

Chapter 1 : Search results for `D. M. Bailer-Jones` - PhilPapers

Abstract. This paper examines several analogies employed in computational data analysis techniques: the analogy to the brain for artificial neural networks, the analogy to statistical mechanics for simulated annealing and the analogy to evolution for genetic algorithms.

How Scientific Models Represent: Seeking a Cognitive Account Some of the most iconic images of our age are models of scientific phenomena—the three-dimensional multi-colored double-helix model of DNA; the solar system models representing the structure of the atom; and models of the human brain that look like wiring diagrams. Yet as familiar as they are, models are very puzzling. But having spent a semester at the Center for Philosophy of Science doing so, she feels she has made significant progress. She is also spreading the word. Early on in her visit she organized an informal reading group looking at various philosophical discussions of scientific models attended by both faculty and graduate students. Having previously taken an M. In this subject she received a Ph. She, Coryn, and their four-year-old son Ezra were originally scheduled to join us from University of Bonn a year earlier, but a heroic battle with cancer forced Daniela to postpone her fellowship. It is thus a very special pleasure for us to hear her infectious laugh in the halls of the Center this year. She sees the use of models as a particularly systematic way of capturing and describing natural phenomena. She is suspicious of philosophical accounts of scientific models that are not in contact with actual scientific practice, and thus focuses on the concrete development of models, for example by astrophysicists trying to understand radio sources. In addition to looking at published uses of such models, she also interviews scientists in order to find out what they think models are and what they use them for. Before they are publicly accessible in journals or on the Internet, Bailer-Jones reminds us, scientific models are cognitive tools, aids in helping us think about the difficult and complicated world around us. Bailer-Jones is thus also systematically investigating research in the cognitive sciences, and especially cognitive psychology, to see if it sheds light on the scientific use of models. She is especially hopeful that recent work in cognitive psychology on visual representations and on child development will have more or less direct application to her work. This has a possibly paradoxical consequence, since a quick look at that work reveals that it makes pervasive use of models! Like all models, scientific models are often incomplete and highly idealized, i. Mathematical models, for example, can be highly abstract and idealized by comparison with the phenomena they are intended to model. Moreover, there are often known inconsistencies between two models in a single area of science. Bailer-Jones is that, despite these apparent shortcomings, models nevertheless continue to be crucial tools in the tool kit of the working scientist. She speculates that it is not only in areas of science where there are serious gaps in our understanding that models play an important role; they allow us to think fruitfully both where we lack a coherent and detailed account of nature and where we have one. Looking ahead, she plans to study, within the context of developmental psychology, models that describe causal-mechanical relations. Certain models often seem to develop narratives about how one thing brings about another, and this seems somehow to help us understand what is going on—even when we are well aware that the events being modeled happen simultaneously! Riding a bike is a useful model! You push down the pedal, and as you do the back wheel starts moving. Nevertheless we often describe such events by telling a mechanical story—you push down the pedal, it then turns the cogwheel that then moves the chain. The chain then turns the axle of the back wheel of the bike that then starts turning. Unlike a model such as the static, three-dimensional double helix, these causal mechanical models are intended to help us better understand the causal relationships among the components of a natural system. This way of thinking is so ingrained in the modern scientific worldview that it desperately needs the critical reflections of a philosopher of science. It is a source of pride at the Center that we were able to give Daniela Bailer-Jones the time to reflect on scientific models. Her enthusiasm has proved infectious as her laugh. Seeking a Cognitive Account Daniela Bailer-Jones is interested in, among other things, cognitive aspects of science and recent history of philosophy of science. Her work centers on

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scientific models and she is currently writing a book on the 20th century treatment of scientific models in philosophy of science. She came to Pittsburgh together with her husband Coryn, an astronomer, and her four-year-old son Ezra. Daniela received her Ph. And in her spare time she frequents the local playgrounds.

Chapter 2 : CiteSeerX " in Model-Based Reasoning: Science, Technology, Values,

I am a staff member at the Max Planck Institute for Astronomy in Heidelberg. I work on machine learning and statistical data analysis methods for inference in large astronomical data sets, and lead a group working on the development and application of these for Gaia.

Chapter 3 : Project MUSE - Scientists' Thoughts on Scientific Models

Gaia People: Coryn Bailer-Jones. Max-Planck-Institut für Astronomie, Heidelberg. Coryn Bailer-Jones leads the Coordination Unit 8 "Astrophysical Parameters" in the DPAC.

Chapter 4 : Project MUSE - Scientific Models in Philosophy of Science

Daniela Bailer-Jones died on 13 November at the age of She had suffered from cancer for more than 10 years. Daniela touched and enriched the lives of many people, philosophers included. I met her in the summer of in the south of France, at a meeting of the Académie du Midi on the.

Chapter 5 : Scientific models in philosophy of science (Book,) [blog.quintoapp.com]

Daniela Bailer-Jones is interested in, among other things, cognitive aspects of science and recent history of philosophy of science. Her work centers on scientific models and she is currently writing a book on the 20th century treatment of scientific models in philosophy of science.

Chapter 6 : in Model-Based Reasoning: Science, Technology, Values, - CORE

Because of the possibility to keep them liberal, analogical models have played important roles in scientific research because they can give rise to questions and suggest new hypotheses.

Chapter 7 : Model-based reasoning : science, technology, values (Book,) [blog.quintoapp.com]

simulated annealing and genetic algorithms DANIELA M. BAILER-JONES 1 and CORYN A. L. BAILER-JONES 2 1 Department of Philosophy, University of Bonn, Germany; 2 Max-Planck-Institute for Astronomy, Heidelberg, Germany.

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Practical Bayesian Inference: A Primer for Physical Scientists - Kindle edition by Coryn A. L. Bailer-Jones. Download it once and read it on your Kindle device, PC, phones or tablets.

Chapter 9 : Coryn Bailer-Jones

We discuss now two recent works that tried to understand the methodological and philosophical implications of data analysis, and that come close to our viewpoint.