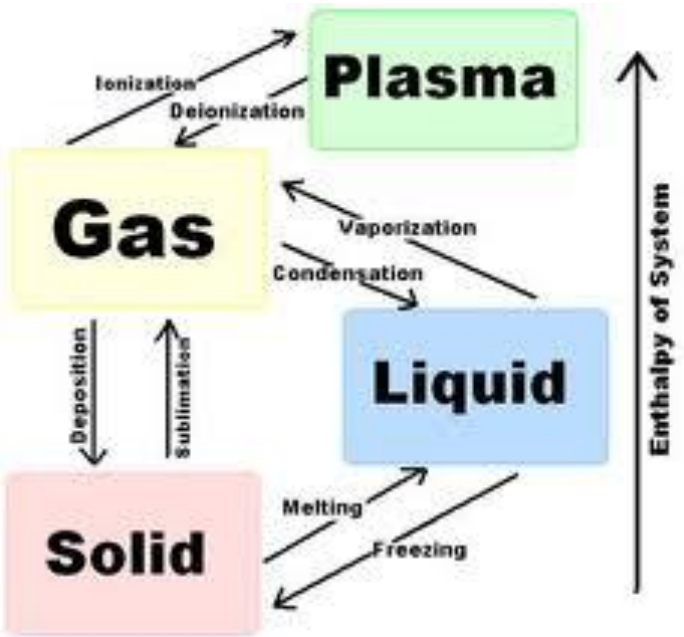
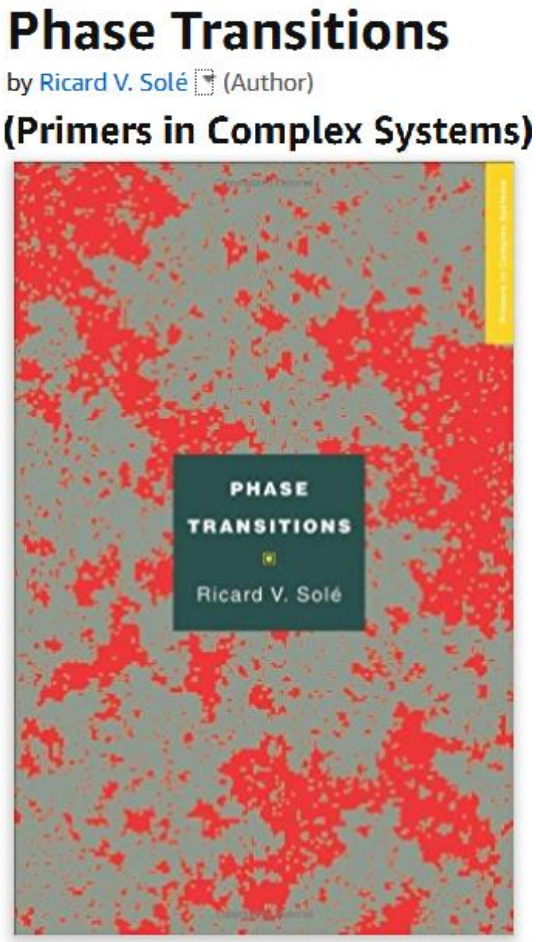
Phase Transitions in the Social Sciences





The Futures We Want: Global Sociology and the Struggles for a Better World

3rd ISA Forum of SOCIOLOGY

July 10–14, 2016
Vienna, Austria

The Notion of 'Phase Transition' in the Social Science

Thursday, 14 July 2016: 11:00

Location: Hörsaal 15 (Juridicum)

Oral Presentation

***Massimiliano RUZZEDDU**, University Niccolo Cusano Rome, Italy*

The notion 'phase transition' is one of the most important in the system and complexity theories. It denotes the passage of a system to a different condition. Actually, the use of notion is quite more frequent in the natural science, especially physics, and includes phenomena like liquid to vapor, not-magnetic to magnetic etc.

This presentation will explore the epistemic potentiality of this notion within the social sciences, where this category denotes all the cases of social change of a system, no matter if global, national or local.

Chaotic Ripple

Understanding Phase Transitions for Social Change

In Complex Systems, Economic Patterns, Global Integration, Social Change on September 8, 2011 at 4:12 pm

ComPlexUs
REVIEW
Complexus 2003;1:190–206; DOI: 10.1159/000082449
Received: August 8, 2004
Accepted after revision: September 13, 2004
Published online: November 26, 2004

The Physical Modelling of Human Social Systems

Philip Ball

Nature, London, UK

Key Words
Sociology · Phase transitions · Statistical physics · History of science · Collective behaviour

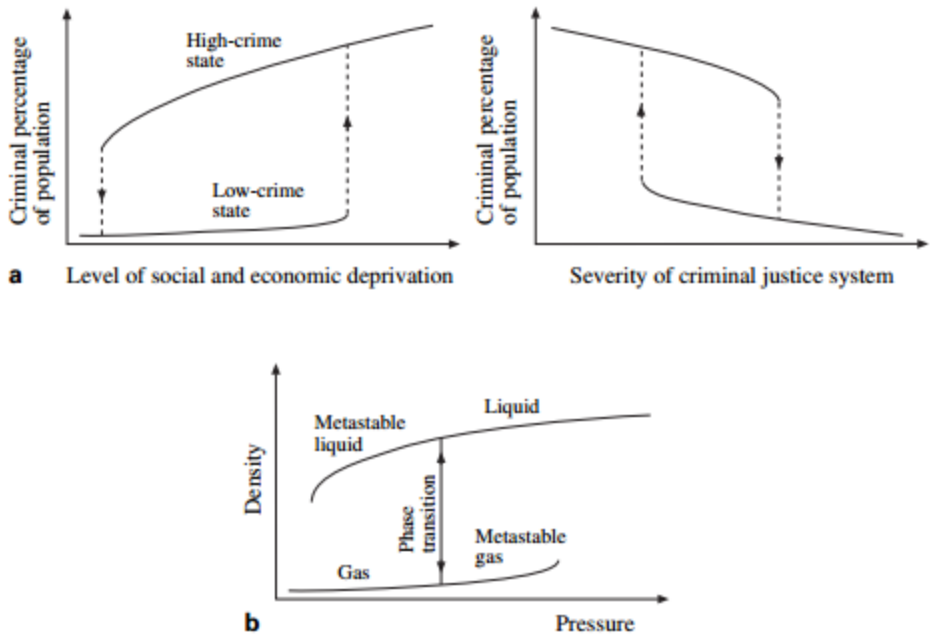


Fig. 10. The crime model of reference 49 predicts two distinct states of a society, in which there is a high and a low proportion of crime. Abrupt transitions may occur between these states as social factors, such as deprivation or the severity of the criminal justice system, are varied (**a**). These sharp jumps between two collective states are analogous to the phase transition between a liquid and a gas in the van der Waals theory of the fluid states (**b**).

Monday, April 11, 2016

Phase transitions and emergence

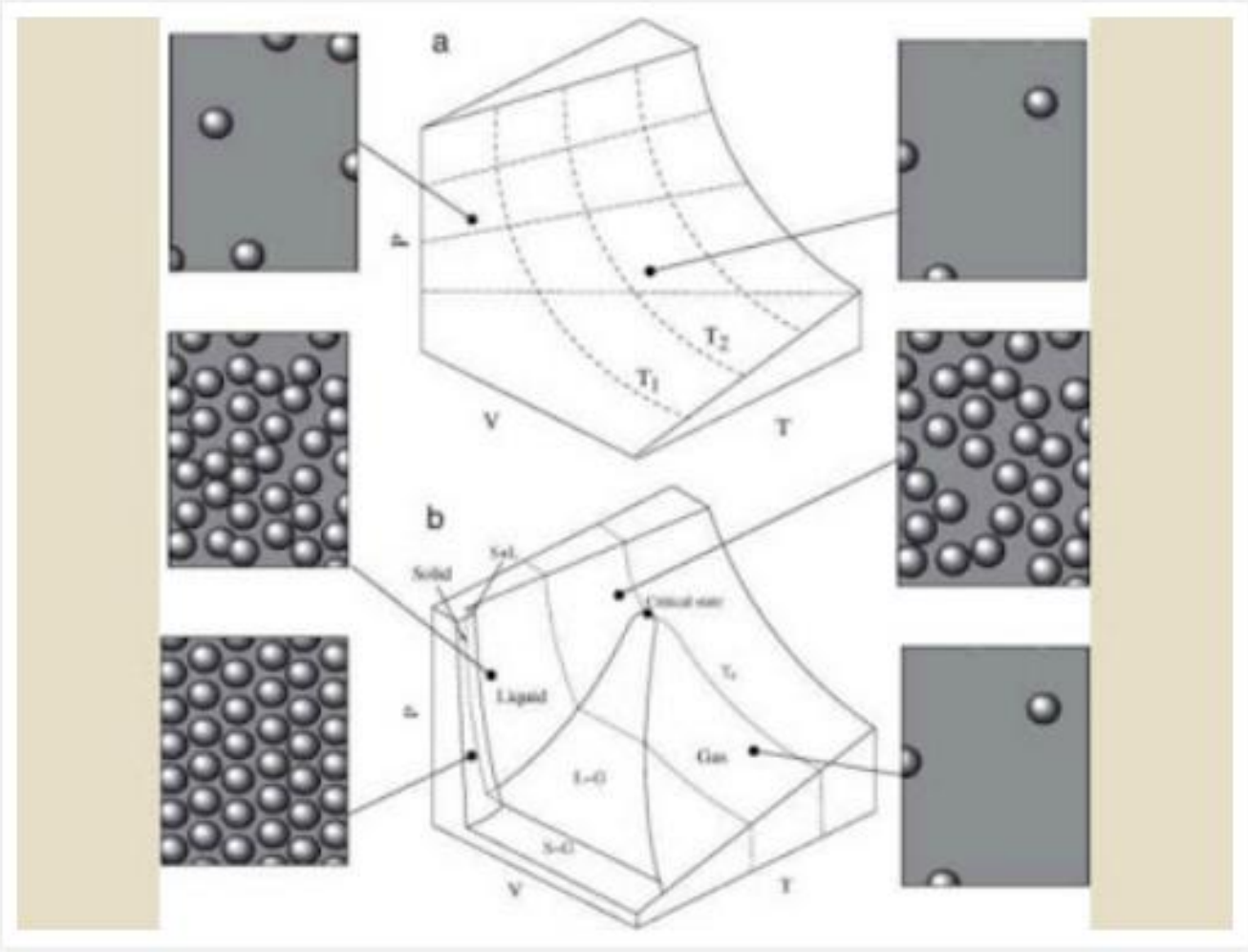


Image: Phase diagram of water, Solé. Phase Transitions, 4

Springer Open

Complex Adaptive Systems Modeling

Information and phase transitions in socio-economic systems

https://casmodeling.springeropen.com/articles/10.1186/2194-3206-1-9

Terry Bossomaier† ✉, Lionel Barnett† and Michael Harré†

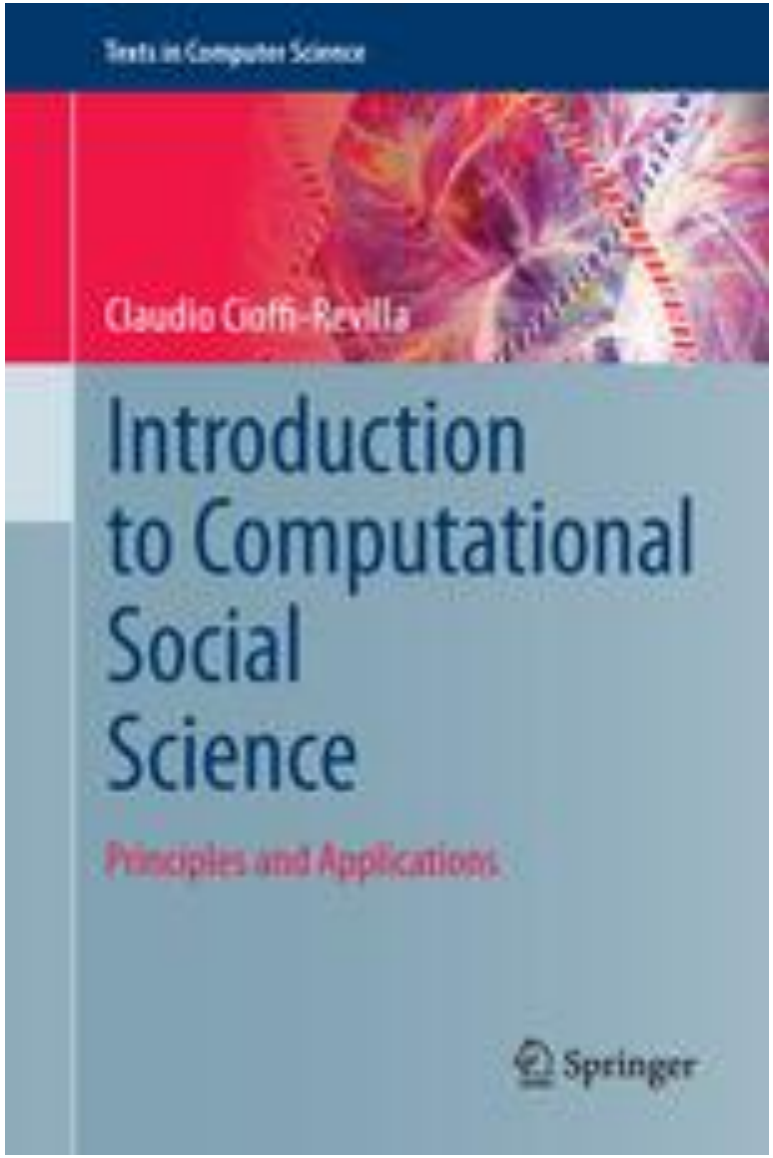
† Contributed equally

Complex Adaptive Systems Modeling 2013 **1**:9 | **DOI:** 10.1186/2194-3206-1-9

Received: 7 November 2012 | **Accepted:** 28 January 2013 | **Published:** 8 April 2013

Abstract

We examine the role of information-based measures in detecting and analysing phase transitions.



Nonlinear Dynamics in the Life and Social Sciences

www.iospress.nl/

Editors	Sulis, W., Trofimova, I.
Pub. date	January 2001
Pages	418
Binding	hardcover
Volume	320 of NATO Science Series: Life Sciences
ISBN print	978-1-58603-020-9

The second section focuses upon the nature of complex systems. The formal
of complex systems is only twenty years old, yet has already yielded considerable in
particularly the concepts of universality and emergence. Universality refers to a func
dependence which applies to a large class of systems, transcending the specific det
particular systems. The notion first appeared in the study of the behavior of certain ph
parameters in the neighborhood of a critical point during a phase transition. It was fo
the case of second order, continuous phase transitions, that this behavior posse
specific functional form that depended solely upon the mathematical nature of the
parameter describing the transition irrespective of the physical nature of the s
Emergence refers to the appearance of behavior at a macroscopic level of description
wholly unexpected as a consequence of knowledge of the behavior of the syster
microscopic level. These two concepts will play a recurring role in many of the pap
follow.

Proc Natl Acad Sci U S A. 2002 Feb 19; 99(Suppl 1): 2463–2465.
doi: 10.1073/pnas.012579399
PMCID: PMC128561

PNAS

Self-organized complexity in the physical, biological, and social sciences

Donald L. Turcotte*† and John B. Rundle‡

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The National Academy of Sciences convened an Arthur M. Sackler Colloquium on "Self-organized complexity in the physical, biological, and social sciences" at the NAS Beckman Center, Irvine,

Self-organization and social science

David Anzola (d.anzola@surrey.ac.uk), *Peter Barbrook-Johnson* (p.g.johnson@surrey.ac.uk) and *Juan I. Cano* (j.cano@surrey.ac.uk)
Additional contact information

Computational and Mathematical Organization Theory, 37 pages

Abstract: Abstract Complexity science and its methodological applications have increased in popularity in social science during the last two decades. One key concept within complexity science is that of self-organization. Self-organization is used to refer to the emergence of stable patterns through autonomous and self-reinforcing dynamics at the micro-level.

Cocktail Party Physics

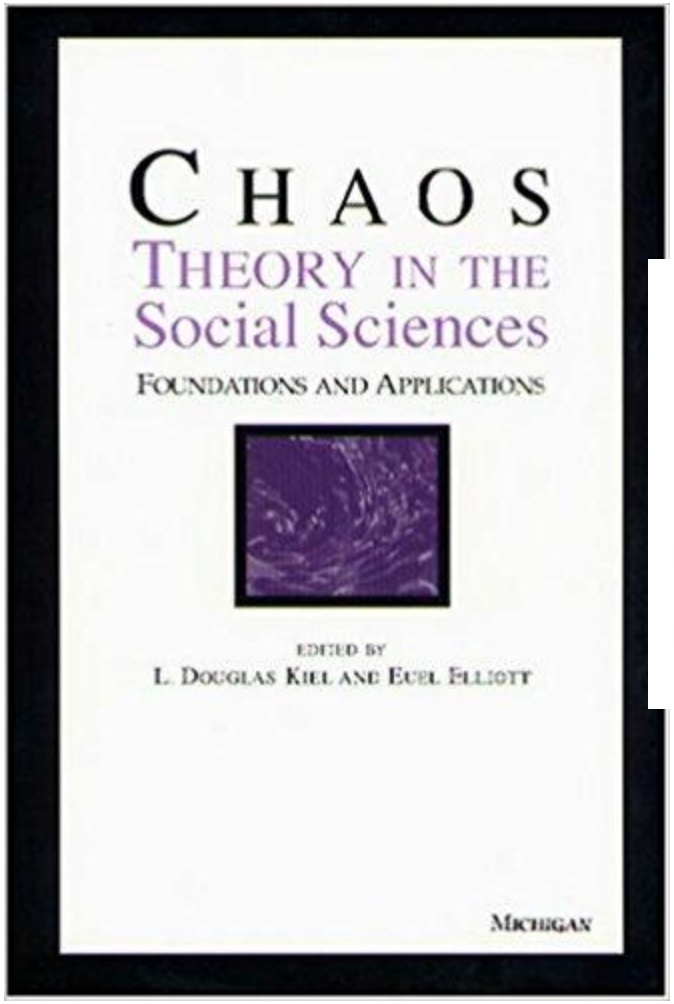
SCIENTIFIC AMERICAN.

What Does It Take to Change a Mind? A Phase Transition

This week's Virtually Speaking Science episode featured yours truly in conversation with Laurie Paul, a philosopher at the University of North Carolina, Chapel Hill, 2014 Guggenheim Fellow, and author of a new book, Transformative Experience.

By Jennifer Ouellette on February 13, 2015

https://blogs.scientificamerican.com/cocktail-party-physics/what-does-it-take-to-change-a-mind-a-phase-transition/



Ideal point dynamics are comparably developed. Choice theory assumes that once a position is taken, it doesn't change. This assumption limits resulting cyclical behavior to a subregion of policy space. James et al. (1993) relax this constraint and allow the ideal points to move within policy space conditional to the iterated status quo locations. As the status quo iterates in policy space, the change in the position of the status quo indicates the degree of stress that must exist on the surface of the policy space. These forces constitute the sum of the moments impacting a subregion in policy space; their limits symbolize the critical values for phase transition.

https://www.press.umich.edu/pdf/9780472084722-ch7.pdf