

**CAUSATION AND LAWS IN THE SPECIAL SCIENCES.
METAPHYSICAL FOUNDATIONS
GAP 8 SATELLITE WORKSHOP**

Constance, Friday, 21st - Saturday, 22nd September 2012
[subsequent to the GAP 8 Conference 17th - 20th of September]

Organized by
Markus Schrenk and Alexander Reutlinger for the
DFG Research Group *Causation / Laws / Dispositions / Explanation*
in collaboration with GAP, the Society for Analytic Philosophy in Germany

PROGRAM (FOR ABSTRACTS PLEASE SEE OUR WEBSITE)

Friday, 21st September

09.15 - 09.30 Arrival

09.30 - 10.45 **Benedikt Kahmen** (University of Aachen)

Causal Explanations of Action

10.45 - 11.15 Coffee

11.15 - 12.30 **Alyssa Ney** (University of Rochester)

Fundamental and Derivative Causation

12.30 - 14.00 Lunch

14.00 - 15.15 **Gerhard Müller-Strahl** (University of Münster)

Explaining Organismic Phenomena in Scientifically Based Medicine

15.15 - 15.45 Coffee

15.45 - 17.00 **Markus Schrenk** (University of Cologne)

Better Best Systems and the Issue of cp-Laws in the Special Sciences

17.00 - 17.30 Coffee

17.30 - 18.45 **Huw Price** (University of Cambridge)

Retrocausality - what would it take?

Saturday, 22nd September

09.30 - 10.45 **Andreas Hüttemann** (University of Cologne)

Why Laws (or Dispositions) are More Basic than Causal Structure

10.45 - 11.15 Coffee

11.15 - 12.30 **Jenann Ismael** (University of Arizona)

Why Causal Structure is More Basic than Global Laws

12.30 - 14.00 Lunch

14.00 - 15.15 **Sandra Mitchell** (University of Pittsburgh)

Biological laws: contingency and stability

REGISTRATION

Registration is kindly requested. Please note that we have only a limited number of places. Please send an email to markus.schrenk@uni-koeln.de by Sunday, 26th August 2012.

FOR ABSTRACTS, FURTHER INFO ON OUR RESEARCH GROUP, & GAP

<http://www.clde.uni-koeln.de/>

<http://www.gap8.de/en/index.html>

If you have any questions please do not hesitate to contact markus.schrenk@uni-koeln.de

ABSTRACTS

Workshop Abstract

In recent debates in metaphysics of science, a considerable amount of work has been dedicated to causation and (*ceteris paribus*) laws in the higher-level or special sciences including the life sciences and the social sciences. Assuming some kind of minimal physicalist attitude (such as, at least, non-reductive physicalism), a question arises for accounts of causation and laws in those sciences: how can one explain that there are causal and nomic facts on the higher-level in a world that is ultimately described by fundamental physics? To put it in even more tendentious words: how do these causal and nomic facts emerge from the physical world?

The goal of this workshop is to explore the metaphysics of causation and laws in the special sciences that is able to answer the above-mentioned challenges.

Jenann Ismael, University of Arizona

Why Causal Structure is More Basic than Global Laws

There was a time when science was thought of as wholly devoted to the investigation of the causal structure of the world. With the mathematicization of science and the triumph of Newtonian theory, causal vocabulary disappeared from the most fundamental level of physical description. It became the norm to present a fundamental theory as a set of mathematical equations describing global laws of temporal evolution. Since Russell's famous 1913 paper philosophers of science have struggled to understand how and where causal ideas enter into the description of Nature. The rather large body of the post-Russellian discussion of causation is dominated attempts to derive causal information from elements drawn from the first principles of a global theory. I will challenge the presumptive globalism of these reductive projects. Using the interventionist analysis of cause, I will argue that causal information is effectively information about laws pertaining to open subsystems and that even fundamentalists about physics should recognize causal structure as more basic than global laws.

Andreas Hüttemann, University of Cologne

Why Laws (or Dispositions) are More Basic than Causal Structure

I will present a disposition-based process-theory of causation. Along the lines of post-Russellians it takes causation to obtain under certain limiting conditions in the macro-realm.

Traditional process theories face (at least) three objections: The relevance problem, the problem of negative causation and the allegation that it is committed to a thorough going reductionism in the sciences. I will present a version of a process-theory that can cope with these problems.

Benedikt Kahmen, University of Aachen

Causal explanations of action

According to one very common view, causation is essential for action: Events are actions in virtue of there being a causal explanation in terms of reasons. This is higher-level causal explanation. Does action theory warrant such explanations, and if so, why? I will start by looking at a well-known challenge to causal action theory, the problem of deviant causal chains. The challenge for causal action theory is to spell out the 'right way' in which reasons have to be causal explanations in order for the explanandum to be an action. I am going to suggest that the two most prominent answers, the idea of guidance and the action-plan analysis, both fail for the same reason. This reason is that they cannot capture the teleological structure of actions. I will conclude that causal action theory needs to be supplemented with a teleological account, and sketch how such an account warrants higher-level causal explanations.

Sandra Mitchell, University of Pittsburgh

Biological laws: contingency and stability

I will discuss the various notions of stability (Woodward, Lange) that have been proposed as alternatives to, or interpretations of, natural necessity as a requirement of lawfulness in the sciences. Most appeal to counterfactual analyses to characterize the degree of stability or the kind of necessity possessed by laws of biology and diagnostic of the differences between laws of physics and laws of biology. I will argue against the sharp contrast between laws and non-laws based on counterfactual differences.

Gerhard Müller-Strahl, University of Münster

Explaining Organismic Phenomena in Scientifically Based Medicine

In scientifically based medicine, explanations of normal and deviating organismic properties or events commonly have recourse to the notions of normo- and pathomechanisms. I will argue that there is a necessarily long but feasible passageway from normo- to pathomechanisms and will plead for objectivism of the concept of individual diseases on the basis of the concept of a complex mechanistic base supplemented with a general function-analytical account of explanation. Further, objective criteria are presented which delimit the range of items belonging to a base. These are preparatory steps for carving out concepts which reveal to be the most proximate notions of order in systems combining inciting and inhibitory causal relations.

Alyssa Ney, University of Rochester

Fundamental and Derivative Causation

In Ney (2009), I argued that the fundamental facts of causation are facts about physical causation. In this paper, I examine, in light of recent work in metaphysics, the nature of the connection between the fundamental facts of causation and derivative facts about causation.

Huw Price, University of Cambridge

Retrocausality - what would it take?

Some writers argue that retrocausality offers an attractive loophole in Bell's Theorem in QM, allowing an explanation of EPR-Bell correlations without "spooky action-at-a-distance." This idea originated more than a decade before Bell's famous result, when de Broglie's student, Olivier Costa de Beauregard, first proposed that retrocausality plays a role in EPR contexts. The proposal is difficult to assess, because there has been little work on the general question of what a world with retrocausality would "look like" -- what kinds of considerations, if any, would properly lead to the conclusion that we do live in such a world. In this talk I discuss these general issues, with the aim of bringing the more specific question as to whether quantum theory implies retrocausality into sharper focus than has hitherto been possible.

Markus Schrenk, University of Cologne

Better Best Systems and the Issue of cp-Laws in the Special Sciences

The better best system account (BBSA) of lawhood (cf. Schrenk 2007, 2008, and Cohen & Callender 2009, 2010) is an extension of Lewis's theory of fundamental laws of nature to the laws of the special sciences. For the theory to work for, say, biology or chemistry, the BBSA has to answer how it deals with the problem of *ceteris paribus* laws that, allegedly, does not arise for the original Lewis account on the fundamental (physical) level. In this paper I will show that the BBSA cannot only handle these difficulties but that it even provides a solution to at least the ontological problems that arise with proviso ridden laws.