2014 Meeting of the Nordic Network for Philosophy of Science

27-28 March 2014, Lund University, Sweden

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# PROGRAM 2014 NNPS Meeting, Lund, 27-28 March

Dpt. of Philosophy, Kungshuset, Lundagård (just North of the Dome Church)

## Wednesday, 26th

**7.30** Pizzeria Italia, Stora Fiskaregatan 6 (in the back, behind Restaurant Italia)

## Thursday, 27th

**12.00** Lunch (room 203)

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<thead>
<tr>
<th>Time</th>
<th>Room 203 (HANSSON WAHLBERG)</th>
<th>Room 405 (GERBER)</th>
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<tr>
<td>1.15</td>
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Coffee/Tea (room 203)

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<th>Time</th>
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<th>Room 405 (KIRKEBY-HINRUP)</th>
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<tr>
<td>4.15</td>
<td>Nagatsu</td>
<td>Bentzen</td>
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**7.00** Snacks (Kungshuset, room 318)

**7.30** Dinner

## Friday, 28th

**9.30** Lunch (Tegner's)

**2.05** Dinner (Södra vägen 7c, doorbell: ZENKER, Tel. 0046.70.148 31 35, BringYourOwnBooze)

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<thead>
<tr>
<th>Time</th>
<th>Room 104 (HÖÖG)</th>
<th>Room 203 (JACOT)</th>
<th>Room 405 (CHAIR)</th>
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<tr>
<td>9.30</td>
<td>Martini</td>
<td>Mumford &amp; Anjum</td>
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<td>10.25</td>
<td>Hitchen</td>
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<td>Olsson &amp; Angare</td>
<td>Kaiserman</td>
<td>I. Johansson</td>
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<td>11.30</td>
<td>Martini</td>
<td>Strandin</td>
<td>L.-G. Johansson</td>
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<td>10.40</td>
<td>Bewersdorf</td>
<td>Runhardt</td>
<td>Ben-Yami</td>
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<td>12.35</td>
<td>Andersen</td>
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Lunch (Tegner's)

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<th>Time</th>
<th>Room 203 (MARTINI)</th>
<th>Room 318 (CHAIR)</th>
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<tr>
<td>2.05</td>
<td>Strandin</td>
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<td>3.00</td>
<td>Kaiserman</td>
<td>Bewersdorf</td>
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<td>3.55</td>
<td>Zenker &amp; Gårdenfors</td>
<td>Andersen &amp; Myrstad</td>
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<td>4.05</td>
<td>L.-G. Johansson</td>
<td>Angare</td>
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**7.30** Dinner (Södra vägen 7c, doorbell: ZENKER, Tel. 0046.70.148 31 35, BringYourOwnBooze)

**Speaker Commentator (CHAIR)**

### Session Format

- Setup
- 00.00 Open Session
- 00.00 00.25 Presentation
- 00.25 00.35 Commentary
- 00.35 00.55 Group Discussion
- 00.55 End Session
- 00.55 01.05 Set up/Room Change
Abstracts

**Why physics hasn't settled the score on spacetime**

Fredrik Andersen  **CAUSCI, NMBU, NORWAY**  
Johan Arnt Myrstad  **UNIVERSITY OF NORDLAND, NORWAY**  
**COMMENTARY BY:**  Hanoch Ben-Yami

In this paper we will assume scientific realism and a Unitarian position. The idea is therefore that there should be possible ways in which our theories can provide us with more than mere calculation devices and that ultimately they should be connectible in one overarching framework.

The paper will have two main paths of argumentation; historical and methodological/epistemological.

The historical part points toward two main strains of argument in the history of astronomy and physics. A realist position of the kind we have pointed toward and a more sceptical position where the limit of human knowledge is correct prediction and mathematical exposition. We aim to show that Copernicus, Kepler, Galileo and Newton all should be read as representatives of the first position and that they explicitly reject the more sceptical approach and its main tenets. The more sceptical camp is represented by their contemporaries Osiander, Ursus, Pope Urban VIII and Hegel. The purpose of this part is to show the importance of scientific realism in the development of modern science.

In the second part we will argue that contemporary philosophy of science tends to argue from within the more sceptical tradition and we will use the discussions surrounding special relativity (SR) as our example. Here we aim to show that after a hundred years of relativity theory we are still missing a phenomenological understanding. Where Galileo and Kepler argue their points using phenomenological analogies, contemporary expositions of SR are getting increasingly mathematical. Although mathematical arguments are necessary, we claim that a phenomenological understanding is required for a physical theory to provide understanding (i.e. to be a constructive theory in Einstein’s (1919) sense). We will emphasise problems concerning operationalization, measurement and the use of semi-mathematical concepts such as practical rigidity.

**Keywords:** Kepler; Galileo; Einstein; Special Relativity; operationalization; Space-time; physics; realism; Scepticism; understanding

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**The limits of logic-based inherent safety for social robots**

Martin M Bentzen  **TECHNICAL UNIVERSITY OF DENMARK, DENMARK**  
**COMMENTARY BY:**  Joel Parthemore

Social robots can reason and act while taking into account social and cultural structures, for instance by complying with social or ethical norms or values. It is predicted that social robots will soon enter very different places of human life, e.g. hospitals, homes for the elderly, battle fields, museums, and so on. As social robots are likely to become more common and advanced and thus likely to interact with human beings in increasingly complex situations, considering risks and ensuring safety in such situations will become very important. This paper investigates various aspects of the safety of social robots from a conceptual perspective. First, a distinction between low-level operational risks and high-level social risks will be made. It is shown that
Abstracts

even if social robots function satisfactorily according to low-level task analyses, they may nonetheless pose high-level social risks to their users.

The main part of this paper consists of an analysis of one very important strategy with regard to robot safety. The safety strategy considered will be called “logic-based inherent safety of social robots”. The idea is that robots should be logically guaranteed to act in a socially acceptable or ethical way. It is shown that there are obligations fulfilled by the robot which cannot be proven to be obligatory by the robot. Further, deficiencies of current formal logics as candidates for providing foundations of human-robot communication are pointed out. I conclude with cautious optimism that (deontic) logic will have a role to play in the design of safe ethical robots, but only if the following criteria are met: 1) The use of robots is mainly restricted to low-level functions. 2) Logics closer to natural language than most current deontic logics are devised. 3) Even such logics only play a limited part of the overall safety of the robot.

Keywords: Robot ethics; deontic logic; philosophy of engineering; philosophy of technology; natural language semantics; human-robot interaction; risk; safety

Absolute distant simultaneity in Special Relativity

Hanoch Ben-Yami  CENTRAL EUROPEAN UNIVERSITY, HUNGARY

COMMENTARY BY:  J. Brian Pitts

What is simultaneous with an event is what can interact with it; events have duration; therefore, any given event has distant events simultaneous with it, even according to Special Relativity.

Keywords: simultaneity; Special Relativity; events; Alexandroff intervals; causality; Reichenbach; present

Total evidence, uncertainty and a priori beliefs

Benjamin Bewersdorf  GRONINGEN UNIVERSITY, THE NETHERLANDS

COMMENTARY BY:  Fredrik Andersen

Defining the rational belief state of an agent in terms of an a priori, hypothetical or initial belief state as well as the agent's total evidence can help to address a number of interesting philosophical problems. In this paper, I discuss how this strategy can be applied to cases in which evidence is uncertain. I also argue that taking evidence to be uncertain allows us to uniquely determine the subjective a priori belief state of an agent from her present belief state and her total evidence, given that evidence is understood in terms of update factors.

Keywords: Initial Credence; Hypothetical Priors; A Priori Beliefs; Total Evidence; Uncertainty; Probabilities; Carnap; Field Conditionalization; Bayesian Epistemology
Abstracts

Models of rationality and the psychology of reasoning: from is to ought, and back

Vincenzo Crupi  UNIVERSITY OF TURIN, ITALY AND MCMP MUNICH, GERMANY
Vittorio Girotto  UNIVERSITY IUAV OF VENICE

COMMENTARY BY:  Michiru Nagatsu

Diagnoses of (ir)rationality often arise from the experimental investigation of human reasoning. We suggest that such diagnoses can be disputed on various grounds and provide a classification. We then argue that much fruitful research done with classical experimental paradigms was triggered by normative concerns and yet fostered insight in properly psychological terms. Our examples include the selection task, the conjunction fallacy, and so-called pseudodiagnosticity. We conclude that normative considerations retain a constructive role in the psychology of reasoning, contrary to recent complaints in the literature.

Keywords: reasoning; rationality; logic; probability theory; Wason’s selection task; conjunction fallacy; pseudodiagnosticity; judgment biases; Hume’s law; is-ought

The fall of Reichenbach

Emmanuel Genot  LUND UNIVERSITY, SWEDEN

COMMENTARY BY:  Benjamin Bewersdorf

This paper identifies conditions under which epistemological models satisfy Reichenbach’s Constraint (RC)---the imperative to leave the context of discovery to psychology, and to operate within the context of justification alone---and argues that naturalistic and applied epistemological models should not attempt to satisfy that constraint. Reichenbach’s original formulation imposes that a model that satisfies RC must yield a proof that some support relation holds between the premises and the conclusion, be the argument deductive or not. RC intentionally collapses justification of inductive reasoning to deductive reasoning about probabilities. It also crowds out abduction, as the reasoning that outputs the partition between a conjecture and its rivals, and the questions instrumental to assessing the conjecture. In particular, in nondeductive problems, the initial assumptions, the conjectured solution (and its rivals), and the range of questions relevant to establish whether the conjectured solution holds, must be fully specified. Then, one can assign to the conjecture a weight, translating the support granted by any initially available evidence, and update that weight in the light of accrued evidence. However, agents with bounded cognitive resources (attention, memory and reasoning abilities) must recover the structure of a problem while attempting to solve it. In particular, they must make estimates about the range of relevant questions, and possibly revise them, in order to ascribe marginal and conditional weights. However, selecting the best set of questions is in general not a decidable problem. Thus, one cannot account for bounded-rational problem-solving without determining how and why some questions were raised, rather than others. Therefore, naturalistic models cannot comply with RC.

Keywords: Discovery vs. Justification; formal epistemology ; applied epistemology ; deduction ; induction ; abduction
Adapting our language: The problem (?) of teleological language in the Philosophy of Biology

Sarah Hitchen  LANCASTER UNIVERSITY, U.K.

COMMENTARY BY: Anita Leirfall

I take the problem of the use of teleological language in Biology and in the Philosophy of Biology to be twofold. Firstly it can make problematic the communication of biological ideas between those who are, broadly speaking, experts in biology, and those who are not. In this case, whilst the words that the expert employs may be familiar, their particular use in this context is likely not to be.

Secondly, the use of teleological language within Biology proves problematic if it is assumed that this necessarily brings with it certain theoretical baggage. I suggest that some disagreements in the Philosophy of Biology can be resolved by accepting that we are not engaged in a competition for the prize of establishing the true meaning of the words we use.

This competition falls foul of the fallacy that there is (and must be) something to which expressions such as ‘the meaning of the word x’ refer.

I believe that the way forward suggested here both addresses and crucially can help to dissolve both of these problems. Turning from the meaning to the use of words allows us to see that there are various legitimate technical and non-technical uses of the one word. Once we do this we can share the responsibility of making clear which use is in play and spend our time on genuinely interesting philosophical and biological problems instead of either identifying and resolving linguistic confusions or boxing at shadows.

Keywords: Philosophy and History of Biology; Communication; Popular Science; Teleology; Adaptation; Genes; Design; Function; Ryle; Mayr; Dupre

The problem of temporal constancy

Ingvar Johansson  UMÉA UNIVERSITY, SWEDEN

COMMENTARY BY: Lars-Göran Johansson

Crucial to the establishment of good measurement units is to find or construct something that can be regarded as unchanging. At the end of a calibration hierarchy there should be a prototype or a nature-given standard that does not change. The search for such unit-grounding entities can be called the problem of temporal constancy. It has not received much attention from philosophers of science.

The problem is central to the unit definitions given by the International System of Units (SI), the world’s most renowned system of measurement units. Now and then the SI upgrades the definitions, and at the moment a proposal called the New SI is under discussion. The proposal, like the present SI, contains a distinction between base units and derived units.

The temporal constancy that grounds a base unit definition has been sought in three different ways: (i) in man-made material prototypes such as the standard meter, (ii) in unchanging natural phenomena such as properties of atoms, and (iii) in fundamental constants of laws of nature such as c and h. In the New SI, all the base units are grounded in constancies of the second and the third kind.
Abstracts

In the third option, the temporal constancy that grounds the base unit of a certain kind of quantity is of another kind than the quantity itself. The unit of length (the meter) is grounded in a velocity, c, and the unit of mass (the kilogram) is grounded in h, which has the physical dimension energy times time (action). The structure of such definitions is analyzed, and two claims made: (a) the old distinction between base units and derived units has become a complete misnomer; (b) the structure cannot without further ado be generalized from the constant velocity case to the Planck constant case.

Keywords: philosophy of physics, the SI system; measurement unit; base unit; derived unit; standard meter; kilogram prototype; fundamental constant; Planck constant; temporal constancy

The measurement problem, quantisation and collapse

Lars-Göran Johansson

UPPSALA UNIVERSITY, SWEDEN

COMMENTSARY BY:

Staffan Angare

The present paper contains a new attack on the measurement problem. The point of departure is a realist view according to which i) state functions in quantum theory describe physical states of affairs and not information states attributed to observers, and ii) in these states, some observables are indeterminate and not merely unknown, i.e., value determinism is rejected. Furthermore, quantisation of interaction is accepted as an empirically established fact, independently of any interpretations of quantum theory.

From these assumptions it follows that Hermitian operators replacing classical variables may be viewed as representing actions from the environment done on physical systems represented by the state functions upon which the operators operate. Sometimes this influence is followed by a discontinuous, indeterministic and irreversible state change; in other words, the system undergoes a collapse, which is represented by a projection operator.

Thus, assuming a realistic view on quantum states and their changes, we have an explanation for the collapse of the wave function. Since the collapse is a discontinuous, random and irreversible state change, the classical form of physical explanation in terms of a mechanism which describes how a system continuously changes its state is impossible. Hence, if we accept quantisation of interaction, we must give up our demand for a ordinary mechanical explanation for the collapse. Neither can we state, in advance, sufficient conditions for the collapse, since it is an indeterministic theory.

By this account we do not need von Neumann’s projection postulate that measurements induce collapses. Measurements have no distinctive physical characteristic; a measurement is a physical interaction whereby an human observer observes the state change of one of the involved systems, the measurement device. Collapses occur always when quantum systems exchange conserved quantities, irrespective of being observed or not.

Keywords: philosophy of quantum mechanics; measurement problem; realism; collapse; quantisation of interaction; indeterminism a consequence of quantisation; projection postulate; projection operators; Hamiltoninan operators
**Abstracts**

**Normative causation**

Alex Kaiserman  
**UNIVERSITY OF OXFORD, U.K.**

**COMMENTARY BY:** Henning Strandin

Our causal judgements seem to be sensitive to normative features of cases. If Barry promises to water Alice’s plants but Gary doesn’t, we are more likely to judge Barry’s failure to water Alice’s plants to have caused the plants to die, despite the fact that both failures stand in the same counterfactual and nomological relations to the effect. The only relevant difference seems to be that Barry’s failure violates a norm. This result has been tested empirically, and turns out to be remarkably stable across a wide range of cases, including ones involving statistical norms, functional norms and scientific norms.

I suggest a simple revision to the counterfactual analysis of causation which can explain these features of our causal judgements. On my view, causal claims are relativized to two contextually indicated background structures – a set of pair-wise incompatible events and a set of ideals or statistical regularities, called an ‘ordering source’, familiar from Kratzer’s standard semantics for linguistic modals. Intuitively, the account states that, when determining whether y is causally dependent on x, we imagine x replaced by what was supposed to happen, relative to a certain set of alternatives and a certain way of ranking them. I argue that this account explains the semantic data above, captures interesting elements of actual scientific explanatory practice, and has independent theoretical and genealogical motivations (it is no surprise that we have evolved a concept that helps us identify not just those interventions which we could make in order prevent some occurrence, but those interventions we should make, in a given context).

Keywords: Causation; norms; counterfactuals; explanation; contrastive causation; context-sensitivity; experimental philosophy; legal liability; causal parity thesis; causal selection.

**Kant’s grounding of space and its relation to Euclidean and non-Euclidean spaces**

Anita Leirfall  
**UNIVERSITY OF BERGEN, NORWAY**  
**AND NORWEGIAN UNIVERSITY OF LIFE SCIENCES**

**COMMENTARY BY:** Ingvar Johansson

In this paper I will argue that Kant’s arguments for the metaphysical status of space are grounded in his arguments for spatial directions and their relation to absolute space. Absolute space has a reality of its own, it is an unanalysable quality, and it serves as an ultimate ground that makes spatial positions and spatial representations possible. Absolute space, then, is an “unanalysable concept of real ground” and such a real ground exhibits the property of a negative magnitude. Negative magnitudes stand in a real opposition. A real opposition occurs when two predicates of a thing are opposed to each other, but not through the law of contradiction. When standing in such a real opposition, negative magnitudes reciprocally cancel an equal amount in each other. Negative magnitudes are also considered as intensive magnitudes that are measured in degrees. For Kant, a negative magnitude is an effort, or power, of the mind of which we are conscious through a feeling of an inner difference. Such a negative magnitude exhibits a mental activity that is neither a discursive thought nor a receptivity of the senses.
Abstracts

Kant’s arguments for spatial directions are fundamental for his conception of space as three-dimensional or Euclidean in the sense that Euclidean space is grounded on a priori absolute space understood as a negative magnitude. Two things follow from this: i) Euclidean space is grounded on a metaphysical conception of absolute space and spatial directions (the way Kant argues), not the other way around. ii) Kant’s conception of space is an a priori form of intuition and non-Euclidean spaces are quantifications of that a priori space and as such they are represented as formal intuitions.

Keywords: Kant; grounding of space; absolute space; spatial directions; form of intuition; formal intuition; negative magnitude; reciprocal positions; real oppositions; powers; Euclidean space; non-Euclidean space.

The selection of interdisciplinarity expertise at the boundaries of trust

Carlo Martini  UNIVERSITY OF HELSINKI, FINLAND

COMMENTARY BY:  Sarah Hitchen

In this paper I plan to address the problems related to interdisciplinary research starting from Hardwig’s analysis of epistemic trust in science communities. According to Hardwig (1985, 1991) science builds its knowledge-base thanks to networks of mutual trust among scientists. Interdisciplinarity stretches the limits of what the scientific community can achieve by trust, with the requirement of constructing more and more complex networks of epistemic interdependencies. I will illustrate the problem with some examples from case studies in systems biology (MacLeod and Nersessian, working manuscript) and attempt solutions by presenting the idea of a normative theory of interdisciplinary expertise.

Keywords: Interdisciplinarity; Interdisciplinary expertise; trust; networks of trust; interdisciplinary expertise; principles of expertise; Hardwig; Epistemic dependence; social epistemology; collaborative expertise.

The only probability is verbal probability

George Masterton  LUND UNIVERSITY, SWEDEN

COMMENTARY BY:  Vincenzo Crupi

In 1977 van Fraassen showed convincingly, and in detail, how one can give a dissentive answer to the question “[a]re there necessities in nature?”. In this paper, I follow his lead and show in a similar fashion and detail, how it is possible to give a dissentive answer to: Are there probabilities in nature? This is achieved by giving a partial analysis – with the aid of Kaplanian pragmatics – of objective chance in terms of that credence that is reasonable where prevailing laws and conditions exhaust one’s evidence. This template belongs firmly within the established Bayesian program of analysing objective chance as ultimate belief. Its contribution to that program is the same as van Fraassen’s contribution to the empiricist program of analysing physical necessity; namely, it demonstrates the logical possibility of such an analysis.

Keywords: Physical probability; Physical necessity; Kaplan’s pragmatics; Total evidence; van Fraassen
Understanding causation by way of failure

Stephen Mumford  UNIVERSITY OF NOTTINGHAM, U.K., AND NMBU, NORWAY
Rani Lill Anjum  NMBU, NORWAY

COMMENTARY BY:  Rosa Runhardt

Constant Conjunction (CC) is criticized by causal realists as being insufficient for causation. Realists often want causation to be CC+ something more, such as necessity. But CC is not even a necessary condition for causation, which ought really by understood as CC-. Many strategies have been deployed to protect causation against the problem of failure. It is only through the failure of CC, however, that we can understand A to be a cause of B. Such an understanding fits with the way we make causal claims and inductive inferences. And it fits with the way that we intervene in order to discover causes. Where we had CC, there would be real problems in saying that we had causation. And in cases where we invoke CC in causation, it seems always to be assumed rather than demonstrated.

Keywords: causation, constant conjunction, necessity, failure, dispositions, powers

Inferences in and from the lab: How we should increase external validity of behavioural experiments, and how we shouldn't

Michiru Nagatsu  UNIVERSITY OF HELSINKI, FINLAND

COMMENTARY BY:  Rune Nyrup

External validity, the issue of whether experimental findings can be extrapolated to another context, has recently attracted attention from philosophers of (social) science, partly as a result of the rise of behavioural and experimental economics and the prospect of applying these results to public policy. The main philosophical and methodological problem is known as the “extrapolator’s circle” (Steel 2008): In order to extrapolate, e.g., causal mechanisms of the lab model to the target system in the wild, we need to say these two systems are similar. But how is it possible to establish the similarity between the two, when we don’t know enough about the latter (which is why we do experiments in the first place)? The main challenge is that information concerning the target system is scarce to support the relevant analogy between the model and the target. The existing proposals of process-tracing (Steel, 2008; 2010; Guala, 2005, 2010) thus essentially amounts to the efficient use of this scarce resource.

In this paper, I argue that scientists devised a more proactive solution to the extrapolator’s circle, namely to directly generate stronger, tailor-made evidence for analogical inferences one wants to make. I illustrate two specific methods, (1) correlational measure of the same subjects’ behaviour both in the lab and in the field (e.g. Benz and Meier 2005; Carpenter and Seki 2005; Rustagi et al. 2010); and (2) framed and natural field experiments that experimentally create analogous settings (e.g. List and Lucking-Reiley 2002). I also argue that these emerging experimental techniques should not be interpreted as a reaction to the problem of the trade-off between internal and external validity, as some philosophers (e.g. Woodward 2008) allege. I end up with a sort of pragmatic methodology that sees the complementarity of different experimental paradigms.
Pursuing and accepting hypotheses: a Peircean view of IBE

Rune Nyrup  DURHAM UNIVERSITY, U.K.

COMMENTARY BY: Emmanuel Genot

It is often observed that explanatory reasoning, especially the so-called inference to best explanation (IBE), plays a crucial role in theory choice in scientific practice. This paper defends an alternative account of the justificatory role of explanatory reasoning in general, and IBE in particular, inspired by C.S. Peirce's account of abduction. Most contemporary proponents of IBE take it to provide justification for accepting hypotheses as true. In contrast to this, the Peircean view defended here takes explanatory reasoning to first and foremost provide justification for pursuing hypotheses, i.e. to subject them to empirical testing.

The standard view of IBE faces a problem of accounting for the connection between explanatoriness and truth-like likeness (what Peter Lipton calls "Voltaire's Objection"): Why should the fact that a hypothesis would be a good explanation if it were true give us any reason to regard it as actually true? The Peircean view avoids this problem since justification for pursuing a hypothesis H does not require showing H any more probable. Furthermore, the Peircean view faces no analogous challenge: I develop an account of pursuit (building on Larry Laudan's and Allan Franklin's work) where the connection between explanatoriness and justification for pursuit is simple and intuitive. Briefly: assuming that one important goal of science is to find good explanations, showing that H would provide a better explanation (more understanding) than previously thought also shows that it would be more valuable to learn whether H is actually true, thus increasing the justification for pursuing H.

Finally, the Peircean view provides an alternative account of the role played by explanatory reasoning in many of the historical case studies cited by proponents of IBE. This undermines historical-empirical arguments for the reliability of explanatory reasoning as a guide to (approximately) true hypotheses.

Keywords: inference to best explanation; abduction; justification for pursuit; context of discovery/justification; C.S. Peirce; Peter Lipton; Voltaire's Objection; Larry Laudan; Allan Franklin; scientific realism;

Network density and group competence in scientific communication

Erik J Olsson  LUND UNIVERSITY, SWEDEN
Staffan Angere  LUND UNIVERSITY, SWEDEN

COMMENTARY BY: Carlo Martini

Suppose that we wish to maximize group competence, or group performance, in solving a common problem. Suppose, moreover, that the group members are given, and what we can play
Abstracts

with is the communication structure of the group, that is, we can decide who is to communicate with whom. If so, how should we “hook people up”? Common sense arguably still dictates that “the more group members can communicate with each other, the more competent the group will become”. If so, then the complete graph, where there is a communication link from everyone to everyone else, is the way to go. Unfortunately, studies in various disciplines – including social psychology and economics – persistently undermine, or problematize, the commonsense answer. These studies have found a lot of communication links, i.e. high network density, to be detrimental to group performance in a wide range of cases. In section 2, we review four such studies. In the remainder of the paper, we explore the issue within the framework of our own Bayesian model of communication. We introduce this model in section 3 and 4. In section 5, we describe the setting within which our simulation experiments are carried out. As we report in section 6, one experiment shows that the “repugnant conclusion” that network density is generally detrimental to group competence can be replicated in our framework. This leads us to asking whether increasing the quality of information in the network can make network density more attractive. We study, in section 7, the effect of imposing two such conditions, which effectively disallow inquirers from “spamming” the network by unnecessary repetition, and we observe that network density can be positively correlated with group competence if these conditions are imposed, but that whether this is so depends on what we mean, more precisely, by “group competence” or “epistemic value”.

Keywords: Network density; scientific Communication; group competence; veritistic value; norm of assertion

Historical and philosophical insights about General Relativity and space-time from particle physics

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COMMENTARY BY:  Frank Zenker

Recent Einstein scholarship has rehabilitated his rejected “physical strategy” involving an electromagnetic analogy and universal coupling including gravity’s energy-momentum. Later, particle physicists successfully derived General Relativity similarly as a zero graviton-mass, spin-2 field. Remarkably, merely eliminating negative energies to secure stability make a massless relativistic tensor field satisfy Einstein’s equations; the flat metric and gravity merge. (By contrast, Einstein’s famous principles are either approximate or conjectural.) Attending to such derivations in the historiography of GR would have rehabilitated Einstein’s physical strategy earlier.

But why consider only massless fields? The 1890s Neumann-Seeliger exponential decay, addressing puzzles in an infinite Newtonian world, foreshadowed massive spin 0 (scalar) gravity. A multiplicity of massive gravities can be constructed with the same geometrical ingredients, posing a difficulty in explaining field equations by geometry and thus motivating the converse. Massive gravities show that it is metaphysically and epistemically possible that there be more multiple geometries, as in Brown’s constructive view of space-time geometry.

To fail to entertain massive gravity was to suffer from unconceived alternatives, such as when future Vienna Circle founder Moritz Schlöck announced c. 1920 that GR refuted or evacuated Kant’s synthetic a priori. Finally c. 1970 a dilemma appeared: massive spin 2 gravity was either unstable or empirically falsified. At last a strong commitment to GR and its lessons for space-time philosophy was mandated.
But since 1999 “dark energy” has cast doubt on GR on long distances. Recent progress has apparently avoided both horns of the 1970s dilemma. So massive spin 2 gravity is, again, for now, a serious rival. Yet it threatens to differ from GR radically in philosophical consequences because the graviton mass term presumably should destroy the gauge freedom (as in the electromagnetic analog). Massive gravity deserves philosophers’ and historians’ attention.

Keywords: conventionality; philosophy of geometry; unconceived alternatives; Neo-Kantianism; Vienna Circle; logical positivism; Moritz Schlick; Hugo von Seeliger; Wolfgang Pauli; Richard Feynman

A new take on causal mechanisms in social contexts: manipulability theory’s demands for mechanistic reasoning

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COMMENTARY BY: Rani Anjum

In this paper, I investigate the study of causal mechanisms in the social sciences. I argue that unless one adopts a clear notion of causation, such as Woodward's manipulability theory of causation, one does not find evidence for causal claims. I show that adopting Woodward’s theory entails that a researcher must take into account both the observable implications of the mechanisms, and possible interventions on those mechanisms.

In a backlash against the pervasiveness of statistical methods, in the last decade or so social scientists have become more focused on finding the causal mechanisms behind observed correlations. To provide evidence for such causal claims, researchers often rely on process-tracing, a method which involves contrasting the observable implications of several alternative mechanisms. Although process-tracing has gained prominence as a technique, researchers do not share a fundamental framework of what causation is.

I will show what process-tracers’ reasoning would look like if they were to commit to Woodward’s manipulability theory (Woodward 2003). This theory tells us that any successful explanation of an effect must refer to causal factors that could be manipulated to change the phenomenon under study. Specifically, a variable X is a cause of another variable Y if there exists some ‘intervention variable’ I. I is an intervention variable if we can use I to change X, which will then in turn change Y without any interference of other variables linked to Y. In other words, using I we will be able to ascertain that it was X that made the change in Y happen. I will argue that if a process-tracing researcher were to adopt the manipulability notion of causation, she would not only have to find observable implications of the alternative mechanisms under study, but also information regarding an intervention variable for each link of the causal chain.”

Keywords: causation; causal mechanisms; James Woodward; manipulability theory; intervention variables; philosophy of social science; methodology; process-tracing;
Abstracts

Specificity and redundant causation
Henning Strandin
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COMMENTARY BY: Alex Kaiserman

In this paper I do three things. First, I propose taking facts, modeled as sets of worlds, as causal relata. Second, I give an explication of relative specificity of certain kinds of sentences in terms of entailment and logical strength. Finally, I use these things to try to give an account of how specificity is involved in cases of redundant causation. The obvious parallel is discussions of event fragility in existing literature on redundant causation, but the proposed analysis is not possible when events, as usually imagined, are taken to be what is causally related. The purpose of the paper is both to suggest an alternative way of understanding cases of redundant causation, and to try to undermine certain notions about what kind of things are related by causation.

Keywords: causation; redundant causation; disjunctive causes; metaphysics; specificity; facts; events; David Lewis; counterfactuals; modal semantics

Communication, rationality, and conceptual changes in scientific theories
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Peter Gärdenfors
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COMMENTARY BY: George Masterton

This paper outlines how conceptual spaces theory applies to modeling changes of scientific frameworks when these are treated as spatial structures rather than as linguistic entities. The theory is briefly introduced and five types of changes are presented. It is then contrasted with Michael Friedman’s neo-Kantian account that seeks to render Kuhn’s “paradigm shift” as a communicatively rational historical event of conceptual development in the sciences. Like Friedman, we refer to the transition from Newtonian to relativistic mechanics as an example of “deep conceptual change.” But we take the communicative rationality of radical conceptual change to be available prior to the philosophical meta-paradigms that Friedman deems indispensable for this purpose.

Keywords: a priori; conceptual spaces; communication; communicative rationality; incommensurability, Michael Friedman, neo-Kantianism, scientific revolution, theory change, Thomas Kuhn
Practical Information

Getting to Lund
Most international connections are through Copenhagen airport (CPH) or Copenhagen main station. Leaving the baggage hall of CPH airport, continue straight on towards the huge clock in the entrance hall, and find, to your right, red/grey colored vending machines (reading: Skanetrafiken) to obtain single or group train tickets to Lund Central (via the Öresund Bridge) with your credit card, else buy from the booth nearby, then descend onto the platform for trains headed to Malmö. At Copenhagen main station, find the vending machine at the North entrance. Trains are frequent, most go directly to Lund, and reach Lund within 35 to 45 minutes. The schedule can be obtained at http://www.skanetrafiken.se. Note that standard return tickets are valid only for 24 hours. From Malmö airport (MMX), you reach Lund by bus (40 minutes). See http://www.flygbussarna.se/.

Hotel
Upon reaching Lund, which is the first stop after Malmö, take the walkway across the tracks, exiting the station at the East side (i.e., to the right in the direction of the train), then continue heading East on St Petri Kyrkogata for two blocks, passing the ICA supermarket. You are now in front of your hotel, just opposite the public library. Your room includes breakfast at the centrally located Hotel Duxiana (St Petri Kyrkogata 7, http://www.lund.hotelduxiana.com/), which is two minutes from the venue. Please, see the map, below. Do note that the DUX does not give wake up calls.

Venue, Slots, Props
We start with lunch on Thursday midday on the first floor of Kungshuset in room 203, the red brick building just north of the dome, Lund’s landmark, which his East of your hotel. Talks are in room 104, 203, and 405 (on the ground, the first and the fourth floor). Slots are 55 minutes, including a ten minute peer commentary and 20 minutes for discussion, followed by a ten minute break for set up and room change. A projector and a laptop computer are provided, running Windows 7, Office Suite. Best to bring your presentation as a PDF on a USB stick, or use your own machine. Mac users, please bring a video adapter.

Chairing
If you are assigned to chair a session, please make sure to have met speakers and commentators beforehand. To avoid unnecessary delays, please ask the speaker (and possibly the commentator) to transfer the presentations to the laptop well before the talk starts. Keep it brief, and be strict about timing. Allow >5 minutes between talks for room change. Be in the room well before the session Make sure the room is locked during lunch breaks, and after the last session of the day, but open during the Thursday coffee break.

Food
We’ll have sandwiches on Thursday. Lunch on Friday is at Tegner’s Matsalar (see map), close by. The buffet dinner is on Thursday at 7.30 pm at Kungshuset, room 318, snacks and wine are severed from 7 pm. Friday dinner is at Södra vägen 7c, in the South of Lund, from 7.30pm (with food ready around 8 pm), a 15 minute walk from your hotel. Please bring some wine or similar. Those in town on Wednesday may want to join dinner at Pizzeria Italia (Stora Fiskaregatan 6) in a backyard, behind Restaurant Italia, and at your own cost please.

Wifi, Gym, Shopping, etc.
You have wifi at the hotel and the conference site, and can also use the service Eduroam (if your university is a member; see http://www.eduroam.org/). Several coffeeshops also offer wifi. The university gym, Gerdahallen (http://www.gerdahallen.lu.se/), is a five minute walk north of the conference site. A pool, near the city part in the South, can be reached on a ten minute walk from the hotel (http://www.actic.se/anlaggning/lund-hogevallsbadet/). There are several yoga studios around town. Except for supermarkets and restaurants, shops close around 6 pm, and around 4 pm on Saturday, same in Malmö, the next biggest city south of Lund. Liquor is sold exclusively through the state sys-
Practical Information

tem (Systembolaget). Sweden is on **240 Volts** (you may need an adapter); **English** is widely spoken; the telephone country codes is **0046**; legal tender is the **Swedish Crown** (SEK), **credit cards** are widely accepted.

**Participant Cost**
There is no **conference fee**. **Participants** (though not speakers) are **charged at cost** for lunches and the Thursday dinner, including soft drinks and wine/beer at dinner.

**Reimbursement**
Those arranging their own accommodation **can be reimbursed** for this **at up to 1100 SEK** upon submitting an invoice and a reimbursement form. Please contact frank.zenker@fil.lu.se.

**Map**
See additional elements on this map at: [http://goo.gl/maps/MDRIY](http://goo.gl/maps/MDRIY)
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