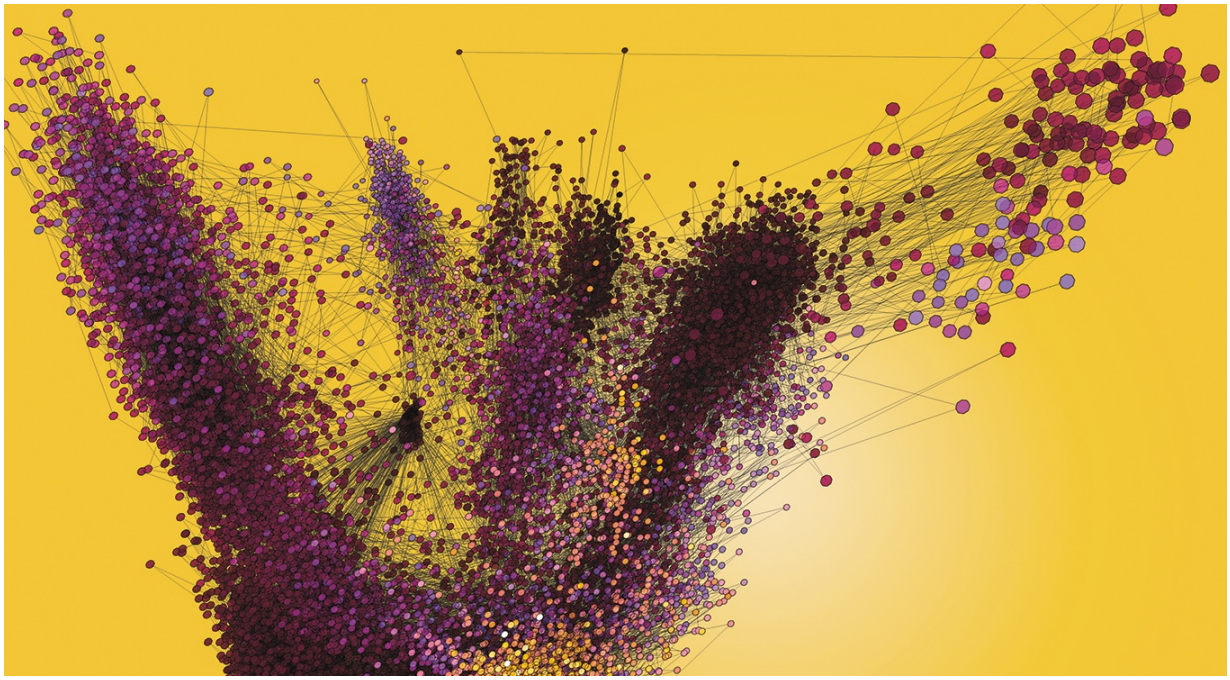
Biology, Big Data, Scientific Meaning and Politics



Emily Grosholz

Penn State University

Science & Philosophy Colloquia

auletta Dipartimento (II floor), Villa Mirafiori,
via Carlo Fea 2, Roma
11 December 2019 – 11:00-13:00

chair Carlo Cellucci
open to the public

organization
Emiliano Ippoliti *Filosofia – Sapienza*

SAPIENZA
UNIVERSITÀ DI ROMA

SCIENCE & PHILOSOPHY COLLOQUIA|
DIPARTIMENTO DI FILOSOFIA | DOTTORATO DI FILOSOFIA

ORGANISATION & INFO: EMILIANO IPPOLITI EMI.IPPOLITI@GMAIL.COM

Programme

wednesday 11 December 2019

11:00-11:10 **Opening** Carlo Cellucci *Roma Sapienza*

11:10-12:10 **Emily Grosholz (Penn State)** *Biology, Big Data, Scientific Meaning and Politics*

12:10-12:25 **Break**

12:25-13:00 **Debate**

chair Carlo Cellucci *Roma Sapienza*

Description

In my last two books on philosophy of science (2007 and 2016) I argue that the growth of knowledge often takes place at the intersection of disparate areas of research and also disparate discourses or idioms. In these books, I argue against a habit of 20th century philosophy of science: the influential Vienna School seemed to want to reduce science to logic, instead of seeing modern logic as a helpful addition to our account of reason. The problem is that logic requires discursive homogeneity, but productive scientific discourse is full of heterogeneity: biology does not 'reduce' to chemistry and physics, even though the results of those two disciplines are important to the study of living systems (which include ourselves). Working with a marine biologist in California, and a population geneticist in Minnesota, I have come to see the increasing centrality of 'big data' in their research and learned that the importance of big data has created another kind of philosophical reductionism. On the one hand, some philosophers argue that big data and powerful computers offer correlations that do not require scientific theory to explain correlation in terms of causation: the numbers speak for themselves. On the other hand, opposed philosophers (using arguments based on mathematics) argue that if the data is big enough, then it provably offers spurious correlations: scientific method and philosophical reflection are needed to sort the useless from the useful patterns. What is a useful and meaningful pattern? This question led me to look back on the way in which both biologists organize their field sites and decide what kind of data to gather: they understand those living systems at many levels, in terms of the interactions of various organism with each other and the surrounding environment and in terms of their genetic components. Both of them have also become politically active over the past decade, so they offer, explain and base arguments on their data in public forums, which adds another dimension to their meaning. I will give two specific examples, in which the numbers speak, but only in the context of disparate discourses, brought together by abstract mathematically-organized thought, empirical research collected in the field (mudflats north of San Francisco Bay and prairie remnants around the state of Minnesota) and practical deliberation.

SAPIENZA UNIVERSITÀ DI ROMA

SCIENCE & PHILOSOPHY COLLOQUIA|
DIPARTIMENTO DI FILOSOFIA | DOTTORATO DI FILOSOFIA

ORGANISATION & INFO: EMILIANO IPPOLITI EMI.IPPOLITI@GMAIL.COM

Emily R. Grosholz
Edwin Erle Sparks Professor of Philosophy, African American Studies and English

Member, Center for Fundamental Theory / Institute for Gravitation and the Cosmos
The Pennsylvania State University

Chercheur Associé Étranger de SPHERE, UMR 7219 CNRS and University of Paris Denis Diderot / Paris 7

Winner of the 2017 Fernando Gil International Prize for Philosophy of Science

SAPIENZA
UNIVERSITÀ DI ROMA

SCIENCE & PHILOSOPHY COLLOQUIA|
DIPARTIMENTO DI FILOSOFIA | DOTTORATO DI FILOSOFIA

ORGANISATION & INFO: EMILIANO IPPOLITI EMI.IPPOLITI@GMAIL.COM