

Login Create Account

## Search & Browse

Simple Search Advanced Search Browse by Subject Browse by Year Browse by Conferences/Volumes

Latest Additions

#### Information

Home About the Archive

- Archive Policy
- History
- Help

FAQ

Journal Eprint Policies

Register

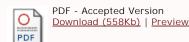
Contact Us

### News

Guide to new PhilSci-Archive features.

# Mechanisms in Dynamically Complex Systems

Kuhlmann, Meinard (2011) Mechanisms in Dynamically Complex Systems. [Preprint]



# Abstract

In recent debates mechanisms are often discussed in the context of ' complex systems' which are understood as having a complicated compositional structure. I want to draw the attention to another, radically different kind of complex system, in fact one that many scientists regard as the only genuine kind of complex system. Instead of being compositionally complex these systems rather exhibit highly non-trivial dynamical patterns on the basis of structurally simple arrangements of large numbers of nonlinearly interacting constituents. The characteristic dynamical patterns in what I call " dynamically complex systems" arise from the interaction of the system' s parts largely irrespective of many properties of these parts. Dynamically complex systems can exhibit surprising statistical characteristics, the robustness of which calls for an explanation in terms of underlying generating mechanisms. However, I want to argue, dynamically complex systems are not sufficiently covered by the available conceptions of mechanisms. I will explore how the notion of a mechanism has to be modified to accommodate this case. Moreover, I will show under which conditions the widespread, if not inflationary talk about mechanisms in (dynamically) complex systems stretches the notion of mechanisms beyond its reasonable limits and is no longer legitimate.

Export/Citation: <u>EndNote</u> | <u>BibTeX</u> | <u>Dublin Core</u> | <u>ASCII (Chicago style)</u> | <u>HTML Citation</u> | <u>OpenURL</u> Social Networking: <u>Share</u> |

#### Item Type: Preprint

Keywords: mechanisms, complex systems, dynamics, non-linear interaction, (statistical) self-similarity, robustness, econophysics, congestive heart failure



User: Date 03 Jan 2011 10:57 Deposited: Last Modified: 03 Jan 2011 10:57 I tem I D: 8442

URI: <u>http://philsci-archive.pitt.edu/id/eprint/8442</u>

# Actions (login required)

刘 View Item

# Document Downloads

ULS D-Scribe		E-Prints	Share	Feeds
	1			



This site is hosted by the <u>University</u> <u>Library System</u> of the <u>University of</u> <u>Pittsburgh</u> as part of its <u>D-Scribe</u> <u>Digital Publishing Program</u>

eìprints Philsci Archive is powered by <u>EPrints</u> <u>3</u> which is developed by the <u>School</u> <u>of Electronics and Computer</u> <u>Science</u> at the University of Southampton. <u>More information</u> <u>sort ordite</u>

and software credits.

