways that did not depend on his taking the maps to be representations of the structure of DNA. Benzer's failure to solve the junkman's problem at any given stage of his research did not undermine the lab work: he used genetic maps in ways that helped him successfully collect and organize "junk" despite the fact that he was not sure what (epistemic) "value" he could get out of it. I explain how particular features of genetic maps enabled him to separate two sorts of success—the success in mapmaking and the success in determining something about the structure of DNA—and explore how the former success supported the latter.

*Speaker