

Marie Kaiser: A Case Study in the Metaphysics of Biological Practice: The Parts of the Human Genome

Abstract

Under which conditions is a molecule, such as a particular DNA sequence, a real part of the human genome? Does the human genome have joints of nature that allow for a unique partitioning into parts? In this talk, I provide an answer to these questions by analyzing the scientific practices of individuating genomic parts and by critically reconstructing the metaphysical assumptions that underlie these practices. My analysis focusses on the ENCODE (ENCyclopedia Of DNA Elements) project which was planned as a follow-up to the Human Genome Project and which aims at interpreting the DNA sequence of the human genome by identifying all of its functional parts. For a metaphysician who tries to understand part-whole relations in the biological realm, the ENCODE Project constitutes an instructive case study because it is among the few cases in which biologists explicitly seek to individuate part-whole relations. My central claim will be that there are two necessary conditions for a molecule to be a part of the human genome: first, it must have a causal-role function, that is, it must contribute to the capacity of the genome to provide information for the synthesis of proteins, and second, it must be an actual segment of the genome's DNA sequence. This account of genomic parthood is an example of a metaphysics of biological practice because it analyzes the explanatory and investigative practices of the biological sciences to develop claims about what the world is ultimately like.