

Reduktion und Elimination in Philosophie und den Wissenschaften

Reduction and Elimination in Philosophy and the Sciences

Abstracts

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FORMAL MECHANISMS FOR REDUCTION IN SCIENCE

Terje Aaberge, Sogndal, Norway

The paper presents a formal way of looking at the reduction in science by exhibiting among others the cases of Newtonian and Hamiltonian formulations of Classical mechanics. The cases are discussed in a framework considering a scientific theory as consisting of the juxtaposition of two languages, the object language used to express empirical statement about systems and the property language used to express statements about the properties of systems. Both of these languages are ideally based on the syntax of first order predicate logic and endowed with a semantic structure expressed by ontologies. In this framework the notion of reduction can be referred to the axiom system constituting the core of the ontologies. Reduction corresponds to the extension of the axiom system and thus of the ontology. The reason is that the ontology then contains more contextual knowledge and less data is needed to describe a system.

WITTGENSTEIN ON COUNTING IN POLITICAL ECONOMY

Sonja M. Amadae, Columbus, USA

Philosophers are ... interested in matters of normativity: What is it for person A to be obligated to do action B? What do we mean when we say that one ought to do something, like give to a charity? Mathematics and mathematical logic provide at least one important and, possibly simple, case. Logic is normative if anything is. In what sense are we required to follow the canons of correct reasoning when doing mathematics? (Stewart Shapiro, *Thinking About Mathematics* (Oxford University Press, 2000), 5.)

ALTERNATIVE REDUCTIONS FOR DYNAMIC DEONTIC LOGICS

Albert J.J. Anglberger, Salzburg, Austria

One more recent approach to deontic logic – the logic of permission, obligation and prohibition – places deontic logic into a dynamic framework. In dynamic logics we differentiate between actions and assertions. For every action term an execution operator '[α] ...' is introduced, which is read as 'every execution of ... leads to a state in which ... holds'. Enriching our language by a violation constant V allows us to reduce deontic predicates in two obvious ways: (i) An action is forbidden iff every execution leads to a violation (ii) an action is forbidden iff at least one execution leads to a violation. Both reductions lead – besides being somewhat coarse grained – to implausible theorems. In our talk we will address the question where and how one may find more sophisticated reductions.

THE DATE OF TRACTATUS BEGINNING

Luciano Bazzocchi, Pisa, Italy

The question of Tractatus dating can be resolved through a historical-critical analysis of the Prototractatus notebook. McGuinness' *reasons* to poke the first part of Prototractatus compilation between MS102 and MS103 notebooks, i.e. between June 1915 and March 1916, are not convincing; nevertheless, his dating suggestion is more realistic than, for instance, Geschkowsky's last counter-proposal. In the 1915 diary, indeed, there is a passage that with all evidence points to Prototractatus page 12. So I suggest emphasizing (and modifying) McGuinness' suggestion in this way: the starting pages of the Abhandlung do *precede*, and *don't* follow, MS102 last entries. This could definitively change the critics' approach to Wittgenstein's wartime diaries.

ANALYZING CONCEPTS AND DEFINING PROPERTIES

George Bealer, Yale, USA

The paper begins with reflections on the identity conditions of concepts and properties. These reflections suggest a novel approach to the paradox of analysis and, in turn, an account of conceptual analysis and the definition of properties.

REDUCTION DOESN'T ELIMINATE THE NEED FOR HIGHER-LEVEL RESEARCH: CIRCADIAN RHYTHM RESEARCH AS AN EXEMPLAR

William Bechtel/Adele Abrahamsen, San Diego, USA

Success in reductionistic research in cognitive science or biology is often portrayed as eliminating any need for independent explanations at higher levels. On the standard philosophical account, successful reduction of a higher level science means that its laws can be derived from those of a lower level science and hence perform no explanatory work of their own. But this misrepresents what successful reductionistic inquiry promises or can deliver. At least in the life sciences (including cognitive science), the usual focus of reductionistic inquiry is not the discovery of laws at a lower level than some law of initial interest. Instead, investigators begin with a phenomenon and general idea of the mechanism responsible for it and seek to discover its component parts and operations and how they work together. The focus of actual reductionistic inquiry is the decomposition of mechanisms, not the derivation of laws, and the desire to understand scientific inquiry in this way has led some of us to propose and develop a new mechanistic philosophy of science.

Building this new approach has required a variety of case studies of scientific inquiry. Our own most recent case is research on the circadian rhythms exhibited in numerous behaviors and physiological functions. Researchers have had considerable success with the most basic reductionistic task in this field: identifying the parts within organisms that are important to the generation of the rhythms. In mammals, it has been found that many

individual neurons in the suprachiasmatic nucleus function as clocks, and that key components include genes such as *Period (Per)* and *Cryptochrome (Cry)* and the proteins PER and CRY into which they are translated. Moreover, some key operations performed by these parts are known: PER and CRY form a compound (dimer) which is transported into the nucleus and inhibits *Per* and *Cry*, hence reducing the rate of production of further molecules of PER and CRY. Reductionistic research in the last 15 years has succeeded in identifying these and many other parts of the clockworks.

Such inquiry, no matter how successful it is in finding the parts and characterizing the operations they perform, does not suffice to explain circadian phenomena. The operations performed by the parts in individual cells are organized and orchestrated such that the cell functions as a unit – one that displays complex temporal dynamics. Moreover, there are operations between SCN cells that synchronize their oscillations and between SCN cells and the receptors responsive to environmental cues that entrain the clock to the local time and between SCN cells and the many bodily organs that exhibit circadian behavior. Finally, there are operations connecting the organism to the environment, especially to sources of light and temperature. None of these operations at higher levels are discovered by focusing on the operations involving genes and proteins inside SCN cells—they require tools and techniques appropriate to the level at which the operations are occurring.

An especially challenging part of inquiry in the life sciences involves relating parts and operations at different levels. Within the mechanistic framework, these are best handled not by invoking notions such as *top-down* or *bottom-up* causation, but by understanding the constitutive relation between a mechanism and its component parts and operations. When the mechanism is affected by operations impinging on it, so are some of its components. Conversely, when some of its components are changed by being operated on by other components, the mechanism as a whole and the operations in which it engages are changed. The ontological picture, as exemplified in modern biology, is one in which the capacity of mechanisms to operate in their environments is explained at lower levels but the mechanisms (as wholes) interact causally with other mechanisms at higher levels. This picture iterates as one goes to even lower levels by decomposing a part of the original mechanism into its parts or to higher levels as one treats the original mechanism as a part in a yet higher-level mechanism. There are operations at multiple levels of organization and no level is eliminated by discovering the operations within it that enable a given mechanism to interact with others at its level.

THE ESSENCE (?) OF COLOR, ACCORDING TO WITTGENSTEIN

Ondřej Beran, Prague, Czech Republic

Wittgenstein's view on the problem of what "essences" are can be demonstrated on the example of colors. His interest shifts from the question whether ascriptions of color are elementary to the description of the whole variety of the use of color names and ascriptions, via considerations about regular (phenomenological, that is: grammatical) laws of what is possible for (i.e. meaningful to say about) colors. The essence of color, if any, the only *universal* standing for the variety of color phenomena lies in the unity of the word (in this sense, Wittgenstein is a sort of

nominalist), but the nature of this unity cannot and is not to be further explained.

THE ONTOLOGICAL STATUS OF NATURAL KINDS

Alexander Bird, Bristol, UK

I examine the possible views concerning the ontological status of natural kinds and the whether any kind of elimination or reduction is feasible. I suggest that no kind of ontological elimination is consistent with essentialism, but essentialism may permit the limited reductionism of the homeostatic property cluster approach.

WITTGENSTEIN'S EXTERNALISM – GETTING SEMANTIC EXTERNALISM THROUGH THE PRIVATE LANGUAGE ARGUMENT AND THE RULE-FOLLOWING CONSIDERATIONS

Cristina Borgoni, Granada, Spain

It is widely accepted that Wittgenstein's position in *Philosophical Investigations* is in great agreement with *semantic externalism*. However, the way his position is related to it is neither explicit nor is itself a standard reference. The aim of this work is to show that the Private Language Argument and the Rule-Following considerations are sufficient arguments to defend an externalist position. Two routes will be offered that will lead us from those arguments to externalism.

INTENTIONALITY, INFORMATION, AND EXPERIENCE

Johannes L. Brandl, Salzburg, Austria

The fact that we have thoughts about things is a salient feature of our mental life. In phenomenology this feature goes by the name intentionality, while cognitive psychologists prefer to speak of the representational power of the mind. Where does this power come from? It is generally agreed today that one attempt at answering this question has thoroughly failed. The power of mental representation (i.e. intentionality) cannot be explained as a feature of language. Many philosophers have therefore turned to a more promising project, namely to explain intentionality in information-theoretic terms. This project, too, has come under attack however. Such reductive explanations fail, it is argued, because they leave out the constitutive relation between intentionality and experience. If intentionality can be explained at all, it must be grounded in a primitive non-relational feature of our experience. In this paper I will take up this adverbialist challenge to an information-theoretic explanation of intentionality and show how it can be met.

INFORMAL REDUCTION

E.P. Brandon, Cave Hill, Barbados

While some think the failure of most scientific reductions to measure up to formal accounts of reduction, such as Nagel's, portends an exciting metaphysical pluralism, I suggest that we should regard the formal models as themselves idealisations, and understand the point of scientists' claims about reduction as showing that for explanatory purposes we need no more than is given by the reducing theory.

CONTEXTUALISM, RELATIVISM, AND FACTIVITY. ON SOME PROBLEMS IN THE LOGICAL ANALYSIS OF 'KNOWLEDGE' AFTER THE LINGUISTIC TURN IN EPISTEMOLOGY

Elke Brendel, Mainz, Germany

The main goal of the so called "linguistic turn" in recent epistemology is to use linguistic data in order to gain new insights into epistemological problems and to defend or refute some epistemological positions. In particular, linguistic research into the semantics of knowledge attributions seems to provide a key to resolve some of the notorious problems with regard to knowledge, such as scepticism.

A prominent example of this new linguistic turn in contemporary epistemology is the debate about the linguistic plausibility of *epistemic contextualism*. Contextualists appeal to linguistic intuitions in order to defend the thesis that the truth-conditions of knowledge ascriptions depend in a certain way upon the context in which they are uttered. However, there is no agreement among epistemologists about the semantic theory that best explains this context-dependency. According to one main version of contextualism, 'know' is construed as an *indexical*, whereas in *contrastivism* 'know' is interpreted as lexically ternary with a slot for a certain contrast proposition. In other *nonindexical accounts* 'know' expresses the same relation at every context of use, but the truth values of knowledge ascribing sentences depend on certain epistemic standards operant in the context of use.

I will argue that contextualism, contrastivism and many nonindexical accounts of knowledge, such as subject-sensitive invariantism, do not provide an adequate linguistic model for the semantics of knowledge ascriptions since they all fall short of a logical inconsistency in the form of the so-called *factivity problem*. I will further outline some important necessary conditions of a logical analysis of knowledge that explains the semantics of knowledge attributions in a way that resolves the factivity problem.

AN ANTI-REDUCTIONIST ARGUMENT BASED ON SPINOZA'S NATURALISM

Nancy Brenner-Golomb, Bilthoven, The Netherlands

The paper concentrates on the assumed 'bottom-up' structure of in the reductionist organization of science. I

compare the scientific approach of physicalism to that of Spinoza's naturalism. I show that the basic difference in these approaches is that the former excludes a large part of human experience from the conception of nature, and therefore of science, which according to Spinoza is unacceptable. I conclude that once Spinoza's conception of nature is accepted, the universality of the 'bottom-up' principle is undermined.

MODELS OF REDUCTION

Otávio Bueno, Miami, USA

The concept of reduction has played a significant role in earlier conceptions of science, particularly those articulated by logical empiricists, such as Carnap and Nagel. It also played an important role in philosophical reconstructions of mathematics in the hands of Frege, with the reduction of arithmetic to second-order logic plus definitions. Part of the difficulty of these earlier approaches to reduction is the extremely tight connection they require between the domains under study: the reducing and the reduced. In this paper, I offer an alternative, less restrictive model of reduction in terms of partial structures, and examine in which way we can still consider a place for reduction in current science and mathematics.

DID I DO IT? – YEAH, YOU DID! WITTGENSTEIN & LIBET ON FREE WILL

René J. Campisi C./Carlos M. Muñoz S., Cali, Colombia

In this paper we analyze Libet's conclusions on «free will» (FW), rejecting his view of the concept and defending a partially aligned view with Wittgenstein's early remarks on FW. First, the concept of Readiness Potential (RP) and Libet's view are presented. Second, we offer an account of Wittgenstein's point of view. Third, a dual-domain analysis is proposed; finally, we offer our conclusions. This article's conclusions are part of an ongoing research.

MENTAL CAUSATION AND PHYSICAL CAUSATION

Lorenzo Casini, Canterbury, UK

The belief that the world is ultimately physical is, nowadays, very common. What is then the nature of the mental, and what are its causal powers? Kim and Antony give us different answers, the first advocating Reductive Physicalism, the second Non-Reductive Physicalism. Nonetheless, they share a common metaphysical task, the search for systematic psychophysical correlations. This is needed, so they claim, because only microphysical entities, whose causal powers the mental inherits, are involved in genuinely causal mechanisms, which secure and explain the truth of psychological generalisations. They want a physical model of causation to be applied to mental events. In this paper I argue that, if the paradigmatic feature which the microphysical is to display is that it conforms to a particular model of causal production, as Kim explicitly suggests, this prevents

Reductive and Non-Reductive Physicalism to achieve their tasks.

FROM THE AUFBAU TO THE CANBERRA PLAN

David Chalmers, Canberra, Australia

In *Der Logische Aufbau der Welt*, Carnap attempted to demonstrate that all truths are definitionally entailed by a class of truths in a primitive vocabulary. The project of the Aufbau is widely held to be a failure. Nevertheless, the "Canberra plan" in contemporary philosophy offers the hope of vindicating an Aufbau-like project, albeit by expanding the primitive vocabulary and perhaps weakening the entailment relation. I will discuss the relation between the two, and examine what sort of Aufbau-like conclusion might be generated from the assumptions of the Canberra plan.

ON TWO RECENT DEFENSES OF THE SIMPLE CONDITIONAL ANALYSIS OF DISPOSITION-ASCRPTIONS

Kai-Yuan Cheng, Chia-Yi, Taiwan

It is widely considered that the simple conditional analysis of disposition-ascriptions has been decisively refuted by counterexamples offered by Martin (1994), Bird (1998), and others. In recent discussions, however, two philosophers, Choi (2006) and Gundersen (2002), stand out in defending the analysis in question. In this paper, I argue that they do not succeed in their attempts, and that each founders on a similar ground.

QUEEN VICTORIA'S DYING THOUGHTS

Timothy William Child, Oxford, UK

Wittgenstein suggests that we can understand ascriptions of thoughts that we have no means of verifying: thoughts that not only *are not* but *could not be* manifested in behaviour. For example, we can understand claims about what Queen Victoria was thinking about as she lay dying. But how do we understand such claims? The paper explores Wittgenstein's answer to that question. Three possible accounts are examined. It is argued that there are traces of each account in Wittgenstein; that Wittgenstein himself did not clearly favour one of these accounts over the others; but that one of these accounts is philosophically preferable to the others.

DIAGONALIZATION. THE LIAR PARADOX, AND THE APPENDIX TO GRUNDGESETZE: VOLUME II

Roy T Cook, Minneapolis, USA & St Andrews, UK

The *Liar Paradox* is constructed within Frege's *Grundgesetze* using a variant of Gödel's diagonalization lemma. The particular instance of Basic Law V that triggers the *Liar paradox* is identified, and it is observed that this is exactly the principle that Frege himself identified as the root of *Russell's paradox* in the appendix to Volume II of the *Grundgesetze*. This suggests that a re-examination of Frege's work might shed new light onto both paradoxes, and the interconnections between them.

EXORCIZING GETTIER

Claudio F. Costa, Natal, Brazil

The aim of this paper is to give formal precision to the reformulation of the tripartite definition of knowledge that requires that the justification of the known proposition must be able to make this proposition true. The new formulation shows more clearly how this reformulation is able to resist to any counterexample of Gettier's type.

A WITTGENSTEINIAN APPROACH TO ETHICAL SUPERVENIENCE

Soroush Dabbagh, Tehran, Iran

In this paper, I am going to present an argument in favour of generalism and criticise the particularistic position in moral reasoning. According to generalism which is associated with supervenience, the way in which a morally relevant feature contributes to the moral evaluation of different contexts is patternable. However, a particularist like Dancy utilizes the very idea of resultance instead of supervenience to give an account of how a non-moral feature behaves in different contexts. An account drawn from Wittgenstein with regard to the nature of concepts is presented here to criticise the particularistic position while endorsing the generalistic position with regard to the extent of the patternability of the reason-giving behaviour of a morally relevant feature in different contexts.

THERE CAN BE CAUSAL WITHOUT ONTOLOGICAL REDUCIBILITY OF CONSCIOUSNESS? TROUBLES WITH SEARLE'S ACCOUNT OF REDUCTION

Tárik de Athayde Prata, Fortaleza, Brazil

Searle distinguishes between *causal* and *ontological reductions*. They seem to be closely related and Searle himself acknowledges this (section II). But a serious problem arises from his theory of mind because he believes that consciousness is a special case, in which the *causal* (but not the *ontological*) reduction is possible (section III). I believe that, in Searle's conception, a causal

reduction *requires* an ontological reduction – this is a *type-identity* of both phenomena. But if it is really so, there cannot be causal without ontological reductions and Searle's theory implies *contradictory* claims about consciousness.

ALGORITHMS AND ONTOLOGY

Walter Dean, New York, USA

This note advertises the question "Are algorithms mathematical objects?" Although this question bears significantly on the analysis of mathematical knowledge and is a natural question about the foundations of computer science, it has gone largely unexplored in philosophy of mathematics and formal ontology. I suggest that this question is not answered by traditional arguments in favor of Church's Thesis, and sketch a framework theory relative to which it might be systematically investigated.

THE KNOWER PARADOX AND THE QUANTIFIED LOGIC OF PROOFS

Walter Dean/Hidenori Kurokawa, New York, USA

The Knower Paradox attempts to demonstrate that any theory T which 1) extends Q , 2) includes a predicate $K(x)$ intended to formalize "the formula with godel number x is known", and 3) is able to prove certain plausible epistemic principles involving $K(x)$ is inconsistent. The purpose of this note is to show how the paradox may be redeveloped within a system of *quantified explicit modal logic* in the tradition of (Artemov 2001) and (Fitting 2004). In the course of so doing, we isolate a principle – the Uniform Barcan Formula [UBF] – which we show is required to derive an explicit counterpart of the axiom U (i.e. $K(K\phi \rightarrow \phi)$) which was used in the original derivation of the Paradox. We argue that since there are independent reasons to be suspicious of UBF, it is U which should be given up in order to resolve the paradox.

QUINE ON THE REDUCTION OF MEANINGS

Lieven Decock, Amsterdam, The Netherlands

Quine has proposed two strategies for the reduction of meanings to classes and physical objects. The first is the straightforward reduction to stimulus meaning. The second is the less straightforward reduction of meanings to classes of synonymous expressions. Synonymy can be explained by means of analyticity, which can be explained in a behaviourist way as true as a result of learning to use the words of the language. This proposal, which can be compiled from Quine's later work, is almost compatible with Carnap's strategy of semantical rules.

THE SCAPEGOAT THEORY OF CAUSALITY

Marcello di Paola, Rome, Italy

Wittgenstein's conception of causality evolved with his career, and a study of its trajectory illuminates important dimensions of the philosopher's thought. Focusing the analysis on *Cause and Effect* and *On Certainty*, in this paper I show it to be genealogical, and to be consistent with and best made sense of by an evolutionary interpretation. I label this the scapegoat theory of causality.

LOGIC MUST TAKE CARE OF ITSELF

Tamara Dobler, Norwich, East Anglia, UK

This paper argues that there is a tension in Wittgenstein's early conception of logic between the view that logic and language take care of themselves and the view inherited from Russell and Frege that logical analysis is 'the caretaker' of language.

My suggestion is that much of Wittgenstein's criticism of Frege and Russell rests upon an alternative conception of logic and language animated by his preoccupation with the nature of the proposition and its sense. This conception is anticipated in his early insight that 'logic must take care of itself' and comes ever more into focus as he writes the *Notebooks*. I also argue, however, that at that time Wittgenstein's thoughts about the self-sufficiency of logic were not radical enough to escape from the Russellian idea of analysis. I thus suggest that the main motivation for Wittgenstein's 'theory of logical portrayal' might be triggered by what I shall call 'Russell's need': the need "to justify the process of analysis".

CLASSIFYING INFERENCE CONDITIONALS

Igor Douven, Leuven, Belgium

Inferential conditionals express reasoning processes. This paper proposes a new typology of such conditionals, based on the type of inference that underlies the expressed reasoning process. It will be shown that, even though the proposed typology is exceedingly simple, it has considerable explanatory power. (My talk will be based on joint work with Sara Verbrugge.)

WITTGENSTEIN ON FRAZER AND EXPLANATION

Keith Dromm, Natchitoches, Louisiana, USA

Wittgenstein offers two general criticisms of Frazer in his "Remarks on Frazer's *Golden Bough*." The first attacks the plausibility of Frazer's explanations for religious and magical practices; the second attacks the very effort to explain such practices. Some commentators have understood Wittgenstein to be offering an alternative account of religious and magical practice, but the proposed accounts are difficult to reconcile with Wittgenstein's

second criticism of Frazer. They take Wittgenstein to be proposing either an expressivist or instinctive account of these practices. I explain the purpose of the remarks that suggest these accounts and show how they serve a purpose that is consistent with Wittgenstein's eschewal of explanation.

DUMMETT ON THE ORIGINS OF ANALYTICAL PHILOSOPHY

George Duke, Melbourne, Australia

This paper offers a critical reading of Michael Dummett's claim that 'the fundamental axiom of analytical philosophy [is] that the only route to the analysis of thought goes through the analysis of language' (1993, 128). Dummett's characterization, it is argued, has some validity when supplemented by recognition of the role of logical analysis in 'the semantic tradition'. Even when Dummett's thesis is clarified in this way, however, it remains inadequate as a way of characterizing analytical philosophy and its relation to 'other schools'.

WHAT NEO-LOGICISM COULD NOT BE

**Philip Ebert, Stirling, UK /
Marcus Rossberg, St Andrews, UK**

This paper discusses Bernard Linsky and Edward Zalta's Neo-Logicist programme. In the first section we offer a brief summary of the formal framework – third order object theory – in which a mathematical theory is to be embedded. The second section focuses on their claim that mathematics can be known by re-interpreting it within that formal framework. We argue that they fail to offer a satisfying explanation of mathematical knowledge. The third section discusses their conception of mathematical truth and highlights various shortcomings for their view. In the concluding section we argue that their approach should not to be regarded as a Neo-Logicist project.

WITTGENSTEIN MEETS ÖGS: WOVON MAN NICHT GEBÄRDEN KANN ...

Harald Edelbauer / Raphaela Edelbauer, Hinterbrühl, Österreich

Die Übersetzung von Wittgensteins Texten in eine Gebärdensprache (ÖGS) – wie sie von Gehörlosen verwendet wird – erweist sich als vielschichtiges und selbstreferentielles Unternehmen. Probleme ergeben sich nicht nur aus der oft nahezu inkompatiblen Metaphorik. Die Thematisierung versteckter ‚sonozentrischer‘ Annahmen, die im Verlauf der Übertragung zutage treten, dient zugleich als Korrektiv der Interpretation Wittgensteins. So gelangen wir zu einer offenen, dynamischen, dialogischen Übersetzung, die im Prinzip nie abgeschlossen ist.

Neben der filmischen Dokumentation des – auf ein Jahr beraumten – Projektes ist auch die Wiedergabe von Texten Wittgensteins in einer von Chrissostomos Paspaspyrou neu entwickelten Gebärdenschrift vorgesehen.

VAGUENESS, AMBIGUITY, AND PERCEPTUAL BISTABILITY

Paul Egré, Paris, France

A general issue in the study of vagueness concerns whether vagueness can be reduced to a form of ambiguity (Fine 1975, Pinkal 1995, Williamson 1994). In this talk I propose to discuss the link between the notions of vagueness and ambiguity in the perceptual domain. Well-known examples of ambiguous stimuli are so-called bistable figures, such as Necker's cube or Jastrow's duck-rabbit, namely physically stable configurations that can be perceived in two different ways. A striking aspect of the perception of bistable stimuli is that even when one's attention is sustained, spontaneous transitions still happen from one percept to the other (Hupé and Rubin 2003). On the other hand, a concept or category is characterized as vague if it has borderline cases, namely cases for which the concept fails to apply clearly or to be excluded clearly. Typically, in a series of color hues ranging from a clear red to a clear yellow, some stimuli would count as borderline cases of either category when it is no longer clear to which category they should be assigned.

While vagueness and ambiguity have often been opposed in the semantic domain (much as underdetermination vs. overdetermination of meaning, in K. Fine's words), D. Raffman has suggested that within soritical series, borderline cases pattern typically as ambiguous stimuli (Raffman 1994). Moreover, as discussed by Raffman, soritical transitions from one category to the other typically give rise to hysteresis effects, namely to the longer persistence of one percept over the other, depending on which category one is coming from (Lindsey, Brown and Raffman 2005 in progress, cited in Raffman 2005). As it turns out, this effect is also observed in the perception of bistable figures (see Hock, Kelso and Schöner 1993).

In this talk, I wish to examine some philosophical consequences of the idea put forward by Raffman that borderline cases within soritical series might pattern as ambiguous stimuli. If the analogy is correct, one important such consequence seems to me to be that there should be no fact of the matter, in the relevant instances, as to whether patches of color in the borderline area can be classified as red or not. Indeed, bistable figures are such that there is no fact of the matter as to whether they should be perceived one way or the other, given that physically they are invariant. Rather, variations in judgments are to be traced solely to perceptual instability on the side of perceiving subjects. To that extent, the analogy appears to run against epistemic accounts of vagueness, which postulate the existence of an unknowable sharp cut-off within soritical series.

A second aspect I shall examine concerns the characterization of the uncertainty specific to vagueness. Standardly, for bistable figures it is said that one percept excludes the other. A duck-rabbit is perceived as a duck or as a rabbit, but not as something in between. Prima facie therefore, the analogy between bistability and vagueness may seem inadequate. However, bistable figures themselves can be arranged in transition series consisting of slight alterations between adjacent members in the series (Fisher 1967, Gregson 2004). An interesting aspect of such configurations is the fact that although one percept becomes less probable than the other as one moves along the series, both percepts can still be applied all along in principle for such stimuli, even for the end stimuli. One issue is whether the uncertainty which is often used to characterize vagueness can be explained in a similar way

on the basis of a competition between overlapping categories.

ABBILDUNG UND LEBENDES BILD IN TRACTATUS UND NACHLASS

Christian Erbacher, Bergen, Norwegen

Nach dem *Tractatus* ist der Satz ein Bild der Wirklichkeit. Der Begriff des Bildes wurzelt dabei in zwei unterschiedlichen Auffassungen: zum einen wird er im gewöhnlichen Sinn verwendet, zum anderen im mathematischen Sinn der Abbildung. Der vorliegende Beitrag zeigt, welche Stellen des *Tractatus* mit dem Begriff im mathematischen Sinn in Verbindung stehen und wo die Verwendung wechselt. Der mathematische Begriff der Abbildung hängt zentral mit der Forderung einer Repräsentation der Wirklichkeit durch Satzzeichen zusammen. Die Verwendung des Begriffs wechselt allerdings zum gewöhnlichen Sinn bei der Besprechung der Verkettung von Namen in Elementarsätzen. Die Sichtung von Manuskripten aus dem *Nachlass* bestätigt diesen Eindruck. So stellt der *Tractatus* die Forderung nach einer isomorphen Repräsentation (im mathematischen Sinn) von Sachverhalten dar, bestimmt aber keine Zuordnungsregel von einfachen Zeichen zu Elementarsätzen.

EXPLAINING THE BRAIN: RUTHLESS REDUCTIONISM OR MULTILEVEL MECHANISMS?

Markus Eronen, Osnabrück, Germany

Mechanistic explanation and metascientific reductionism are two recent and widely discussed approaches to explanation and reduction in neuroscience. I will argue that these are incompatible and that mechanistic explanation has a stronger case, especially when it is combined with James Woodward's manipulationist model of causal explanation.

HOW THE GROWTH OF EVIDENCE HAS STOPPED THEORY CHANGE

Ludwig Fahrbach, Düsseldorf, Germany

In my talk, I aim to defend scientific realism against the pessimistic meta-induction (PI, for short). Scientific realism, as I define it, endorses the success-to-truth principle, i.e., the principle that if a scientific theory is successful, then it is (approximately) true. The PI, then, consists in pointing out that the history of science is full of theories that were once successful for a while, but later shown to be false. These theories constitute counterexamples to the success-to-truth principle, and seem to refute it.

To rebut the PI, I start from the observation that the notion of success is graded, that the degree of success of a theory increases, when the cases of fit between its predictions and observations grow in number, diversity and precision. The main thesis of my talk is that among

theories with very high degrees of success (e.g., our current most successful theories) almost no refutations have occurred, and that practically all successful refuted theories enjoyed rather low degrees of success. I support this thesis with two observations from the history of science. First, the degree of success of the most successful theories has by and large grown exponentially, so that the greatest growth of success occurred in the last few decades. I support this claim by considering various indicators of success, such as amount of data, computing power, scientific manpower, etc. Second, in the recent past practically no theory changes occurred among our most successful theories.

OCCAM'S RAZOR IN THE THEORY OF THEORY ASSESSMENT

August Fenk, Klagenfurt, Austria

From the point of view of theories as hypothetical representations, with predictive success as their real touchstone, this paper argues in favour of a three-dimensional model of theory assessment, including the dimensions generality, precision, and parsimony. Are such virtues, in self-referential ways, also applicable to those meta-theories that have invented such criteria? The focus of the respective analysis will be on *lawlikeness* which is most commonly viewed as a precondition of both, prediction and anticipation as well as explanation and reconstruction. Laws turn out to be mere projections of the relative frequencies observed so far. Such projections can be justified - if at all, and irrespective of the weakness of the "regularity" and the number of observations - by applying some sort of Occam's razor: Do without the assumption of a change as long as you can't make out any indication that a system's output might change!

DIE NICHTREDUZIERBARKEIT DER KLASSISCHEN PHYSIK AUF QUANTENTHEORETISCHE GRUNDBEGRIFFE

Helmut Fink, Erlangen, Deutschland

Die Reduktion physikalischer Theorien hat sich schon oft als sehr erfolgreich erwiesen. Die Quantentheorie gilt heute als grundlegendste Theorie der Physik.

Der Quanten-Universalismus führt jedoch auf das strukturell tief verankerte Messproblem der Quantentheorie. Es verschwindet nicht durch den "klassischen Limes". Struktur- und Interpretationsvergleiche zwischen klassischer Physik und Quantentheorie zeigen vielmehr, dass die Quantentheorie auf den klassischen Begriffsräumen der Fakten bei Apparaten und Messergebnissen nicht verzichten kann. Hier findet die Reduktion auf rein quantentheoretische Grundbegriffe eine methodisch notwendige und daher unüberwindliche Grenze.

INTERPRETABILITY RELATIONS OF WEAK THEORIES OF TRUTH

Martin Fischer, Leuven, Belgium

In this paper we will investigate 'weak' theories of truth. Theories of truth that are conservative extensions of *PA* are considered to be weak. Another measure of the strength of a theory can be given by its interpretability relations to other theories. We will show that some of the axiomatic theories of truth that are conservative extensions of *PA* are interpretable in *PA*. This concerns disquotational theories of truth like *TB* and *UTB* as well as compositional theories of truth with restricted induction like *TC*. We will also show that there are conservative extensions of *PA* that are not interpretable in *PA*.

TOWARDS A REDUCTIVE THEORY OF REFERENCE?

Jerry Fodor, Rutgers, USA

There is a robust philosophical/psychological tradition, dating at least from the associationism of the British empiricists, that seeks to provide a naturalistic and reductionistic account of the semantic/intensional properties of languages and minds. But the received view among 'analytic' philosophers, especially those influenced by Wittgenstein, is that this project can't be carried out; the semantic/intentional is 'autonomous' with respect to naturalistic discourse. This talk will discuss three of the standard grounds for this kind of anti-reductionism. I'll argue that none of them is fully convincing; in particular, that the prospects for a causal reduction of linguistic/mental reference are distinctly better than is generally supposed.

DOES BRADLEY'S REGRESS SUPPORT NOMINALISM?

Wolfgang Freitag, Konstanz, Germany

Nominalists often derive indirect support for their position from an argument to the effect that realism about universals is vulnerable to Bradley's regress. I argue independently (a) that realism is no more committed to the regress than nominalism is and, moreover, (b) that neither view is committed to Bradley's regress. An analysis of the sources for the regress reveals that there are two ways of avoiding the regress. I argue that both ways are open to nominalist and realist positions alike.

ZEITLICHE ONTOLOGIE UND ZEITLICHE REDUKTION

Georg Friedrich, Graz, Österreich

Kann die Berücksichtigung der Zeit und des Raumes bei ontologischen Überlegungen ein Beitrag zur ontologischen Sparsamkeit sein kann? Ich möchte in meinem Beitrag dieser Frage nachgehen. Dazu werde ich zwei eng zu-

sammenhängende Fragen behandeln, nämlich (i.) die Frage nach einer zeitlichen Ontologie und (ii.) die Frage nach den Möglichkeiten einer zeitlichen Reduktion. Die zeitliche Ontologie ist ein zeit-räumliches Kategoriensystem, welches, meiner Meinung nach, besonders einfach und ontologisch sparsam ist, sie macht auch weniger Voraussetzungen. Auf einer anderen Ebene gibt es für die zeitliche Reduktion weitere Möglichkeiten, z.B. die zeitliche Reduktion der Modalitäten oder die zeitliche Fragmentierung von ontologisch problematischen bzw. umstrittenen Gegenständen. Es wird sich zeigen, dass die Berücksichtigung der Zeit (und des Raumes) weit reichende Auswirkungen auf die Ontologie haben kann.

WHY THE PHENOMENAL CONCEPT STRATEGY CANNOT SAVE PHYSICALISM

Martina Fürst, Graz, Austria

Some physicalists take the *phenomenal concept strategy* (Stoljar 2005) to be one of the most powerful responses to anti-physicalistic arguments such as the *knowledge argument* (Jackson 1986) or the *explanatory gap* (Levine 1983). My presentation aims at demonstrating that the target of the physicalist phenomenal conceptualist – namely, to give a satisfactory account of dualistic intuitions without drawing ontological dualistic conclusions – has to fail.

BENACERRAF AND BAD COMPANY (AN ATTACK ON NEO-FREGEANISM)

Michael Gabbay, London, UK

I argue that Benacerraf's famous objection to mathematical realism in his paper "*What numbers could not be*" can be adapted to present severe difficulties for the Neo-Fregean programme. I formulate an alternative abstraction principle and argue that there is no reason for the natural numbers to be generated by one abstraction principle rather than the other.

Independently of this conclusion, the formal comparison of the two abstraction principles involves a result of interest to Neo-Fregeans: I offer a solution to the *bad company* objection.

DEFLATIONISM AND CONSERVATIVITY: WHO DID CHANGE THE SUBJECT?

Henri Galinon, Paris, France

We present a defence of alethic deflationism against the so-called conservativity argument put forward by Ketland (1999) and Shapiro (1998). We show that the argument is flawed without assuming any strong view on the contentious delineation between axioms which are "essential to truth" and axioms which are essentially arithmetical in nature.

HARD NATURALISM AND ITS PUZZLES

Renia Gasparatou, Patras, Greece.

Eliminative "hard" naturalism is a form of naturalism that is very up to date today in philosophy of mind and metaphysics. It endorses the elimination of all mental language from our everyday vocabulary, claiming that science will prove that mental terms refer to pseudo-entities. I will argue that even though hard naturalists strongly depend on science, they can hardly account for the evolution of science: *For the time being* all ordinary language is mediated by mental concepts and explanations. It is through them that today's scientists are trained. If we accuse them of being void, we can no longer sensibly train today's scientists. Neither can we sensibly articulate today's hypotheses or theories. I will suggest that the very primacy ascribed to science's explanatory methods makes it harder for eliminative naturalists to explain how science is communicated and evolved.

THE MIND-BODY-PROBLEM AND SCORE-KEEPING IN LANGUAGE GAMES

Georg Gasser, Innsbruck, Austria

Can we solve the mind-body-problem? Many scholars are rather sceptical: Neither of the various accounts given so far seem generally acceptable to the scientific community. The impression is conveyed that we permanently seem to end up into a kind of argumentative impasse. By referring to Lewis' concept 'score-keeping in language games' I will sketch a series of cognitive steps we undergo when approaching the mind-body-problem. Thereby it should become clear why purported solutions appear rather unsatisfying. The paper concludes not with a solution to the mind-body-problem but with an explanation why remedy for it is hard to find.

TRUTH AND CONSEQUENCES

Kenneth Gemes, London, UK

What is the point of confirming a theory if that confirmation gives no reason for thinking untested parts of the theory are also true? Hempel tried to capture the importance of confirmation being transmitted to untested parts of a theory with his special consequence condition. Many popular accounts of confirmation/corroboratorion, for instance both Popperian accounts and Bayesian probabilistic accounts of confirmation, violate that condition. This paper considers the reasons why the intuitively plausible consequence condition has been rejected and argues that in fact it should and can be respected even within a Bayesian framework.

WRIGHT, WITTGENSTEIN UND DAS FUNDAMENT DES WISSENS

Frederik Gierlinger, Wien, Österreich

Die vorliegende Arbeit beschäftigt sich mit Crispin Wrights 2004 erschienenem Aufsatz *Wittgensteinian Certainties*. Die dort geschilderte Auffassung von *hinge propositions* wird zum Anlass genommen ausgewählte Bemerkungen aus Ludwig Wittgensteins *Über Gewissheit* und den *Bemerkungen über die Grundlagen der Mathematik* aufzugreifen und mit Wrights Auslegung zu kontrastieren. Dabei wird Wrights Bestimmung fundamentaler Überzeugungen, als die *er hinge propositions* ausdeutet, in zweierlei Hinsicht als mangelhaft ausgewiesen:

Zum einen wird gezeigt, dass die Annahme dieser Sätze kein metaphysisches Risiko unsere Wissensansprüche betreffend bedeutet, da die Behauptung, all unsere Annahmen könnten falsch sein, überhaupt keinen klaren Sinn hat. Zum anderen wird argumentiert, dass die Bestimmung von *hinge propositions* als Regeln der Evidenzbeurteilung ungeeignet ist, die besondere Rolle, die diese Sätze spielen, zu erklären.

REDUCTION REVISITED: THE ONTO-LOGICAL LEVEL, THE CONCEPTUAL LEVEL, AND THE TENETS OF PHYSICALISM

Markus Gole, Graz, Austria

A priori physicalists hold that all mental phenomena are entailed by the physical phenomena *a priori*, i.e., solely on grounds of the meanings of the words involved. Thus, for every mental term a synonymous and coreferential physical term can be found. In contrast, *a posteriori* physicalists deny this *a priori* connection and argue that mental and physical terms are not synonymous, albeit coreferential *a posteriori*. It is argued that *a posteriori* physicalism is in tension with the tenets of physicalism which are taken to be parsimony, elegance and simplicity. Another, although related, problem poses the demand for an explanation of how independent mental concepts fit into the physicalist story of the world.

AN ELIMINATION THEOREM FOR A LOGIC WITH DESCRIPTIONS

Norbert Gratzl, Salzburg, Austria

Definite descriptions are in the focus of philosophical discussion at least since Russell's famous paper "On Denoting". We present in this paper a logic with descriptions in Russell's spirit. The formulation, however, is closely related to Schütte's development of predicate logic, i.e. the formulation of the calculus uses positive- and negative-parts. With respect to this slightly more sophisticated formulation it is possible to formalize Russell's convention that is originally stated in the meta-language of his theory of descriptions within our calculus. In this paper we prove an elimination theorem for this calculus.

REDUCTION AND REDUCTIONISM IN PHYSICS

Rico Gutschmidt, Bonn, Germany

This presentation deals with the question of how physical theories are related to each other (problem of reduction) and whether there are theories being in principle superfluous (problem of reductionism).

The main part discusses the relation between theories taken from the context of gravitation and works out the conditions for a relation of *reduction* so that a theory reduced is in terms of reductionism in principle superfluous. It will be proposed to distinguish such a relation from another one based on comparison, which could be called *compatibility* and is not able to support claims of reductionism.

In the closing part, it will be argued that the laws of Galilei and Kepler are in that sense reduced to Newtonian physics and that equally the Newtonian description of the planet's orbits is reduced to the Schwarzschild solution, but that Newton's law of gravitation is merely compatible to general relativity.

CAN WE DISPENSE WITH MODAL PREDICATES?

Volker Halbach, Oxford, UK

Often notions such as necessity, knowledge, and analyticity are not conceived as predicates applying to propositions or sentences; rather they are expressed by sentential operators or by predicates without a slot for propositions. On the one hand, eliminating modal predicates has some advantages: since no objects such as propositions are needed to which these predicates are applied, the elimination can be used in an ontological reduction. Moreover, modal predicates are prone to paradox, which can be avoided if the modal predicates are eliminated. On the other hand, eliminating modal predicates seems to cripple the expressive power of the language. In my talk I'll look at various proposed reductions of modal predicates in adverbialist and operator approaches. I'll then evaluate attempts to restore the expressive power of the language by retaining a predicate for truth.

CONSENSUS, COMPROMISE AND JUDGMENT AGGREGATION

Stephan Hartmann, Tilburg, The Netherlands

Judgment aggregation studies the aggregation of yes-no judgments of the members of a jury on logically interconnected propositions into a consistent collective judgment set. As the discursive dilemma shows, proposition-wise majority voting will not in general lead to a consistent collective judgment set. To arrive at a consistent collective judgment set, three procedures have been discussed in the literature: the premise-based procedure (PBP), the conclusion-based procedure (CBP) and the distance-based procedure (DBP). According to these procedures, the jury can accept a judgment set that only a few (or even none) of the members of the jury voted for.

This raises the question whether such a decision is really acceptable. Clearly, a decision based on PBP, CBP or DBP amounts to a compromise, and not everybody will be happy with the decision. The jury members agree to go along with the will of the others. The preferred solution, however, is to arrive at a consensus, whereby every jury member is in agreement with the final decision. The goal of this paper is to develop a model for the emergence of consensus in a judgment aggregation setting and to ask how this new aggregation method compares with suitably generalized versions of PBP, CBP and DBP. The paper is based on joint work with Jan Sprenger (Bonn, Tilburg).

PHYSICALISM WITHOUT THE A PRIORI PASSAGE

Harris Hatzioannou, Athens, Greece

The target of the paper is the thesis that physicalism is committed to the a priori entailment of all facts by physical facts. I consider in turn Lewis's formulation of the thesis, Chalmers's and Jackson's modified account that eschews explicit conceptual analyses, and Jackson's subsequent reinterpretation of the thesis in terms of *de re* entailment. I argue against all three formulations and then conclude with some suggestions regarding the way in which we may understand a posteriori physicalism and the determining relation that it posits between physical and all other facts.

WITTGENSTEINS PROJEKTIONSMETHODE ALS ARGUMENT FÜR DIE TRANSZENDENTALE DEUTUNG DES TRACTATUS

Włodzimierz Heflik, Krakau, Polen

In diesem Beitrag analysiere ich Wittgensteins Projektionsmethode. Diese Analyse wird vor (1) dem Hintergrund der ontologischen Basis des *Tractatus* und (2) der Voraussetzungen der Deduktion der Kategorien bei Kant durchgeführt. Der Beitrag fokussiert auf die Konzeption des Sinnes im *Tractatus* als Produkt der Projektionsmethode. Darüber hinaus weise ich auf die Ähnlichkeit zwischen der Projektionsmethode und dem Schematismus bei Kant hin. Diese Überlegungen liefern Argumente für die transzendente Interpretation des *Tractatus*.

RULE-FOLLOWING AND THE IRREDUCIBILITY OF INTENTIONAL STATES

Antti Heikinheimo, Jyväskylä, Finland

According to Jaegwon Kim, mind-body reduction requires functional definitions of mental properties in terms of lower-level properties. I argue, drawing on Saul Kripke's normativity argument, that such definitions are not attainable for intentional states.

RELATING THEORIES, MODELS AND STRUCTURAL PROPERTIES IN INTERTHEORETIC REDUCTION

Rafaela Hillerbrand, Oxford, UK

This paper argues that two issues, though crucial for intertheoretic reduction, are commonly overlooked. Firstly, even in fields like physics where established theories exist, it is not *theories* that are reduced. Rather, concrete *models* derived from the reduced and the reducing theory can be related in a way that qualifies as reduction. Secondly, the debate on intertheoretic reduction mainly focuses on correspondent principles for *theoretical entities* that relate to observable quantities and take on specific finite numerical values. I argue that directing one's attention solely to this type of descriptive vocabulary is not sufficient for a satisfactory reduction. Rather, correspondence rules are needed to bridge (part of) the *structural properties* of the theories involved as well. I develop my arguments drawing on the alleged paradigm of intertheoretic reduction, the reduction of thermodynamics to statistical mechanics.

SUPERVENIENCE AND MORAL REALISM

Alison Hills, Oxford, UK

Blackburn has argued that moral properties supervene on natural properties and that this is a problem for moral realists, because they cannot adequately explain why this relationship holds. In this paper, I clarify the supervenience objection to moral realism and evaluate recent responses to it from moral realists.

THE CONSTITUTION OF INSTITUTIONS

Frank Hindriks, Groningen, The Netherlands

Institutions pose a challenge for reductive materialism in that they have certain features that resist a straightforward reduction to physical entities. Presidents, for instance, have causal properties that do not depend on their intrinsic properties only. Organizations consist in some sense of the people they unite. However, an organization can retain its identity when its membership changes. I argue that the best way to accommodate features such as these is by conceptualising the relation between institutions and entities at lower levels in terms of constitution, a relation of unity without identity. I present a modal account of constitution on which the satisfaction of favourable conditions explains why one object constitutes another one.

WITTGENSTEIN'S "GIFT OF DYSLEXIA"

Anna-Maija Hintikka / Jaakko Hintikka, Boston, USA

Wittgenstein's dyslexia helped him in different ways in appreciating philosophical problems. They include the problem of being guided by a rule (which is what Wittgenstein's so-called "rule-following discussion" is

about) and the problem of the relevance of formal games of logic and mathematics to application games.

A PROOF OF NOMINALISM

Jaakko Hintikka, Boston, USA

Nominalism can be construed as maintaining that the only quantifiers we need range over are particulars (individuals) in contradistinction to second-order (and other higher-order) entities. It is shown here how to reduce all second-order quantification to the first-order level. This is done in three stages: (1) Independence-friendly first-order logic is extended by introducing that contradictory negation need not be sentence-initial. (2) The resulting logic is given a game-theoretical interpretation. The main idea is to isolate the game $G(F^*)$ needed in interpreting a sentence S where $\neg F$ occurs as a subformula and where F^* is a substitution-instance of F from the rest of S . (3) The hierarchy of second-order sentences is reduced step by step in the same way sigma one-one fragment is reduced to first-order IF logic.

This reduction makes both axiomatic set theory and conventional higher-order logic dispensable in the foundations of mathematics.

DAVIDSON'S CRITERION OF IDENTITY FOR EVENTS

Leon Horsten, Bristol, UK

Davidson proposed a criterion of identity for events that specifies identity conditions for events in terms of their causes and effects. For a brief time, philosophers showed an interest in Davidson's criterion. But soon it was rejected by most scholars, mostly on account of its perceived circularity or impredicativity.

It will be argued that Davidson's criterion merits a reappraisal. And this is what will be done in this paper. Both from a philosophical and from a technical point of view, Davidson's criterion will be subjected to a new investigation.

On the formal side, it will be investigated how likely it is for an arbitrary causal event structure to satisfy Davidson's identity criterion for events. It will be shown that as the number n of events goes to infinity, the probability that a causal event structure with n events satisfied Davidson's criterion goes to 1. Also, a strengthening of the condition that is expressed by Davidson's criterion shall be formulated and analyzed.

On the philosophical side, it will emerge that this circularity is more subtle than has been recognized in the literature. Moreover, it is not easily reduced to known kinds of circularity, such as the circularity that is involved in the self-referential paradoxes. And whether Davidson's identity criterion suffers from this distinctive kind of impredicativity turns out to depend on the causal event structure of the world.

Special attention will be given to the issue of the circularity or impredicativity of Davidson's identity criterion. A precise definition of the relevant notion of circularity will be proposed. And the conditions under which a causal

event structure displays this kind of circularity will be charted. Also, it will be investigated how likely it is for a causal event structure to be circular in this way.

DO BRAINS THINK?

Christopher Humphries, London, UK

I examine the argument of Maxwell Bennett and Peter Hacker (B&H) that neuroscientists are given to widespread misapplication of psychological terms and concepts. John Searle's critique of this argument is analysed: the charge of criterial behaviourism is found to be unsustainable, while the demand for causal sufficiency in theories of mind is shown to create a circularity. It is argued that the category mistake identified by B&H's Wittgensteinian dialectic can be located by other means, so that not all of B&H's ramifying conclusions need be regarded as essential to the main thesis. It is suggested that Quinean naturalism provides the most potent objection to there being a strict dichotomy of psychological and neurological categories.

ON THE RELATION BETWEEN EXTENSIVE FORM GAMES AND GAMES IN NORMAL FORM

Simon Huttegger, Irvine, USA

Ever since the publication of von Neumann and Morgenstern's 'Theory of Games and Economic Behavior' there has been a debate whether, and in what sense, games in extensive form can be reduced to games in normal form. I will provide an argument that the representation of extensive form games by normal form games is in general not adequate. My argument is based on a dynamical concept of genericity (structural stability), which is of importance in evolutionary game theory and the theory of learning in games. Games in extensive form do in general have non-generic dynamical properties, while the dynamics of games in normal form is almost always generic.

HOW METAPHORS ALTER THE WORLD-PICTURE – ONE THEME IN WITTGENSTEIN'S ON CERTAINTY

Joose Järvenkylä, Tampere, Finland

In this paper I have tried to reconstruct Wittgenstein's view of metaphors in *On Certainty* by comparing it with some elements of Donald Davidson's influential theory. I claim that both philosophers would agree that metaphors have only literal meaning, but unlike Davidson, Wittgenstein held that for philosopher the most important aspect of metaphors is not what they mean but how they are used. By seeing how they are used in their context we are ought to recognise that by using metaphors it is possible to exceed this very context. In other words metaphor can enlarge our understanding of the world by altering our world-picture. Thus I suggest that in *On Certainty* Wittgenstein took metaphors as a legitimate device in philosophy; by using metaphors philosophy can have

some positive content without a need to theorize or interfere with that how language is actually used.

THE MODAL SUPERVENIENCE OF THE CONCEPT OF TIME

Kasia M. Jaszczolt, Cambridge, UK

The concept of time (here: A-theory time, McTaggart 1908) is generally acknowledged to be only a partial reflection of real time (here: B-theory time). Multiple arguments, mostly from the phenomenological tradition of Husserl and Heidegger, have been used for the explanation of this thesis. In this paper I focus on a different kind of supervenience, namely on the dependence, in the sense of constitutive conceptual and semantic qualities, of internal time on epistemic modality and thereby on degrees of detachment from certainty that temporal thoughts include and temporal expressions convey. I discuss several arguments and some linguistic evidence in support of the thesis of modal supervenience and conclude with a question concerning the possible conceptual and semantic *identity* of epistemic modality and temporal reference.

THE DETERMINATION OF FORM BY SYNTACTIC EMPLOYMENT: A MODEL AND A DIFFICULTY

Colin Johnston, London, UK

This paper develops a model for understanding the Tractarian doctrine that a sign in syntactic use determines a form. This doctrine is found to be in tension with Wittgenstein's agnosticism with regard to forms of reality.

ZWISCHEN HUMES GESETZ UND „SOLLEN IMPLIZIERT KÖNNEN“ – MÖGLICHKEITEN UND GRENZEN EMPIRISCH-NORMATIVER ZUSAMMENARBEIT IN DER BIOETHIK (TEIL I)

Michael Jungert, Bamberg & Tübingen, Deutschland

In den letzten Jahren ist eine zunehmende Beteiligung empirischer Sozialwissenschaften an bioethischen Diskussionen zu beobachten. In der Folge gewann insbesondere die Frage nach dem Verhältnis von Empirie und normativer Theorie neue Brisanz. Die nachfolgenden Überlegungen greifen diese Problematik auf und fragen nach adäquaten Wegen empirisch-normativer Zusammenarbeit in der Bioethik. Dazu werden zunächst drei idealtypische Modelle empirisch-normativer Zusammenarbeit vorgestellt. Anschließend werden wissenschaftstheoretische Kriterien einer adäquaten Zusammenarbeit entwickelt und anhand von Überlegungen zu Humes Gesetz und der „Sollen impliziert Können“-Annahme formallogisch untermauert. Darauf aufbauend wird eine Bewertung der drei Modelle vorgenommen, um abschließend drei konkrete Modi adäquater normativ-empirischer Zusammenarbeit zu skizzieren.

WHAT REDUCTIONISTS BELIEVE IN

Christian Kanzian, Innsbruck, Austria

Ontological reductionism is normally motivated by a sceptical view on what people in their ordinary life assume to be the case in their ordinary world: things like cars, sheep, and human persons, having properties, being related to one another, and remaining the same even if they change. Reductionists want to protect us from taking such a naive view of reality as ontologically serious. Ontology should not reflect upon what normal people mean, but what the basic structures of our world *really* are. And science - natural science of course - tells us what these basic structures really are. Thus the noblest aim of ontology is to reduce the objects in one's everyday world to the basics presented to us by natural science; respectively to reconstruct these objects from this given basis. In my talk I try to examine ontological reductionism in more detail: How is the label "ontological reductionism" to be understood? Are there common premises shared by the different reductionistic positions? How can we discuss them? – My result will be that reductionistic ontologies assume strong premises, beliefs, I am inclined to say; and these beliefs can be called into question, because of on the one hand ontological and on the other hand methodological or meta-ontological reasons. My focus lies on the reductionistic assumption of ontology as an "a posteriori" discipline; and here especially on the problem of "hypostasizing" models used in physical theories (which normally occurs in a posteriori or "inductive" ontologies). Atoms for instance, understood as material simples, may be useful models for physical interpretations of the material basis of reality; as ontological entities they are simply faulty constructions. – However, my alternative is strict anti-reductionism, for which I finally will give an outline.

ASSESSING HUMEAN SUPERVENIENCE

Amir Karbasizadeh, Tehran, Iran

In this paper, I will critically assess Humean Supervenience by dissecting it into two separate theses. The first, which I call *Separability*, claims that spatio-temporal relations are *the only fundamental external physical relations*. The second, which is called *Physical Determination* says all facts about worlds, similar to ours, including modal and nomological facts, are determined by their total physical state. I will claim that the first component of the Humean Supervenience, namely the separability thesis, is threatened by quantum mechanics. The second component, however, can be retained despite some criticisms.

ZU CARNAPS DEFINITION VON 'ZURÜCKFÜHRBARKEIT'

Roland Kastler, München, Deutschland

In den *Principia Mathematica* versuchen Whitehead und Russell die Begriffe der Mathematik in jene der Logik (Typenlogik bzw. Logik plus Klassentheorie) einzubetten. Rudolf Carnap erweiterte das Anwendungsgebiet der in den *Principia Mathematica* eingeführten Methode der logischen Konstruktionen, indem er in seinem Werk *Der logische Aufbau der Welt* die Grundzüge eines Projektes

darstellt, welches die Begriffe der Welt auf unmittelbar Gegebenes zurückzuführen intendiert. Die von Carnap entwickelte Konstitutionstheorie nimmt dabei nicht nur im allgemeinen Bezug auf Russell und Whitehead, und zwar in dem Sinne, in dem Carnap sich beispielsweise dem Phänomenalismus Ernst Machs verpflichtet fühlt (Vgl. Rudolf Carnap: *Mein Weg in die Philosophie*, 29.), sondern er formuliert bezüglich der „*Principia*“, daß jene 'ein „Konstitutionssystem“ der mathematischen Begriffe' darstellen (Vgl. Rudolf Carnap: *Der logische Aufbau der Welt*, 47f.).

DING-ONTOLOGY OF ARISTOTLE VS. SACHVERHALT-ONTOLOGY OF WITTGENSTEIN

Serguei L. Katrechko, Moscow, Russia

In the history of philosophy, it is possible to separate the following basic types of ontology: the *ontology of things* (Aristotle), the *ontology of attributes* (Plato) and the *ontology of relations* (Wittgenstein). Those three set the basis to reveal the ontology of 'facts', or *the ontology of 'state of affairs'* described in Wittgenstein's *Tractatus Logico-Philosophicus*. The article presents an interpretation of, firstly, the ontology of Wittgenstein's logical description of the world, i.e. the *logic* ontology, and, secondly, the *Sachverhalt*-ontology of the *Tractatus* which does not postulate the presence of 'intrinsically unchangeable' objects like Aristotle's 'things', i.e. it is of non-substantial character.

EMPIRICAL ADEQUACY AND RAMSIFICATION, II

Jeffrey Ketland, Edinburgh, UK

Since F.P. Ramsey's introduction of the idea (Ramsey 1929, "Theories"), a number of philosophers have suggested that the cognitive content of a scientific theory should be given by its Ramsey sentence. Ramsification provides a means of eliminating theoretical predicates without having to provide an explicit definition, and is therefore attractive to philosophers of a positivist inclination. However, the Ramsey sentence of a theory is weaker than the theory itself. Demopoulos & Friedman (1985, "Critical Notice: Bertrand Russell's The Analysis of Matter: Its Historical Context and Contemporary Interest", *Philosophy of Science* 52) were the first to introduce the so-called Newman objection to Ramsey sentence approaches to eliminating theoretical predicates, based on Newman's 1928 critique of Russell's structuralism. Demopoulos & Friedman pointed out that, roughly, the truth of the Ramsey sentence of a theory is equivalent to its empirical adequacy and perhaps a cardinality condition on the external world. The technical details of one version of this objection were set out in Ketland 2004 ("Empirical adequacy and ramsification", BJPS). Roughly, one obtains theorems of the form, "the Ramsey sentence of a theory *T* is true if and only *T* has a model with certain properties". The main result of Ketland 2004 is one such theorem. However, there are in fact several inequivalent ways to analyse the formalization of scientific theories, the notion of "empirical adequacy" and the construction of the Ramsey sentence. (For example, whether the theory is

formulated in a one-sorted or many-sorted language; whether un-ramsified predicates are allowed to have unobservable objects in their field; etc.) This paper will survey several of these alternatives, and give corresponding results expressing the truth conditions of Ramsey sentences.

HOW DO MORAL PRINCIPLES FIGURE IN MORAL JUDGEMENT? A WITTGENSTEINIAN CONTRIBUTION TO THE PARTICULARISM DEBATE

Matthias Kiesselbach, Potsdam, Germany

This essay argues that Wittgenstein's mature conception of language contains all the resources needed to answer a central question of moral philosophy: how can we hold on to moral principles in the face of the seeming impossibility to formulate a moral principle which is invulnerable to particularistic counter-examples? The essay argues that Wittgenstein's conception of language includes a plausible answer to an analogous threat to grammatical norms. The idea is that although all judgement is a matter of following grammatical norms, some judgements necessarily involve revisions of grammar. This happens when a language game is confronted with novel practical demands to which current grammar is unsuited. In these situations of grammatical tension, a judgement cannot be based on rules alone. Since nothing stands in the way to interpreting moral principles as propositions of grammar, Wittgenstein's reaction to the threat against grammatical norms serves as an answer to the ethical puzzle.

EMERGENT PROPERTIES: "SUPERVENIENT AND YET NOT DEDUCIBLE"

Jaegwon Kim, Brown University, USA

Formulating a concept of emergence which is at least prima facie intelligible and coherent is a significant issue not only because emergence concepts continue to proliferate, attracting much positive attention from some quarters, but also because the idea of emergence is closely related to some of the concepts of central importance in the current debates on the mind-body problem. Early emergence theorists, like C.D. Broad and C. Lloyd Morgan, clearly intended emergence to be an objective phenomenon in the world and conceived of emergent properties as real features of objects with their own distinctive causal powers. This classic conception of emergence is now often called "strong" or "ontological". According to Broad's characterization, emergent properties supervene on their "basal" conditions and yet are not deducible from them. The ontological conception of emergence is now contrasted with an "epistemological", or "weak", conception according to which properties are emergent in case they are "surprising" and "unexpected" for us, or unpredictable and unknowable from information concerning base-level phenomena. This paper begins with an examination of Broad's characterization of ontological emergence, which is quite common among writers on emergence. It will be seen that some interesting issues arise from Broad's approach. I extend my considerations to

some recent conceptions of physicalism, reductive explanation, and other related issues.

"DOWNWARD CAUSATION": EMERGENT, REDUCIBLE OR NON-EXISTENT?

Peter P. Kirschenmann, Amsterdam, The Netherlands

Many view reality as a hierarchy of levels, with the higher levels emergent from the lower ones. Some also claim that there is a "downward causal" influence of higher-level entities on their lower-level constituents. I critically discuss such claims. After presenting two original views as well as the muddled conceptualization in the debate about "downward causation", I analyze two examples, comment on the "causal exclusion argument", and conclude with yet another computer analogy.

ON GAME-THEORETIC CONCEPTUALIZATIONS IN LOGIC

Maciej Tadeusz Kłeczek

It is a well known fact that the central model-theoretic concepts such as partial isomorphism and truth in a structure admit equivalent reformulation in terms of the game for structure comparison and the game of semantic evaluation. It is well posed question in the philosophy of logic whether about game-theoretic conceptualizations have any impact on received logical results. Answering this question is the topic of this paper.

It is highlighted that FO logic, which admits imperfect information in the process of the game of semantic evaluation (so called Independence Friendly Logic), is not closed under contradictory negation. This entails the failure of the Law of Excluded Middle and opens the possibility of overcoming limitative theorems such as Tarski's Undefinability of Truth Theorem and Lindstrom's Theorem. Those results are obtained on a game-theoretic basis and are significant contributions of game-theoretic conceptualizations for logical theory.

A METAPHYSICALLY MODERATE VERSION OF HUMEAN SUPERVENIENCE

Szilárd Koczká, Miskolc, Hungary

Among philosophers interested in philosophy of science it is widely held that a metaphysical treatment of the natural laws can only be correct if it is supported by scientific practice, i.e. it must explain why natural laws can play the role that scientific practice requires. However on the basis of this requirement we can not say the final word in the question that which theory is the tenable one since scientific practice itself is compatible with both. Humean Supervenience as a minimalist thesis about scientific laws – rather than mind independent natural laws – can express the core idea of Hume's original thoughts about nomic relations, while it can eschew serious problems about the concrete definition of the subvenient base on which

everything else supervenes which problems can not be solved in a standard neo-humean way.

“IN DER FRAGE LIEGT EIN FEHLER” – ÜBERLEGUNGEN ZU PHILOSOPHISCHE UNTERSUCHUNGEN (PU) 189A

Wilhelm Krüger, Bergen, Norway

Gemeinhin wird die Frage nach der Bestimmtheit der Übergänge in PU 189A¹ in der Sekundärliteratur als Ausdruck einer jener philosophischen Verirrungen betrachtet, die im Sinne von PU 133 nicht zu lösen, sondern nur aufzulösen sind. In dieser Arbeit will ich zeigen, dass PU 189A konstruktiv aufgefasst werden kann und mit Bezug auf einen Entwicklungsschritt der Wittgensteinschen Philosophie zu verstehen ist. Ich werde dazu (1) PU 189A vorstellen und (2) mit einigen Bemerkungen Wittgensteins zur Bestimmtheit des Satzsinnes aus dem Jahre 1931 konfrontieren. Abschließend (3) soll zur Diskussion gestellt werden, was mit dieser Gegenüberstellung für eine werkimmanente Interpretation von PU 189 gewonnen ist.

PROBLEMS WITH PSYCHOPHYSICAL IDENTITIES

Peter Kügler, Innsbruck, Austria

If the identity claims made by type identity theory, token identity theory and functionalism are true, they are either necessarily true or contingently true. Necessary identity runs into well-known problems, as modal arguments seem to show that psychophysical identity claims could be false. Contingent identity, on the other hand, needs to be explained, but the explanatory models that may be applicable are non-physicalist models.

REDUCING COMPLEXITY IN THE SOCIAL SCIENCES

Meinard Kuhlmann, Bremen, Germany

In some recent agent-based investigations of socio-economic systems complexity is reduced in both of the two different meanings of 'reduction'. First, complexity is *decreased* by showing why various micro details are irrelevant for the explanation of certain macro phenomena. One can even make the stronger point that the non-discriminating inclusion of all available information about the micro level would destroy the identification of causal mechanisms, which are needed for a full explanation of certain higher-level phenomena. There is also a second sense in which reduction matters for agent-based explanations of social phenomena. The occurrence of particular complex dynamical patterns in social phenomena is reduced to, or *subsumed* under, certain universal types, which I call structural dynamical patterns. And the possibility of this subsumption can be understood in terms of certain structural mechanisms.

FOUR ANTI-REDUCTIONIST DOGMAS IN THE LIGHT OF BIOPHYSICAL MICRO- REDUCTION OF MIND & BODY

Theo A. F. Kuipers, Groningen, The Netherlands

Biophysical micro-reduction of concepts and laws in mind-body research will be characterized in such a way that it happens to contradict four anti-reductionist dogmas: it is non-eliminative, it is compatible with multi-realizability, it includes supervenient properties and regularities, and it will take the embodied and embedded nature of the mind into account.

WEAK PHYSICALISM AND SPECIAL SCIENCE ONTOLOGY

James Ladyman, Bristol, UK

Naturalists take science at face value and hence ought to be ontologically committed to the entities posited by the various special sciences. According to the Eleatic principle, causal efficacy is necessary condition for existence. This principle is plausible for concrete entities and so naturalists must attribute genuine causal powers to special science ontologies. However, physicalism is usually taken to require a commitment to the causal completeness of the physical world, and so a generalization of Kim's causal exclusion argument threatens the special sciences with the dilemma of epiphenomenalism versus reductionism. The former is incompatible with the Eleatic principle and so motivates eliminativism about the ontologies of the special sciences, whereas the latter is widely held to be untenable. Hence, there is a tension between physicalism and naturalism. However, ironically among philosophers of physics there is a widespread view that there is no causation in fundamental physics, suggesting the physicalism must be understood without reference to causal completeness. In this paper I argue that a weak form of physicalism can be combined with an independently motivated account of special science ontology to dissolve the generalized causal exclusion problem and harmonise naturalism and physicalism.

TWO PROBLEMS FOR NONHUMEAN VIEWS OF LAWS OF NATURE

Noa Latham, Calgary, Canada

In this paper I advance a generative conception of fundamental laws of our universe that I think almost all nonHumean views of laws of nature are committed to. I argue that its viability depends on empirical conditions ensuring that our universe has a first moment of existence and that the fundamental laws do not introduce a counterintuitive direction of time. Whether or not these conditions are met in our universe, I argue that this empirical sensitivity greatly reduces the intuitive appeal of the generative conception.

SOME REMARKS ON WITTGENSTEIN AND TYPE THEORY IN THE LIGHT OF RAMSEY

Holger Leerhoff, Konstanz & Oldenburg, Germany

In this paper, I will discuss Wittgenstein's critique of Russell's Theory of Types and his alternative approach to the problems posed by the vicious-circle paradoxes. Ramsey's more fine-grained distinction between logical and semantical vicious-circle paradoxes and the corresponding versions of type theory will prove to be valuable for an appropriate analysis of the matter.

THE TRACTATUS AND THE PROBLEM OF UNIVERSALS

Eric Lemaire, Paris & Nancy, France

The question we wish to raise here is the following: what are the objects of the Tractatus? This problem is old, and received a wide variety of solutions. But, there is no consensus about it. The problem can be reformulated as "What is the composition of an elementary proposition?". Does it contain only particulars or particulars and universal or only universal? Unfortunately, Wittgenstein said that this question cannot be answered *a priori* or by logical investigation. He thought that we could discover the composition of elementary propositions by the philosophy of psychology which he seems to conceive as an *a posteriori* investigation. As long as we do logic, we cannot answer the question "How many are there in the world?" because it is a matter of fact. Thus, the problem of universal does not seem to be a problem for *armchair philosophers*, contrary to logic. So, it seems that there is nothing to say about it. Nevertheless, we should distinguish two questions. 1) Is there some universal? 2) What universals exist? Do answers to these questions depend on an *a posteriori* investigation? An *a posteriori* realist as D. Armstrong argue for the existence of universals and against nominalisms on *a priori* grounds, even if he thinks that the second of our question can only be answered on the basis of *total science*. So our enterprise may not be hopeless. Our aim here will be to consider two simple arguments in favour of a realist interpretation of the *Tractatus*.

A CRITIQUE OF THE PHENOMENAL CONCEPT STRATEGY

Daniel Lim, Cambridge, UK

Frank Jackson's Knowledge Argument (1982) has been at the center of a longstanding debate concerning the ontological nature of consciousness. Starting from a set of uncontroversial epistemological premises it moves to a controversial metaphysical conclusion and purports to demonstrate the falsity of physicalism. In recent years the so-called phenomenal concept strategy has been developed to rebut these claims. Defenders of this strategy argue that: (i) it respects the kind of knowledge Mary gains when leaving the black and white room, (ii) it is physically explicable and (iii) it explains why we are in the grip of a dualist illusion. There has been a lot of attention given to (i) and (ii) and rightly so. There is a real tension that physicalists must address in holding (i) and (ii)

together, but even if this tension can be resolved (iii) is left unaccounted.

META-ONTOLOGICAL MINIMALISM

Øystein Linnebo, Bristol, UK

A number of philosophers have been attracted to the idea that certain kinds of objects are "thin", in the sense that very little is required for there to be objects of these kinds. For instance, Frege and neo-Fregeans holds that nothing more is required for the existence of directions than that there be lines standing in the relation of parallelism; mathematical structuralists hold that nothing more is required for the existence of mathematical objects than that there could be concrete realizations of certain structures; and some metaphysicians hold that nothing more is required for the existence of mereological sums than that the relevant parts exist. I examine some problems with existing defences of "thin" objects. Then I develop what I take to be a better form of the view, based on an assimilation of objects to semantic values and a minimalist account of what is required for an expression to have a semantic value.

DESCRIPTIVE FUNCTIONS AND MATHEMATICAL FUNCTIONS

Bernard Linsky, University of Alberta, Edmonton, Canada

It has been said that Frege first "mathematicized" logic prior to carrying out his logicist program of reducing mathematics to logic, as illustrated by his account of concepts as functions from objects to truth values. Recently Peter Hylton has tried to understand Bertrand Russell's propositional functions by first distinguishing them from the more familiar mathematical functions on which Frege's work is based. My thesis is that Russell deliberately sought to reduce mathematical functions to propositional functions as part of his logicist program of reducing mathematics to logic. The notion of "descriptive functions" is defined in *Principia Mathematica* via the notion of definite descriptions with $*30x01. R'y = (ix)xRy$ Df. The expression "R'y" is read as "the R of y". If 'xRy' means "x is father of y" then 'R'y' is "the x such that x is father of y", or "the father of y". Combined with the theory of definite descriptions in *14 and then the theory of "relations in extension" in *21, the result is a reduction of mathematical functions to propositional functions. Comments on Frege's theory of functions from Russell's *Principles of Mathematics*, and some of the collected papers, support the thesis that Russell was suggesting this as a reductive account of mathematical functions. I also present the history of the reduction of functions to sets of ordered pairs, and its place in logical accounts of functions.

NATURALISMUS IN DER ETHIK: WAS MAN AUS DEN ENGPÄSSEN DES NEUEREN HEDONISMUS LERNEN KANN

Winfried Löffler, Innsbruck, Österreich

In jüngerer Zeit werden hedonistische Positionen der Ethik stark propagiert, die sich ausdrücklich auf ein naturalistisches Menschenbild berufen (siehe etwa B. Kanitscheider, *Hedonismus – eine naturalistische Ethik*, in: F.-J. Wetz, *Kolleg praktische Philosophie 1*, Stuttgart: Reclam 2008). Dass sie an irgendeiner Stelle eine zumindest gelinde Form dessen begehen müssen, was man oft als „naturalistischen Fehlschluss“ kritisiert, ist zu erwarten und wird auch durchwegs eingeräumt. Darin ist allerdings nicht das Hauptproblem des aktuellen Hedonismus zu erblicken (da auch andere Ethikbegründungen ihre normativen Zentralprämissen in ähnlich angreifbarer Weise gewinnen).

Ich möchte in meinem Vortrag auf einige weitere Engpässe hinweisen, die mir bedenklicher erscheinen: (1) Der naturalistische Hedonismus (NH) ist bisher vor allem als abwehrende, andere Moraltraditionen problematisierende Position (mit Schwerpunkt Sexualethik und Ethik am Ende des Lebens) fassbar und weniger als ausgearbeitete konstruktive Position; (2) Der NH als bislang rein individualethische Position würde einer reflektierten *sozialethischen* Ergänzung bedürfen (u.a. auch deshalb, um mögliche Inanspruchnahmen des NH durch politische Ideologien kontrollierbar zu halten); (3) Will der naturalistische Hedonismus eine leistungsfähige ethische Position sein, dann müsste er wesentliche Gehalte aus anderen Ethiktraditionen „zukaufen“, die unter seinen eigenen Voraussetzungen aber kaum zu rechartigen sind (Gleichheitspostulate, Universalisierbarkeitskriterien, Pareto-Kriterien etc.). Bisher ist die Tendenz zu beobachten, an solche Gehalte zwar im Wege einleitender Bekenntnisorhetorik zu appellieren, sie aber nicht systematisch einzubinden.

Diese Engpässe weisen auf ein tiefer liegendes Dilemma in der Naturalismuskonzeption hin, die dem NH zugrunde liegt, und wohl auf ein Dilemma des Naturalismus überhaupt.

THE MULTIREALIZATION OF MULTIPLE REALIZABILITY

Holger Lyre, Augsburg & Bonn, Germany

Multiple Realizability (MR) is still regarded as one of the principal arguments against any type reductionist account of higher-order properties and their special laws. In my talk I will argue that there is no unique MR but rather a multitude of categories of MR cases. In a slogan: MR is itself multi-realized. We can, therefore, not expect one unique reductionist strategy against MR as a anti-reductionist argument. The main task is rather to develop a suitable taxonomy of the variety of MR cases and to sketch possible reductionist answers for each category of cases. The talk will provide first steps into this direction.

METAPHORISCHE BEDEUTUNG ALS VIRTUS DORMITIVA

Jakub Mácha, Brno, Tschechien

Die Idee der metaphorischen Bedeutung sollte die Erklärung dafür sein, wieso Metaphern zu verstehen sind. Donald Davidson hat argumentiert, dass eine solche Idee keine Erklärungskraft besitzt. In diesem Aufsatz werden Wurzeln des Arguments bei Nietzsche und Wittgenstein untersucht. Wittgensteins „sekundäre Bedeutung“ weist eine signifikante Affinität zur metaphorischen Bedeutung auf. Auch die Weise, wie diese Idee bei ihm abgehandelt wird, kommt der von Davidson näher, obwohl in einem Punkt eine bestimmte Abweichung festzustellen ist. Abschließend wird eine mögliche Modifikation dieser Idee vorgeschlagen, damit sie dieser Kritik entgegen könnte. Die metaphorische Bedeutung muss etwas aussagen über die Metapher überhaupt, nicht über diese oder jene konkrete Metapher.

„VOM WEISZDORN UND VOM PROPHETEN“ – POETISCHE KUNSTWERKE UND WITTGENSTEINS „FLUSZ DES LEBENS“

Annelore Mayer, Baden, Österreich

War Wittgenstein ein Philosoph, dessen Gedankengänge durch strukturelle Phänomene der Dichtkunst beeinflusst, ja vielleicht sogar erst ermöglicht worden sind? Sein Umgang mit Poesie und seine persönlichen Äußerungen über Dichter lassen immerhin derartige Überlegungen zu. Wittgensteins Bemerkungen zu Gedichten Ludwig Uhlands und Aleksandr Sergeevič Puškins können vielleicht einen Einblick geben in sein Verständnis von Sprache und deren Eingebundenheit in ganz bestimmte „Flüsse des Lebens“, wo den einzelnen Wörtern nicht nur die grundsätzliche lexikalische Bedeutung zukommt. Eine konsequente Weiterführung solcher Überlegungen evoziert aber letztlich die Frage, ob Wittgensteins Philosophie ihrem Wesen nach selbst „poetisch“ sei und auch in diesem Sinne verstanden werden kann bzw. soll.

„DIE EINHEIT HÖREN“ – EINIGE ÜBERLEGUNGEN ZU LUDWIG WITTGENSTEIN UND ANTON BRUCKNER

Johannes Leopold Mayer, Baden, Österreich

Anton Bruckner ist ein Komponist, der von Wittgenstein in vielfältigen Zusammenhängen erwähnt wird. Dessen Musik scheint aber nicht nur seine eigene musikalische Erlebnisfähigkeit angeregt zu haben, sondern möglicherweise auch sein Denken. Ein auffälliges Merkmal von Bruckners Musik ist das Streben nach Einheit, nach der intensiven Verklammerung der einzelnen Elemente eines symphonischen Gebildes. Sind es derartige strukturelle Erscheinungen, welche auf Wittgenstein besonders anregend gewirkt haben? Es stellt sich die Frage, ob durch die Inbeziehungsetzung formaler Lösungen bei Bruckner und wittgenstein'scher Überlegungen gleichermaßen Einsichten gewonnen werden können in eine bestimmte Art philosophischen und musikalischen Denkens und ob Musik und Philosophie somit einander

Dienste leisten können – durchaus im Sinne befruchtender Interdisziplinarität.

COUNTERFACTUALS, ONTOLOGICAL COMMITMENT AND ARITHMETIC

Paul McCallion, St Andrews, UK

A major challenge in the philosophy of arithmetic is the integration of metaphysics and epistemology. One source of difficulty is the ontological commitment carried by arithmetical assertions. It is tempting to think that this source of difficulty is illusory – after all, the willingness of ordinary speakers to assert arithmetical sentences is on the face of it independent of their ontological beliefs. It is argued that plausible ontologically non-committing counterfactual paraphrases can be given for a predicative fragment of arithmetic. The moral is that commitment to numbers is revealed not in the use of numerical singular terms but rather in the acceptance of impredicative definitions of numerical predicates.

GETTING OUT FROM INSIDE: WHY THE CLOSURE PRINCIPLE CANNOT SUPPORT EXTERNAL WORLD SCEPTICISM

Guido Melchior, Graz, Austria

The canonical version of external world scepticism has the following structure:

Premise1: If P does not know that she is not a brain in a vat, then P does not have knowledge of the external world.

Premise2: P does not know that she is not a brain in a vat.

Conclusion: Therefore, P does not have knowledge of the external world.

Some philosophers attack premise1 by denying the underlying closure principle. I will investigate possible argumentations for and against premise2. I will show that premise2 is only true if additional internalistic conditions are fulfilled. I will conclude that the canonical version of the argument is inadequate and that premise1 must be replaced by a stronger internalistic premise. After presenting the adequate argument, I will show that this internalistic premise contradicts the closure principle underlying premise1. I will conclude that external world scepticism can only hold if the closure principle is rejected.

DISPENSING WITH PARTICULARS: UNDERSTANDING REFERENCE THROUGH ANAPHORA

Peter Meyer, Göttingen, Germany

An alternative to Robert Brandom's inferentialist, deflationary account of linguistic reference will be sketched in this paper. Inverting Brandom's order of exposition, anaphora is not explained in terms of inheritance of

substitutional commitments; instead, the pragmatically rooted anaphoric relation that holds between coreferential tokens of (singular) terms is taken as the starting point for a 'deflationary' theory of reference that shares many of the strengths of Brandom's theory of reference while avoiding the idiosyncrasies and shortcomings it has from a philosophical and linguistic point of view.

REICHENBACH'S CONCEPT OF LOGICAL ANALYSIS OF SCIENCE AND HIS LOST BATTLE AGAINST KANT

Nikolay Milkov, Paderborn, Germany

We defend the Friedman-Richardson thesis of a strong connection between Kant and the logical empiricism. To remind the reader, logical empiricists claimed that modern mathematical logic and mathematical physics resolutely abandoned the Kantian synthetic a priori. In contrast, Michael Friedman and Alan Richardson argue that Kant's scientific legacy in the twentieth century philosophy was much more complex and subtle. In fact, already Quine insisted that the logical empiricists still followed Kant, above all, in preserving the sharp distinction between the underlying spatiotemporal framework of physical theory, on the one hand, and the empirical laws formulated within this framework, on the other hand. This, however, was only the tip of the iceberg of latent Kantianism in the works of the logical empiricists. In this paper we are going to demonstrate this point with the example of Hans Reichenbach.

DEFINING ONTOLOGICAL NATURALISM

Marcin Milkowski, Warsaw, Poland

Many philosophers use "physicalism" and "naturalism" interchangeably. In this paper, I will distinguish ontological naturalism from physicalism. While broad versions of physicalism are compatible with naturalism, naturalism doesn't have to be committed to strong versions of physical reductionism, so it cannot be defined as equivalent to it. Instead of relying on the notion of ideal physics, naturalism can refer to the notion of ideal natural science that doesn't imply unity of science. The notion of ideal natural science, as well as the notion of ideal physics, will be vindicated. I will shortly explicate the notion of ideal natural science, and define ontological naturalism based on it.

THE LOGIC OF SENSORIAL PROPOSITIONS

Luca Modenese, Padova, Italy

The aim of this paper is to present a logical analysis of the sensorial propositions based on the principles of Wittgenstein's *Tractatus logico-philosophicus*. Using the structure of sensorial spaces (derived from proposition 6.3751), a logical form was obtained by the application of the method proposed in proposition 3.315. This logical form is expressed in a symbolic way, and the assumptions

needed to write it are indicated and discussed. The utility of the analysis proposed it is then shown resolving a classic problematic truth table.

A WITTGENSTEINIAN ANSWER TO STRAWSON'S DESCRIPTIVE METAPHYSICS

Karel Mom, Amsterdam, The Netherlands

This paper assesses an ambiguity in Strawson's exposition of his project of descriptive metaphysics. This ambiguity, which is traced back to Strawson's Kantianism, affects the method of Strawson's project: connective—in contrast with reductive—analysis. I argue that, due to its Kantianism, Strawson's project, notwithstanding its affinity with the later Wittgenstein, is unable to team up with the full potential of Wittgenstein's linguistic analysis.

PROPERTIES AND REDUCTION BETWEEN METAPHYSICS AND PHYSICS

Matteo Morganti, London, UK

This paper puts different forms of reductionism together. First, trope ontology is defended as a plausible form of nominalism about properties; secondly, according to a 'sparse' account of properties and to an Armstrongian 'scientific' approach, it is suggested that not all predicates correspond to real properties and it is the role of science to identify the basic 'building blocks' of reality. The result is a trope-theoretic interpretation of the fundamental level of reality that reduces all properties and entities to a set of basic tropes. At the same time, two antireductionist theses are advanced. First, it is not the case that there is only one level of basic, monadic and 'categorical' properties. Secondly, metaphysics should not be reduced to science.

FUNCTIONAL REDUCTION AND THE SUBSET VIEW OF REALIZATION

Kevin Morris, Providence, USA

The success of functional reduction crucially depends on what it is for one property to realize another. I consider the relationship between functional reduction and the subset view of realization, which has been advertised as preventing the reduction of most realized properties to realizers. In opposition to this, I argue that the subset view does not threaten reductionism about functional, realized properties.

ONTOLOGICAL REDUCTION AS AN INTERTHEORETICAL RELATION

C. Ulises Moulines, Munich, Germany

This paper argues that claims about the ontological reducibility of one domain of objects to another domain can best be analyzed, at least in scientific contexts, as claims about a particular kind of intertheoretical relationship between the theory dealing with one domain and the theory dealing with the other one. For this, in turn, it is most convenient to employ a model-theoretic, and more particularly a structuralist view of scientific theories: The identity criterion for any given scientific theory is essentially given by an array of several interrelated classes of models (or structures). Accordingly, ontological reduction is to be seen as a particular kind of a relation between the corresponding classes of models of the two theories that are supposed to be in a reductive relationship, both subsuming the same (or a similar) "experiential field". To explicate this kind of relationship the notion of an echelon-set proves to be crucial: The domains in the models of the reduced theory should be reconstructed as echelon-sets over the domains of the corresponding models of the reducing theory. But some other conditions have to be fulfilled as well related to the notion of "experiential field".

PHYSICAL THEORIES: THEIR MODELS VS. THEIR EQUATIONS

Thomas Müller, Utrecht, The Netherlands

Many questions in philosophy of science are posed and discussed in terms of models. According to the semantic view of scientific theories, theories simply are classes of models, so that all questions about scientific theories – e.g., whether they are deterministic or not, or what their relation is to other theories – would have to be discussed in terms of models anyway.

While the concept of a model has a variety of uses, for physical theories it is often possible to give a mathematically precise characterization of models, e.g., as classes of curves in a phase space. These curves in turn may often be determined as solutions of a theory's defining equations. Indeed it is common to answer questions about physical theories, conceived of as classes of models, by looking at the defining equations. This makes sense since these equations are often well studied by mathematical physicists, while there is little readily available information about the models. A good example of this strategy is provided by Earman's detailed investigations of the determinism or otherwise of various physical theories: the criterion for determinism of a theory is defined with respect to a class of models, but the assessment is given by studying the equations. Employing this strategy means to treat the models of a theory and the theory's defining equations as informationally equivalent.

In my talk I will pose a challenge to this equivalence assumption: with respect to the definition of determinism in terms of models, I will discuss possible examples of spurious assessments of determinism and of indeterminism. I will then argue that studying the equations (which is what people do) gives the right assessment of the situation, while relying on the models (which is what the definition demands) leaves room for unwanted isomorphisms. I will conclude by drawing a parallel to the discussion of branching vs. divergence in the metaphysics of continuants.

THE WRITING OF NIETZSCHE AND WITTGENSTEIN

Elena Nájera, Alicante, Spain

Nietzsche and Wittgenstein are the forerunners of two very different philosophical traditions. However, they share a fragmentary way of writing which forces us to reconsider the importance given to the literary form of thinking. Motivated by criticism of the egalitarianism and scientism of western culture, both authors' ways of writing question the capacity of everyday language to express thoughts and transform authenticity into something almost indescribable. In this paper we will analyse the characteristics of Nietzsche and Wittgenstein's works, as well as the reading conditions which they require, with the aim of determining the role that literary style plays in their respective proposals.

WORD-MEANING AND THE CONTEXT PRINCIPLE IN THE INVESTIGATIONS

Jaime Nester, Blacksburg, Virginia, USA

I tie Wittgenstein's notion of meaning-as-use to Frege's context principle. Though I refer to Frege's context principle, I make clear Wittgenstein attributes a broader scope to the context principle that extends beyond mere propositions. This move enables me to argue that Wittgenstein's meaning-as-use shows how Frege's context principle is open to circularity, while his own transformation of it is not. I make this argument by explaining what Frege's context principle is, and I show how it operates in conjunction with his other two guiding principles. Though I contrast Wittgenstein's meaning-as-use with Frege's commitment to the logical contribution that words make to the truth-value of propositions, I still tie Wittgenstein's conception of meaning to Frege's context principle in the way I have suggested.

MERELOGISCHE THEORIEN

Karl-Georg Niebergall, München, Deutschland

Unter mereologischen Theorien seien Theorien in prädikatenlogischen Sprachen mit "o" (d.h. "überlappt") als einzigem nichtlogischen Prädikat verstanden. Ich formuliere 1.- und 2.-stufige mereologische Theorien und untersuche sie bzgl. formaler, metalogischer Eigenschaften. Besonders interessieren mich dabei intertheoretische Beziehungen, wie z.B. die relative Interpretierbarkeit, zwischen ihnen. Zudem versuche ich auf die Frage, ob sie als Grundlegung der Mathematik dienen könnten, einzugehen.

NATURALISTIC ETHICS: A LOGICAL POSITIVISTIC APPROACH

Sibel Oktar, Istanbul, Turkey

Logical positivists accept Wittgenstein's view on the inexpressibility of ethics and construct their ethical views in line with their verification method. When you accept the idea that ethical judgements do not refer to matters of fact, you could either hold that they express nothing, i.e., they are nonsense or by a "Humean twist" state that they are expressions of sentiments, i.e., they express emotions. Or, you could pass over the problem in silence, as Wittgenstein seems to have done. I will be dealing with the idea of reductionism in ethics, mostly addressing Moritz Schlick's arguments. Schlick with a naturalistic view on ethics says that if we cannot reduce 'good' to a natural object we cannot express it. I think, although Schlick and Wittgenstein draw the same conclusion their conception of ethics is incompatible. For Wittgenstein ethics is absolute whereas Schlick only deals with the relative sense of ethics.

THE EVOLUTION OF MORALS

Andrew Oldenquist, Columbus, USA

The evolution of morals is explained in terms of (1) the evolution of innate human sociality and its bearing on morals, and (2) bridge theories which give usage descriptions of moral terms. From facts about innate sociality and language I shall derive "S believes A is wrong," but not "A is wrong." Social morality evolved as a combination of group egoism and impartial morality, each explainable causally in terms of evolved human sociality. Another bridge theory gives conditions under which revenge turns into retributive justice.

PRAGMATIC ACCEPTANCE: REPRESENTATIONAL OR NON-REPRESENTATIONAL, AND WHY?

Fabio Paglieri, Rome, Italy

I will start with a brief survey of the notion of acceptance in philosophy of science (van Fraassen, 1980), philosophy of action (Bratman, 1992; Cohen, 1992; Wray, 2001), and epistemology (Stalnaker, 1984; Engel, 1998; Tuomela, 2000). Out of this, I will focus on the notion of *pragmatic acceptance* (PA), i.e. the attitude a subject expresses when he/she acts consistently with a content that is either unrelated to or in contrast with his/her beliefs. I will then introduce a distinction between two varieties of PA: *strategic PA*, which is the type famously discussed by Bratman (1992), and *routine PA*, where the behavior is shaped in the absence of overt belief due to sub-personal action-guiding routines, like driving towards a new restaurant and yet mistakenly taking the road to your own home, as if you believed the destination to be your own home, although you certainly did not believe anything of the sort. My main question is whether these varieties of acceptance should be understood as representational concepts, in the (admittedly restrictive) sense that truth and falsity can be predicated of them.

Concerning strategic PA, I will argue, contra Bratman, that this is not a primitive notion on a par with belief, and that all the varieties of strategic PA discussed by Bratman (i) are reducible to a structure of beliefs and goals, and (ii) need to be so reducible, in order for the act of acceptance to be rational. If this is correct, then strategic PA is a representational concept, but a derivative one – and its representational nature is inherited from the representations it is made of, i.e. beliefs and goals.

Regarding routine PA, I will argue that this is not a representational notion, even though it is liable of ex post reconstruction in representational terms. What happens in routine PA is that a sub-personal process takes over control of the agent's behavior, with little or no role of conscious awareness at the personal level. What makes this mechanism non-representational is its procedural nature, since there is no obvious sense in which a process can be said to be either true or false. If this is correct, then when we re-describe routine PA in representational terms, e.g. "I drove towards home on the false assumption that we were headed there", we are in fact missing its nature.

Finally, I will outline some connections between these musings and current work on the proper interpretation of indicative conditionals (Leitgeb, 2007; in preparation), in which it is argued that accepting an indicative conditional is a metacognitive state, but not a metarepresentational one (for further details on the distinction, see Proust, 2007). Due to the application of Gärdenfors (1986) and Lewis (1976) impossibility results to Stalnaker's reformulation (1984) of the Ramsey test for conditional (1929), acceptance of an indicative conditional is taken to express a property of the cognitive system that utters it, rather than referring to some property of the world.

My suggestion is that this is akin to say that accepting a conditional commits the agent to a certain course of inferential action (i.e. drawing certain conclusions if presented with appropriate evidence), without implying belief in a conditional proposition. This suggests a similarity between acceptance of indicative conditionals and the standard view of PA, and in turn invites speculation on whether acceptance applies to all mental attitudes that guide our action without being believed. If so, then all acceptances would be pragmatic by definition, and some of the distinctions in the current literature would have to be reconsidered.

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LANGUAGE GAMES AND SOCIAL SOFTWARE

Rohit Parikh, Brooklyn College/CUNY, New York, USA

In his famous "five red apples" example Wittgenstein describes in some detail a short incident during which a note is sent requesting five red apples, and these are supplied by the shopkeeper. A lot of water has passed under the bridge since then and we understand in more detail how procedures like these are organized in society and the role which communication plays. In our talk we will say something about social procedures, signalling games and cheap talk.

SPECIES, VARIABILITY, AND INTEGRATION

Makmilller Pedroso, Calgary, Canada

According to the essentialist view, a biological species is a group of organisms that instantiates some intrinsic property not shared by the members of other species. However, this account is at odds with contemporary biology. Species exhibit a huge array of intra-specific variability whereas members of different species may be alike in terms of phenotypic and genotypic traits. Boyd (1991; 1999) proposes an account of species that intends to overcome these shortcomings of essentialism. The present paper has two goals. I first present the reasons why essentialism about species is in conflict with contemporary biology. Based on these reasons, I propose an argument against the view that Boyd's account of species is a satisfactory alternative to essentialism.

LIMITING FREQUENCIES IN SCIENTIFIC REDUCTIONS

Wolfgang Pietsch, Munich, Germany

Limiting frequencies – in spite of their bad reputation in the debate on the interpretation of probability – are found to be indispensable for an important class of theory reductions: whenever the higher-level theory deals with a large amount of entities of the lower-level theory, for example with a large number of molecules, neurons, or human beings. It turns out that mostly the elements of the higher-level theory can only be defined in terms of continuous and differentiable distribution functions for the lower-level entities. At least in principle, such continuous distribution functions always refer to an infinite number of entities, i.e. they rely on limiting frequencies. Because limiting frequencies are quite difficult to deal with conceptually, the mentioned type of reduction provides an interesting test case for different interpretations of probability.

THE KEY PROBLEMS OF KC

Matteo Plebani, Venice, Italy

The aim of the present paper is to show the limitations of the attempt made by Juliet Floyd and Hilary Putnam (Floyd and Putnam 2000) to defend Wittgenstein's remarks concerning Gödel's first theorem. Two objections can be raised against this interpretation of Wittgenstein. One (paragraph 1) is that the key claim that Floyd and Putnam (KC) attribute to Wittgenstein is compatible with mathematical realism, a type of philosophy of mathematics that the philosopher explicitly rejected. The other (paragraph 2) is that Floyd and Putnam's claim hinges upon an untenable way of distinguishing between mathematical theorems and metaphysical theses. Successively, (paragraph 3), I argue that some of Wittgenstein's pivotal theses in the philosophy of mathematics are involved in his discussion of Gödel's theorem and at the end of the day I cast some doubts on the alleged non-revisionist nature of his reflection on mathematics.

THE METAPHYSICAL RELEVANCE OF METRIC AND HYBRID LOGIC

Martin Pleitz, Münster, Germany

Our quantitative temporal reasoning can be faithfully represented only by metric tense logic (1, 2). There are further reasons to prefer metric to hybrid tense logic (3, 4), especially in the context of Arthur Prior's tense-theoretical project of reducing instants. In contrast to hybrid logic (5), metric logic generalizes only to those dimensions of logical space where the reduction of purported objects is acceptable: place and frame, but neither persons nor possible worlds (6-8). I draw on Thomas Müller's standpoint logic (6) and propose a formal criterion of general perspectival identification (7) to show that, unlike hybrid logic, metric logic solves Prior's problem of metaphysical reduction (8). But hybrid logic is unproblematic in the case of alethic modality and thus allows the (non-perspectival) reduction of possible worlds. Persons cannot be reduced by metric or hybrid logic (9). These arguments from logic to metaphysics presuppose a natural language stance (10).

REDUCTIONISM IN AXIOLOGY: THE CASE OF UTILITARIANISM

Dorota Probuca, Cracow, Poland

In my paper I present a very short survey of the system of utilitarian axiology, show its internal structure, and then, in terms of that system, explain what is reduction in utilitarian axiology. Under the utilitarian theory, axiology, epistemology and psychology should be integrated into one theoretical framework. Consequently, values have been reduced to some facts conceived of as empirical, psychosomatic data. Thus, reduction in utilitarian axiology is understood as a specific relation between values and facts. I show how that way of thinking, based on the primacy of individual experience, makes the axiological sphere very poor and eventually degrades human being.

ADAPTIVE CONTROL LOOPS AS AN INTERMEDIATE MIND-BRAIN REDUCTION BASIS

Joëlle Proust, Paris, France

Reduction can be defined as "the explanation of a theory or a set of experimental laws established in one area of inquiry, by a theory usually though not invariably formulated for some other domain." (Nagel, 1961). When the reduced theory contains terms or concepts that do not appear in the reducing theory, it is "heterogeneous". The motivation for introducing heterogeneous reducing terms is that having bridge laws between two classes of entities clarifies the causal structure underlying the reduced theory. Assuming that folk psychology and experimental psychology offer alternative, overlapping theories of mental states (i.e. explain and predict how the latter are caused, how they influence each other in perception, motivation and action), the relevant reduction basis for these theories is often taken to be an heterogeneous theory, whose objects are neural states. Neuroscience however, studies neural states at different time scales and functional levels (e.g. molecular, cellular, developmental, behavioral, etc). It will be argued that the level of adaptive control loops, where neurons are organized in feedforward and feedback causally contiguous assemblies, provides the relevant functional level where an adequate reduction basis for mental states can be obtained.

THE RETURN OF REDUCTIVE PHYSICALISM

Panu Raatikainen, Helsinki, Finland

The importance of the exclusion argument for contemporary physicalism is emphasized. The recent attempts to vindicate reductive physicalism by invoking certain needed revisions to the Nagelian model of reduction are then discussed. It is argued that such revised views of reduction offer in fact much less help to reductive physicalism than is sometimes supposed, and that many of these views lead to trouble when combined with the exclusion argument.

RETHINKING THE MODAL ARGUMENT AGAINST NOMINAL DESCRIPTION THEORY

Jiří Raclavský, Brno, Czech Republic

According to the Nominal description theory (NDT), the meaning of a proper name is identical with the meaning of the so-called nominal description. Kripke-like argumentation against NDT by means of modal argument can be doubted because names are introduced by means of a contingent baptizing act. I suggest refinements of the modal argument which filter out such objections. I distinguish two kinds of nominal descriptions: rigid and non-rigid; thus there arise two versions of the modal argument, which both are valid. But one of them has a conclusion (targeted against NDT) the truth of which remains disputable.

DIFFERENT WAYS TO FOLLOW RULES? THE CASE OF ETHICS

Olga Ramírez Calle, Granada, Spain

The aim of this paper is to illustrate a specific case of rule-following by focusing on moral discourse. The suggestion is that along with the differentiation between 'basic' and what has been called 'modus ponens' cases of rule-following, we may distinguish, or specify, a variant or 'three fold model' which seems to characterize moral terms (among others). I consider further how the moral case so understood fits Wright's distinction between *extension-determining* and *extension-reflecting* cases and conclude that a further distinction is called for: one not drawing on weather best opinion determines truth, but on the determinateness of meaning. That is, we may distinguish between *open-ended* and *invariably prefixed* extension determining conditions. The three fold model is a clear case of determinateness of meaning.

The paper reconsiders McDowell and Blackburn discussion on rule-following, departing from both and showing the need to adopt the proposed alternative.

ATYPICAL RATIONAL AGENCY

Paul Raymont, Toronto, Canada

A competent agent exercises her capacity for self-directing autonomy by acting in ways that are explainable by appeal to her reasons. Central features of such rationalizing explanations are brought to light by way of a comparison with the sort of understanding that is afforded by merely causal accounts of one's behaviour. The resulting observations are then applied to a recent decision by the Supreme Court of Canada, in which a psychiatric patient was deemed to be capable of making decisions about his own treatment. I conclude that when we make sense of someone's treatment decision by seeing it as an expression of his reasons, we thereby commit ourselves to the possibility that an atypical, seemingly strange treatment decision may nonetheless be an expression of genuine, rational autonomy.

INDEXWÖRTER UND WAHRHEITSKONDITIONALE SEMANTIK

Štefan Riegelnik, Wien, Österreich

In den letzten Jahren hat sich gezeigt, dass Bedeutungstheorien im Fall von Indexwörtern daran scheitern, das jeweils angenommene Verhältnis von Wahrheit und Bedeutung auf diese auch anwenden zu können. Ich möchte zeigen, wie der Anspruch auf eine einheitliche Erklärung von sprachlichen Aspekten beibehalten werden kann ohne die Besonderheiten von Indexwörtern dabei zu ignorieren. Untersucht wird dabei auch die Frage, welche Konsequenzen sich für die Disziplin Semantik ergeben würden, wenn man versuchen würde, den Gebrauch von Indexwörtern mit nichtsprachlichen Mitteln zu erklären.

TWO REDUCTIONS OF 'RULE'

Dana Riesenfeld, Tel Aviv, Israel

Rules, in general, have both a conventional and a normative aspect. Philosophical expectations are that the rules of language perform two tasks; they have to be both normative, i.e., capture the difference between correct and incorrect use of language, tell us how we ought to act/speak, and at the same time be conventional, i.e., depict the actual use of language, how we do in fact speak and act. I wish to argue that typically rules are either reduced to norms or to conventions. To exemplify my claim I chose to analyze the most ample and celebrated discussion of rules nowadays, the debate over Wittgenstein's remarks on rule following. I chose Kripke's well-known interpretation of Wittgenstein as representative of the reduction of rules to conventions and Baker and Hacker's critical response as representative of the reduction of rules to norms. Both reductions, I claim, have their merits but both are problematic as well. A normative outlook on rules will have trouble in accounting for their being actually in use by language speakers, while a conventional approach will run into difficulties in explaining their authoritative capacity.

CRITERIA OF ONTOLOGICAL COMMITMENT AND SECOND-ORDER QUANTIFICATION

Marcus Rossberg, St Andrews, UK

The paper compares three distinct proposed criteria of ontological commitment and shows that in special cases all three coincide. In particular, they deliver the same results when a first-order regimented language is supposed in which all singular terms are assumed to refer. It is investigated how the criteria cope with different kinds of languages—in particular, higher-order languages—and are found wanting to various degrees. A new criterion of ontological commitment is proposed to overcome in a unified and natural way the various problems identified for the other criteria.

SCIENTIFIC PRAGMATIC ABSTRACTIONS

Christian Sachse, Lausanne, Switzerland

In the philosophy of biology, the dominant research program for several decades consisted of varieties of ontological reductionism combined with epistemological anti-reductionism. In this framework, biological property types, because they are multiply realized, are not identical with physical property types; and thus, biology would remain indispensable to explain these genuine biological properties.

However, there are strong arguments in favour of an eliminativism that would suggest that the supposed scientific value of biology is in conflict with the thesis of ontological reductionism, namely, the completeness of physics, since there is no systematic link between biological and physical concepts. However, I consider that this problem can be solved by establishing such a systematic link in order to show how biological abstractions

can be scientific pragmatic ones even though they are not indispensable for scientific explanations. In this paper, I will describe just such a solution.

WITTGENSTEIN'S ATTITUDES

Fabien Schang, Nancy, France

What's wrong with modalities in (Wittgenstein 1922)? In (Suszko 1968), the writer argued that "Wittgenstein was somewhat confused and wrong in certain points. For example, he did not see the clear-cut distinction between language (theory) and metalanguage (metatheory): a confusion between use and mention of expressions". Furthermore, a modal logic was proposed in (von Wright 1986) as depicting Wittgenstein's bipolarity thesis in a S5 frame.

The aim of the present paper is to deal with the specific case of epistemic modal logic: such a logic of propositional attitudes assumes a philosophy of language that would violate Wittgenstein's two main assumptions.

WARUM MAN AUF TRANSCENDENTALPHILOSOPHISCHE ARGUMENTE NICHT VERZICHTEN KANN

Benedikt Schick, Berlin, Deutschland

Transzendentalphilosophische Argumente haben nicht den besten Ruf. Wer mit ihnen operiert, setzt sich leicht dem Verdacht aus, er wolle vom Lehnstuhl aus in vermeintlich philosophischer Überlegenheit den empirisch arbeitenden Wissenschaftlern anordnen, was denn bei ihrer Forschung herauskommen darf und was nicht. Des Weiteren scheint häufig vermutet zu werden, dass transzendentalphilosophische Argumente den so Argumentierenden auf einen Idealismus oder Konstruktivismus verpflichten. Beide Annahmen sind nicht zwingend. In diesem Beitrag soll dafür argumentiert werden, dass transzendente Argumentationen entscheidend für die ontologische Einordnung empirischer Ergebnisse sind. Dies geschieht anhand der aktuellen Debatte über das Verhältnis der Redeweise von Gründen zu neurobiologischen Erklärungen des menschlichen Verhaltens. Es soll gezeigt werden, dass nur durch einen transzendentalphilosophischen Test entschieden werden kann, wie der Fall einer geglückten Reduktion einer Beschreibungsebene A auf eine Beschreibungsebene B zu interpretieren ist: als eine Elimination von A oder als eine reduktive Erklärung von A, die die ontologische Relevanz von A unberührt lässt.

MAKING THE MIND HIGHER-LEVEL

Elizabeth Schier, Sydney, Australia

Kim (1998) has argued that a genuine robust physicalism does not leave any room for real, causally efficacious mental properties. Despite all of his concerns about the reality and causal efficacy of mental phenomena Kim does not eliminate all higher-level macro causation. Kim's problem with the mental is that most current cognitive

theories imply that the mind is not higher-level but higher-order. In this paper I argue that connectionism makes meaning higher-level and therefore by Kim's own standards puts meaning on the same footing as other real causally efficacious higher-level properties. The upshot is that we can side-step the current debate about mental causation by moving the mind to the shared uncontroversially real and physical common-ground.

ZWISCHEN HUMES GESETZ UND „SOLLEN IMPLIZIERT KÖNNEN“ – MÖGLICHKEITEN UND GRENZEN EMPIRISCH-NORMATIVER ZUSAMMENARBEIT IN DER BIOETHIK (TEIL II)

Sebastian Schleidgen, Tübingen, Deutschland

Siehe den Beitrag von Michael Jungert.

MENTAL CAUSATION: A LESSON FROM ACTION THEORY

Markus Schlosser, Bristol, UK

Consider the following dilemma for non-reductive physicalism. If mental events cause physical events, they merely overdetermine their effects, given the causal closure of the physical. And if mental events cause only other mental events, they do not make the kind of difference we want them to. This dilemma can be avoided once the dichotomy between physical and mental events is dropped. Mental events make a real difference if they cause actions. But actions, I will argue, are neither mental nor physical events. Actions are realized by physical events, but they are not type-identical with them. This gives us non-reductive physicalism without downward causation. The tenability of such a view has been questioned. Jaegwon Kim, in particular, has argued that every version of non-reductive physicalism is committed to downward causation. But the nature of action, I will argue, allows us to avoid this commitment.

SUPERVENIENZ, ZEIT UND ONTOLOGISCHE ABHÄNGIGKEIT

Pedro Schmechtig, Dresden, Deutschland

Präsentisten haben versucht, das gegen sie gerichtete Wahrmacher-Argument unter Berufung auf ein sog. Supervenienz-Prinzip der Wahrheit zu widerlegen. Es wird erklärt, worin das betreffende Argument besteht und welche Gründe es gibt, ein solches Prinzip einzuführen. Anschließend wird diskutiert, ob der damit verbundene Widerlegungsversuch erfolgreich ist. Das Ergebnis fällt insgesamt negativ aus. Selbst wenn das in Anspruch genommene globale Verständnis von Supervenienz gerechtfertigt ist, lässt es sich nur schwer mit einer präsentistischen Zeitkonzeption vereinbaren.

REDUCTION, SETS, AND PROPERTIES

Benjamin Schnieder, Berlin, Germany

Traditionally, in discussions about the connection between properties and sets attempts to reduce one of the categories to the other ran from properties to sets. But the only viable way of identifying properties with sets is encumbered with the metaphysical mortgage of Lewis's modal realism. In this paper, a proposal is made of turning the traditional attempts upside down: sets can be reduced to a certain subclass of properties, namely identity-properties.

CONTEXT-BASED APPROACHES TO THE STRENGTHENED LIAR PROBLEM

Christine Schurz, Salzburg, Austria

This paper is about the strengthened liar problem as it appears in formal theories of truth and in certain context-based approaches which analyze this problem. I will first consider a formal version of the strengthened liar sentence, and focus on two interrelated problems concerning our intuitive reasoning about this sentence. I will then take a look at context-based approaches to these problems.

STRUCTURAL CORRESPONDENCE BETWEEN THEORIES AND THE REDUCTION OF EMPIRICAL SUCCESS

Gerhard Schurz, Düsseldorf, Germany

"Assume a theory T has been strongly empirically successful in a domain of applications A , but was superseded later on by a superior theory T^* which was likewise successful in A , but has an arbitrarily different theoretical superstructure. Then under certain (natural) conditions, T contains theoretical expression(s) e which 'yielded' T 's empirical success, such that these T -expressions correspond (in A) to certain theoretical expression(s) e^* of T^* , in the form of a conditional equivalence "if A , then (e iff e^*)" which is entailed by the union of T^* with a T^* -consistent part of T ."

The theorem depends on a crucial condition concerning the predecessor theory T which requires that T contains a theoretical expression e which figures as a common cause for several empirical regularities by which it can be indicated or measured in the form of bilateral 'reduction' sentences. I illustrate my correspondence theorem by several historical examples, such as the phlogiston-oxygen example. In the second part of my talk I focus on the semantic and ontological interpretation of the correspondence theorem. It does not entail a reduction of the meaning. However, it entails the reduction of the (strong) empirical success of the theoretical term e within T to the empirical success of the theoretical term e^* within T^* . In other words, the T - T^* -correspondence explains why theory T was empirically successful in spite of the fact that the ontology of T 's theoretical part was false, from the viewpoint of the presently accepted theory T^* . In the final part I explain how the correspondence theorem justifies a

weak version of scientific realism without presupposing the reliability of the no-miracle argument.

THE ELIMINATION OF MEANING IN COMPUTATIONAL THEORIES OF MIND

Paul Schweizer, Edinburgh, UK

The traditional conception of the mind holds that semantical content is an essential feature distinguishing mental from non-mental systems. This traditional conception has been incorporated into the foundations of recent computational theories of mind, insofar as the notion of 'mental representation' is adopted as a primary theoretical device. But a fundamental tension is then built into the picture – to the extent that symbolic 'representations' are formal elements of computation, their alleged content is completely gratuitous. Computation is a series of manipulations performed on *uninterpreted* syntax, and formal structure alone is sufficient for all effective procedures. I argue that the computational paradigm is thematically inconsistent with the search for content or its supposed vehicles. Instead, computational models of cognition should be concerned only with the *processing structures* that yield the right kinds of input/output profiles, and with how these structures can be implemented in the brain.

DAVIDSON ON SUPERVENIENCE

Oron Shagrir, Jerusalem, Israel

Donald Davidson introduces supervenience to the philosophy of mind in his "Mental Events". Curiously, however, there has been little effort to explicate what Davidson means by supervenience. My aim here is to explicate the passages where Davidson discusses supervenience, and to point out that his notion of supervenience is very different from the one assumed in contemporary philosophy of mind.

SUPERVENIENCE AND 'SHOULD'

Arto Siitonen, Helsinki, Finland

The essay concerns the concept of supervenience and the issues contained by it. What does it mean that between x and y there is the relation of supervenience? This entails that x and y are facts or properties, y is reducible to x and explained through reducing it to x . Then, y is said to "supervene on x ". Supervenience is both a conceptual and an empirical dependence: y is not possible without x , and y is an effect of the development of x . These claims lead to a theory of strata and evolution of reality, as well as to a theory of how to order the reality. The basic stratum of reality consists of physical facts.

One may wonder how in the context of supervenience it is possible to account for values and norms, as distinguished from valuating and commanding. Behind this question lies the problem of how to build the moral dimension into the world of facts. The claim presented in the article is that this can be done only by accepting the

irreducibility of values and norms. In treating this issue, we come across a problem that concerns the expressive possibilities of language.

RULE-FOLLOWING AS COORDINATION: A GAME-THEORETIC APPROACH

Giacomo Sillari, Philadelphia, Pennsylvania, USA

I argue that the notion of rule-following can be reduced to the notion of equilibrium in a coordination game. The communitarian solution to the Kripkean skeptical paradox hinges on the ideas of convention and normativity. Lewis's account of convention as a solution to recurrent coordination games contains the game-theoretic, *strategic* element that—I claim—is crucial for the skeptical solution. Moreover, the game-theoretic analysis indicates a possible origin for the normativity of rule-following. Can the reduction proceed any further? Lewis's account of convention relies on the idea that players coordinate by identifying successful *precedent* as the salient action. I argue that reliance on precedent is to be understood in terms of Wittgenstein's notions of *bedrock* and *form of life*. Finally, I argue that the game-theoretic analysis *stops* at bedrock and that attempts to further reduce the phenomenon of rule-following lie beyond its scope.

ONTIC GENERATION: GETTING EVERYTHING FROM THE BASICS

Peter Simons, Leeds, UK

This is an essay in speculative metaphysics in support of a form of reductionistic physicalism, based on two bold conjectures. Firstly, that everything is comprised in the one spatio-temporal-causal cosmos. Secondly, that everything is either ontologically basic, or is generated from this basis by combinatory operations which are themselves basic. The basis contains two kinds of element: formal factors and material (non-formal) particulars forming natural taxa. The two hypotheses rule out both ontic pluralism and ontic emergence. Generation and its converse reduction are here understood solely ontically, and not in terms of knowledge, language or explanation. There is a widespread discrepancy between the nature of what there is and how we cope with it cognitively. Ontic monism is therefore combined with scientific, linguistic and explanatory pluralism, drawing the sting of much anti-reductionist argument. Further, much anti-reductionism is micro-reductionism, based on an impoverished conception of what is ontically basic, namely the mereologically simple. With a richer and more adequate palette of formal factors, the prospects for ontic generation being able to encompass life, mind, intentionality, language, culture and science are enhanced. It still remains an uphill struggle however, and the "higher levels of being" can only be cognitively comprehended via a variety of intellectual operations which facilitate understanding while (largely falsely) seeming to denote various entities of reason. The assumption of reality for such items being largely incompatible with physicalistic monism, this reductionism is congenial to nominalism. The resulting metaphysical position cannot be recommended for its comfort, but cognitive discrepancy allows, even predicts, that discomfort be compatible with truth.

REPRESENTATION IN ACTION

Corrado Sinigaglia, Milan, Italy

My talk will discuss the role of representation in action, especially in the light of certain relevant neuro-physiological findings, which indicate that acting and representing are deeply intertwined. The functional properties of the cortical motor system (in particular of two specific classes of sensorimotor neurons, i.e. canonical and mirror neurons), show that action execution and object and/or other action perception could share the same neural source, suggesting that the motor and representational components of action are more closely entangled than previously thought. As I shall argue, this entanglement can be fully comprehended only on the basis of a motor approach to intentionality that involves a refinement of the standard notion of representation, going beyond the reduction both of the *motor* components of action to mere physical movements (that is, devoid of any intentional/representational meaning) and of the *representational* components of action to abstract and disembodied representations (devoid of any motor relevance).

SCIENCE AND THE ART OF LANGUAGE MAINTENANCE

Deirdre C.P. Smith, Bergen, Norway

In his now classic novel, *Zen and the Art of Motorcycle Maintenance: An Inquiry into Values*, Robert Pirsig tells how the ghost of his previous self, Phaedrus, is driven mad through efforts to unite the 'classical' and 'romantic' forms of understanding he saw unnecessarily at war in modern technological society. The solution to this split in human understanding, was to see both as aspects of a deeper reality he named 'quality'. Although the goal of this struggle was to expand human rationality beyond the classical forms to which it had remained confined since Ancient Greece, the result was the loss of a grip on any reality. In this paper, I will explore Phaedrus's failure as a parallel to how Wittgenstein felt philosophy went wrong in understanding language. Here I enlist the help of Michael Polanyi ('classical'), Virginia Woolf and E.M. Forster ('romantic') as advocating a similar redirection of rationality.

A DIVISION IN MIND. THE MISCONCEIVED DISTINCTION BETWEEN PSYCHOLOGICAL AND PHENOMENAL PROPERTIES

Matthias Stefan, Innsbruck, Austria

Chalmers distinguishes between psychological and phenomenal properties: Psychological properties encompass the majority of our mental life and can be defined functionally, i.e. by their causal role. Accordingly, there is no reason to deny that psychological properties can be reductively explained. In contrast, phenomenal properties cannot be functionalized and thus resist reductive explanation. Chalmers, therefore, rejects physicalism. Kim adopts Chalmers' distinction. According to him, almost everything in the world, including the psychological part of the mental, can be reduced to the

physical basis. Even though phenomenal properties still resist integration into a physicalistic worldview, we have something near enough to physicalism.

I want to question the distinction between psychological and phenomenal properties. Our mental life is fundamentally phenomenal. The phenomenal aspect of the mind effects the way we act, so that explaining behaviour and cognition without considering the phenomenal part of the mind doesn't make sense.

SCEPTICISM, WITTGENSTEIN'S HINGE PROPOSITIONS, AND COMMON GROUND

Erik Stei, Mainz, Germany

In this paper, I want to make use of one aspect Ludwig Wittgenstein developed in *On Certainty* (Wittgenstein 1984) that I take to be useful for answering the radical sceptical challenge, namely the notion of *Hinge Propositions* (HP). To some extent, this approach is inspired by Michael Williams (2003), who incorporated the notion into his version of Epistemic Contextualism. I will argue that some aspects of this position can be sharpened by putting them on par with Robert Stalnaker's conception of *Common Ground* (Stalnaker 2002) and thus yield a more systematic answer to scepticism.

NEUTRAL MONISM. A MIRACULOUS, INCOHERENT, AND MISLABELED DOCTRINE?

Leopold Stubenberg, Notre Dame, USA

In this paper I defend Russell's version of neutral monism against three objections. Galen Strawson has recently argued that NM faces a dilemma. Either it takes experience seriously, in which case it is committed to a miraculous notion of emergence; or it does not, in which case it is committed to the incoherent idea that experiences are mere appearances. I will show that Russell's NM avoids both horns of this dilemma. But it may seem that it does so at the cost of turning NM into a form of mentalism—idealism or panpsychism. This is a classic objection to NM. In the second half of the paper I argue it does not apply to Russell's version of the doctrine.

A SOMEWHAT ELIMINATIVIST PROPOSAL ABOUT PHENOMENAL CONSCIOUSNESS

Pär Sundström, Umeå, Sweden

This paper develops a proposal about phenomenal consciousness that is (somewhat) eliminativist in two respects. First, regarded in the light of some common ways of conceiving of consciousness, the proposal is "deflationary". Second, it opens up space for a development in which what we now naturally think about as consciousness turns out to be many different things.

NEUROPSYCHOLOGICAL FOUNDATIONS OF PHILOSOPHY

Patrick Suppes, Stanford, USA

The slow but steady accretion of the case for an empirical view of all human phenomena calls for a revision of much thinking in philosophy that still retains unfortunate remnants needing the kind of critique that Kant gave earlier, but now applied to a wider circle of philosophical ideas. The purpose of this lecture is not to make a systematic analysis of principles of a completely general kind, but rather to give four extended examples of problems that have often been thought of in philosophy or in mathematics as not being really empirical in nature. They will be presented as naturally empirical from a psychological and a neural standpoint. The first example tries to bring out the empirical character of the ordinary use of the concept of truth, and the psychological methods by which the truth of ordinary empirical statements is assessed. The second example deals with beliefs, especially that of Bayesian priors. I find unsatisfactory the thinness of the psychological foundations that are provided, for example by the forefathers of the modern Bayesian viewpoint, Frank Ramsey, Bruno de Finetti, and Jimmy Savage. The third example deals with problems of rational choice and rational thinking in general. The deeper psychological account of how choices are actually made is a matter of extended psychological development of concepts not usually brought to bear on the theory of rational choice. Finally, in the fourth example, I set forth a psychological thesis about an important aspect of modern mathematics that is troublesome for many people. The purpose of this example is to stress the psychological nature of verifying—mind you, not discovering, but verifying—the correctness of informal mathematical proofs, which still dominates the practice of mathematicians. The topic of neural phenomena, in particular neural computations, comes last, and I will say no more at this point.

IMPLIZIERT DER INTENTIONALE REDUKTIONISMUS EINEN PSYCHOLOGISCHEN ELIMINATIVISMUS? FODOR UND DAS PROBLEM PSYCHOLOGISCHER ERKLÄRUNGEN

Thomas Szanto, Wien & Graz, Österreich

Die Kognitionswissenschaften treten mit dem Anspruch auf, eine wissenschaftlich ernstzunehmende, gleichwohl nicht-reduktionistische Erklärung jener Eigenschaft psychischer Zustände zu liefern, die unter dem Titel Intentionalität Karriere gemacht hat. Demgegenüber werde ich im Vortrag argumentieren, dass der Kognitivismus in seiner klassischen und bis dato einflussreichsten Version, wie sie von J. Fodor entwickelt wurde, keine psychologisch relevanten Erklärungen liefert. Entgegen seiner Zielsetzung, die intentionale Eigenschaften und Konzepte in das psychologische Erklärungsmodell zu integrieren, anstatt sie aus dem psychologischen Beschreibungsvokabular zu eliminieren, basiert der Kognitivismus – so meine Ausgangsthese – auf der metatheoretischen Grundannahme des intentionalen Irrealismus und folgt einer reduktionistischen Heuristik. Ich werde im Anschluss an J. Haugeland verschiedene Typen von Reduktionen entsprechend der jeweiligen psychologischen Erklärungsmodelle bzw. der ontologischen Behauptung hinsichtlich

psychologisch relevanter Explananda unterscheiden und zeigen, dass der Kognitivismus à la Fodor zu einem Typ von Reduktionismus führt, den man als psychologischen Eliminativismus charakterisieren kann.

STRUCTURE OF THE PARADOXES, STRUCTURE OF THE THEORIES: A LOGICAL COMPARISON OF SET THEORY AND SEMANTICS

Giulia Terzian, Bristol, UK

Various authors have argued there is a structural similarity underlying certain set-theoretic and semantic paradoxes, which should therefore be expected to have structurally similar solutions. We argue that this should follow from a more general result establishing that a genuine structural similarity holds between set theory and semantics themselves. The paper then investigates whether this analogy is satisfied by the key normative principles underlying these theories, and whether two further methodological constraints are met.

THE ORIGINS OF WITTGENSTEIN'S PHENOMENOLOGY

James M. Thompson, Halle, Germany

Despite the improvement in the state of research concerning Wittgenstein's "middle period" since the publication of the *Nachlaß*, the topic of Wittgenstein's phenomenology and its origin(s) have not received adequate attention. This paper focuses on the latter issue by taking a closer look at several of the potential sources of Wittgenstein's sudden and surprising use of the terms "phenomenology" and "phenomenological language." The obvious question as to a possible link to Husserl and Heidegger (among others) will be addressed.

OBJECTS OF PERCEPTION, OBJECTS OF SCIENCE, AND IDENTITY STATEMENTS

Pavla Toráčová, Prague, Czech Republic

Abstract: The paper presents a brief investigation into the nature of theoretical identifications like "heat is molecular motion," "water is H₂O," etc. It uses Kripke's insight regarding the way terms can refer to objects, namely that their reference is not determined by the description expressed by the terms. It shows that although this helps us to understand the structure of theoretical identifications it, at the same time, raises certain questions, especially the question about the very possibility of the scientific enterprise. Opposing Kripke's account, the paper then presents Strawson's explanation of theoretical identifications, especially his emphasis on the common-sense realistic view about phenomenal properties. The paper concludes with the suggestion that the nature of identity statements can be understood as consisting in a dynamic alteration of two manners of use of terms, the "Kripkean" and the "Strawsonian" ones.

THE REDUCTION OF LOGIC TO STRUCTURES

Majda Trobok, Rijeka, Croatia

The linchpin of the structuralist account of logic endorsed by Koslow has two components: one is the definition of an implication structure, while the other amounts to the definition of the logical operators as functions defined relative to an implication structure.

In this paper I first present the basic tenets of the structuralist account of logic. Then, in the discussion which follows I give reasons for rejecting certain definitions which form part of the theory and thirdly I point out some general difficulties arising from such an account of logic.

REDUCING SETS TO MODALITIES

Rafał Urbaniak, Ghent, Belgium

The paper is a step towards providing an interpretation of the cumulative hierarchy of sets which makes no reference to abstract objects, and instead, roughly speaking, uses phrases like 'it is possible to introduce a name token such that ...'. I start with a modal interpretation of plural quantification, extend the strategy to another theory, a theory of the so-called cumulative naming structures. It is closer to ZF but there are two things missing yet: the axiom of the power set and the axiom of extensionality don't hold. I hint at another theory that does validate all the axioms of ZF in a fairly intuitive interpretation of the language of ZF but is essentially a theory of ways name tokens can be.

ARE LAMARCKIAN EXPLANATIONS FULLY REDUCIBLE TO DARWINIAN ONES? THE CASE OF "DIRECTED MUTATION" IN BACTERIA

Davide Vecchi, Vienna, Austria

In 1988 John Cairns and associates published "The origin of mutants". This article officially re-opened the debate on the possibility of directed mutation in bacteria. After 20 years we can safely say that the Neo-Darwinian picture of bacterial evolution was incomplete: bacterial mutation is a much more complicated and interesting phenomenon than previously imagined. The central question tackled in this paper is whether Darwinism is more fundamental than Lamarckism. I will focus on such issues as: can Lamarckian explanations be fully reduced to Darwinian ones? Are Lamarckian concepts redundant? Do we have sufficient evidence to treat putative Lamarckian processes as causally inert?

A NOTE ON TRACTATUS 5.521

Nuno Venturinha, Lisbon, Portugal

In this paper, I shall focus on the topic of generality in Wittgenstein's *Tractatus*, more specifically on the problems raised by §5.521. In his "Introduction" to the book, Russell seems to make an incoherent assumption, alluding to a "derivation of general propositions from conjunctions and disjunctions", a perspective actually ascribed to Frege and Russell himself at §5.521. However, in the 1930s, Wittgenstein would astonishingly criticize his earlier conception of generality, which took "(x).fx" to be a logical product and "(x).fx" to be a logical sum. Following the lead of H.O. Mounce, I shall try to make clear that Wittgenstein's criticism is directed at his earlier view that the content of general propositions can be *enumerated*, not at the way in which he *introduced* such propositions. But, on the basis of the third of the surviving wartime notebooks and the so-called *Prototractatus*, I go deeper into the question, analysing some hitherto neglected aspects.

THE PLACE OF THEORY REDUCTION IN THE MODELS OF INTERDISCIPLINARY RELATIONS

Uwe Voigt, Bamberg, Germany

Theory reduction is a classical theme of the philosophy of science and at the same time an important issue of interdisciplinary relations. More precisely: Reduction is one way in which theories of different disciplines can „relate“. To be more precise: It is a one-way leading to the absorption of one discipline by another. Strangely enough, those two aspects of theory reduction usually are not considered together. Moreover, interdisciplinarity is an urgent topic in the sciences themselves, but largely disregarded by the philosophy of science (cf. its being neglected or marginally treated in Carrier 2006; Chalmers 2001; Hacking 1996; Charpa 1006; Poser 2001; Schurz 2006). Due to these circumstances, the question of the place of theory reduction in a model of interdisciplinary relations just is not asked. This contribution is an attempt to overcome this desideratum at least in a first approach.

ETHIK ALS IRREDUZIBLES SUPERVENIENZPHÄNOMEN

Thomas Wachtendorf, Oldenburg, Deutschland

In der neueren Reduktionismus-Diskussion wird immer wieder der Frage nachgegangen, ob Theorien der Ethik nicht im Grunde auf andere Theorien zurückgeführt werden können. Wäre dies der Fall, hätte die Ethik ihren Stand als eigenständige philosophische Disziplin verloren und wäre vielmehr fortan nur eine besondere Art der Beschreibung eigentlich nicht-ethischer Sachverhalte. Will man eine Antwort auf die Frage nach der Möglichkeit einer solchen Reduktion finden, muss man zunächst klären, was die Rede von Ethik überhaupt meint, also was man unter diesem Begriff verstehen will. Versteht man darunter das sprachliche Korrelat einer menschlichen Praxis, zeigt sich, dass Ethik ihrem Wesen nach supervenient zu dieser Praxis und außerdem hyperkomplex ist. Eine Reduktion

der Ethik insgesamt ist deshalb allein aus wissenschaftstheoretischen Gründen nicht möglich. Das heißt in der Konsequenz, dass selbst eventuell erfolgreiche Bemühungen, bestimmte „ethische Zustände“ beispielsweise auf neuronale zurückzuführen, die Ethik als vom einzelnen unabhängige Klasse von Sätzen nicht berühren.

DAS 'SCHWIERIGE PROBLEM' DES BEWUSSTSEINS – ODER WIE ES IST, PERSON ZU SEIN

Patricia M. Wallusch, Frankfurt am Main, Deutschland

John R. Searle beklagte in den von ihm 1984 abgehaltenen *Reith lectures*, dass in den zeitgenössischen Diskussionen so wenig Interessantes über das Phänomen des Bewusstseins gesagt wird. Diesen Umstand führt er darauf zurück, dass das Bewusstsein seit jeher als ein Merkmal des Mentalen aufgefasst wird, das als mit unserem wissenschaftlichen Weltbild unverträglich gilt (Vgl. Searle 1984, 15f).

In den vergangenen zwei Jahrzehnten hat sich im Feld der Philosophie des Geistes diesbezüglich viel getan. Der aussichtsreichste Kandidat einer Theorie, in deren Rahmen es möglich sein könnte, das Bewusstsein zu erklären, wurde in ihren Grundzügen von David Chalmers vorgestellt. Mit ihm stelle ich die Gründe heraus, warum die meisten bisherigen Ansätze keinen substantiellen Erklärungsfortschritt bezüglich des Bewusstseins erzielen konnten. Schließlich lege ich dar, wie ein angemessener Rahmen einer nicht-physikalistischen Theorie des Bewusstseins aussehen könnte, und eröffne infolge eine interessante – wenig bekannte – Perspektive auf ein altes Problem.

THE SUPERVENIENCE ARGUMENT, LEVELS, ORDERS, AND PSYCHOPHYSICAL REDUCTIONS

Sven Walter, Osnabrück, Germany

Kim's so-called "Supervenience Argument" is one of the most important arguments against nonreductive physicalism, the position that dominates current philosophy of mind. Kim has formulated various versions of this argument since the late eighties, and in his latest book (Kim 2005), he has defended it against various criticisms that have been raised by his opponents. The current paper assesses Kim's response to one of the most important criticisms, the so-called "Generalization Argument" according to which, if sound, the Supervenience Argument would not only show that there is no mental causation, but also that there is no biological, no chemical, no geological causation etc.

NO BRIDGE WITHIN SIGHT

Daniel Wehinger, Innsbruck, Austria

According to Joseph Levine there is an “explanatory gap” between the mental and the physical: Phenomenal properties, so it seems, cannot be fully explained in physical terms. This and other arguments have led David Chalmers to the conviction that a dualism of properties must be assumed. Chalmers claims that his dualist theory provides the tools necessary for building a bridge. This claim is questioned by Karen Bennett. According to her, it is just as difficult for the dualist to solve the “hard problem”, i.e. the question of how phenomenal properties arise from the physical, as it is for the physicalist. In view of the subjectivity of the mental I agree with Bennett's criticism. However, I do not approve of her conclusion that this amounts to an impeachment of dualism. I rather argue that the insolubleness of the hard problem is part of the dualist doctrine.

ON THE CHARACTERIZATION OF OBJECTS BY THE LANGUAGE OF SCIENCE

Paul Weingartner, Salzburg, Austria

As a consequence of what has been elaborated in chapter 2 to 4 we may say that Russell's idea of characterising an individual object with the help of a definite description expressing uniqueness is applicable to individual objects of everyday life and to (physical) objects of Classical Mechanics. But it is only approximately applicable with restrictions to objects in the domain of Quantum Mechanics and in the domain of Special and General Theory of Relativity.

THE FUNCTIONAL UNITY OF SPECIAL SCIENCE KINDS

Daniel A. Weiskopf, Tampa, Florida, USA

The view that special science properties are multiply realizable has been attacked in recent years by Shapiro, Bechtel and Mundale, and others. Focusing on neuroscientific kinds, I argue that these attacks are unsuccessful. I suggest that, contra Shapiro, diverse mechanisms can converge on common functional properties at multiple levels, and that this is compatible with the existence of constraints on the evolution of cognitive systems. Finally, I briefly sketch how such functional categories might constitute special science kinds.

TRANSCENDENTAL PHILOSOPHY AND MIND-BODY REDUCTIONISM

Christian Helmut Wenzel, Puli, Taiwan

The notion of “representation” is central to Kant's transcendental philosophy. But projects of naturalization

and mind-body reductionism tend to reduce talk of representation to stories of causality and evolution. How does Kant fare in this context?

TO WHAT EXTENT CAN DETERMINISM BE ELIMINATED IN FAVOUR OF INDETERMINISM AND INDETERMINISM BE ELIMINATED IN FAVOUR OF DETERMINISM?

Charlotte Werndl, Cambridge, UK

The general theme of this paper is the elimination, or replacement, of deterministic descriptions by stochastic ones and of stochastic descriptions being replaced by deterministic ones. In particular, I discuss how far this replacement can be pushed. I tackle these issues for discrete-time measure-theoretic dynamical systems, which widely occur in the sciences, e.g., in meteorology, population dynamics, and generally Newtonian and statistical mechanics. I start by showing that all stochastic descriptions can be replaced by deterministic ones and, conversely, that most deterministic descriptions can be replaced by stochastic ones. I argue that often there are no clear, general principles that call for either the deterministic or stochastic description. Given all this, it might still be hypothesised that the deterministic descriptions needed to replace the stochastic ones are very different from the usual deterministic systems. I provide examples showing that this is not the case. Also, it might be conjectured that the stochastic descriptions needed to replace the deterministic ones at every level of observational accuracy are very different from, and much less random than, the paradigmatic stochastic systems, e.g., Bernoulli or Markov processes. By adapting and extending recent results in ergodic theory, I show that also that conjecture is misguided: (aperiodic and irreducible) Markov processes are the most random stochastic descriptions by which deterministic descriptions can be replaced at every level of accuracy. They model a wide and important class of deterministic systems. All this illustrates that deterministic and indeterministic descriptions are interconvertible in a strong way.

FROM TOPOLOGY TO LOGIC. THE NEURAL REDUCTION OF COMPOSITIONAL REPRESENTATION

Markus Werning, Düsseldorf, Germany

When we look at the structure of thought, what we find is logic. No matter what our starting point is: the semantic analysis of linguistic expressions, the psychology of cognition, or a philosophical theory of reasoning, we usually arrive at some variant or extension of first order predicate logic that characterizes the underlying structure of thought. However, when we look at the cortex, what we find is topology. The functional role of neurons is determined by topological neighborhood relations. Given that the various kinds of neurons are by and large homogeneously distributed over the cortex, the major difference in the functional role of neurons is grounded in which neurons are connected to each other, and which are not. In topological terms: Who's in the neighborhood of

whom. If we presuppose the materialist assumption that the cortex is what brings about thought, any reductive explanation has to show how the logical structure of thought is necessitated by the topological organization of information in the cortex.

THE CALCULUS OF INDUCTIVE CONSTRUCTIONS AS A FOUNDATION FOR SEMANTICS

Piotr Wilkin, Warsaw, Poland

In this paper, I will attempt to present an alternative, non-set-theoretic framework for formalizing natural language semantics. I will argue that using intuitionistic type systems is better suited for this goal than using model theory and allows for both more flexibility and more expressiveness. I will try to give an outline of the Calculus of Inductive Constructions, a modern intuitionistic type system used in the proof assistant Coq and to show its applications in the field of natural language semantics. Especially, I will try to connect this approach with the categorial grammars of Montague and Ajdukiewicz from one side and with the formalization of intensional fragments of the natural language from the other. My goal is to show that the Calculus of Inductive Constructions is especially well suited for expressing those concepts and that it is possibly a noteworthy alternative to traditional approaches in formalizing natural language.

THE FOUR-COLOR THEOREM, TESTIMONY AND THE A PRIORI

Kai-Yee Wong, Hong Kong, China

This article aims to evaluate the purported empirical character of computer-assisted proof, as suggested by Thomas Tymoczko and others. Tymoczko famously argued that the proof of the Four-Color Theorem introduced a new, empirical method of proof, forcing us to modify the traditional conception of mathematical argument as a priori reasoning. Detlefsen and Luker contended that Tymoczko's suggestion entailed that *typically* mathematical proofs were empirical. My chief interest is to raise some objections to a line of thought common to both of these arguments, with a view to outlining an account of the a priori which allows the possibility of a priori knowledge obtained by appeal to computers or through testimony. Drawing on some recent discussions by Tyler Burge, this account gives a broad construal of the non-justificatory, 'enabling' role that experience is held to play in knowledge and cognition, allowing us to argue that the purported empirical character of the appeal to computers pertains only to the role experience plays in enabling our access to the a priori warrant provided by computer proof.

THE METAPHYSICS AND EPISTEMOLOGY OF ABSTRACTION

Crispin Wright, St Andrews, UK & New York, USA

The paper explores, in the light of recent discussions by Sider, Eklund, Hawley, Cameron and others, what if any 'metaontology' is helpful to, or demanded by, the epistemological and ontological role of abstraction principles when they are applied to the foundational purposes of 'neo-Fregeanism' in the philosophy of mathematics.

THE COMPREHENSION PRINCIPLE AND ARITHMETIC IN FUZZY LOGIC

Shunsuke Yatabe, Toyonaka, Japan

We investigate a theory of property which satisfies what Myhill called *Frege's principle*, and we examine how much arithmetic we can develop by it. We concentrate the case of the set theory H with the comprehension principle in Lukasiewicz infinite-valued predicate logic, and we highlight two features of sets in H, non-extensionality and circularity, and by the latter we can develop a non-standard arithmetic.

INTENTIONAL FUNDAMENTALISM

Petri Ylikoski / Jaakko Kuorikoski, Helsinki, Finland

Methodological individualism is often argued for on the basis that intentional explanation is a privileged or fundamental form of explanation for human behavior. We argue that this argument is based on a number of false presuppositions concerning the nature of explanation in general, and on an unwarranted emphasis on one particular type of explanatory virtue.

NEW HOPE FOR NON-REDUCTIVE PHYSICALISM

Julie Yoo, Easton, USA

Non-reductive physicalism is committed to two theses: first, that mental properties are ontologically autonomous, and second, that physicalism is true. Jaegwon Kim has argued that this view is unstable – to honor one thesis, one must abandon the other. In this paper, I present an account of property realization that addresses Kim's criticism and that explains how the two theses are indeed comfortably compatible.

A DEFENSE OF LOGICISM

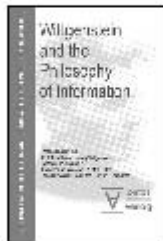
Edward N. Zalta, Stanford, USA

In this talk, I extend the argument in the paper "What is Neologicism?" co-authored with Bernard Linsky (*Bulletin of Symbolic Logic*, 12/1 (June 2006): 60-99). Linsky and I argued that if the notion of reduction used by the original logicians is *weakened*, a new [sic] form of neologicism emerges that can be generally applied to arbitrary mathematical theories. In the present talk, however, I develop positive arguments for thinking: (1) that the notion of reduction assumed by the early logicians is the *wrong* notion of reduction given their epistemological motivations and goals; (2) that the notion of "ontological reduction" defined in "Neo-logicism? An Ontological Reduction of Mathematics to Metaphysics" (*Erkenntnis*, 53/1-2 (2000): 219–265) allows one to attain the epistemological goals driving logicism; (3) that when the comprehension principle for object theory is replaced by the equipotent abstraction principle, the resulting system is a logic, given that we accept that weak second-order logic is indeed (part of) logic even if full second-order logic is not; and thus (4) logicism is true: since arbitrary mathematical theories are ontologically reducible in the logic of object theory, mathematics is reducible to logic.

ARE TRACTARIAN OBJECTS WHITEHEAD'S PURE POTENTIALS?

Piotr Żuchowski, Łódź, Poland

The paper aims at presenting some parallels between Tractarian ontology and A.N. Whitehead's process metaphysics, particularly with regard to characteristics given to objects and pure potentials in both systems respectively. This correspondence corroborates to the introduced interpretation of Tractarian objects according to which they could be conceived not as individual things (substances) but forms of definiteness of facts. This is – as I suggest – what Fact Ontology holds: fundamental entities are facts, other elements of reality have derivative existence. Finally I indicate some difficulties raised by characteristics given by Whitehead and Wittgenstein to entities considered.

Volume 6

Alois Pichler, Herbert Hrachovec (Eds.)

Wittgenstein and the Philosophy of InformationProceedings of the 30th International Ludwig Wittgenstein-Symposium in
Kirchberg, Volume 1

ISBN 978-3-86838-001-9

356pp., Hardcover, EUR 79,00

This is the first of two volumes of the proceedings from the 30th International Wittgenstein Symposium in Kirchberg, August 2007. In addition to new contributions to Wittgenstein research (by N. Garver, M. Kross, St. Majetschak, K. Neumer, V. Rodych, L. M. Valdés-Villanueva), the book contains articles with a special focus on digital Wittgenstein research and Wittgenstein's role for the understanding of the digital turn (by L. Bazzocchi, A. Biletzki, J. de Mul, P. Keicher, D. Köhler, K. Mayr, D. G. Stern), as also discussions - not necessarily from a Wittgensteinian perspective - of issues in the philosophy of information, incl. computational ontologies (by D. Apollon, G. Chaitin, F. Dretske, L. Floridi, Y. Okamoto, M. Pasin and E. Motta).

Volume 7

Herbert Hrachovec, Alois Pichler (Eds.)

Philosophy of the Information SocietyProceedings of the 30th International Ludwig Wittgenstein-Symposium in
Kirchberg, Volume 2

ISBN 978-3-86838-002-6

326pp., Hardcover, EUR 79,00

This is the second of two volumes of the proceedings from the 30th International Wittgenstein Symposium in Kirchberg, August 2007. It contains selected contributions on the Philosophy of media, Philosophy of the Internet, on Ethics and the political economy of information society. Also included are papers presented in a workshop on electronic philosophy resources and open source/open access.

Volume 8

Jesús Padilla Gálvez (Ed.)

Phenomenology as Grammar

ISBN 978-3-938793-91-6

224pp., Hardcover, EUR 59,00

This volume gathers papers, which were read at the congress held at the University of Castilla-La Mancha in Toledo (Spain), in September 2007, under the general subject of phenomenology. The book is devoted to Wittgenstein's thoughts on phenomenology. One of its aims is to consider and examine the lasting importance of phenomenology for philosophic discussion. For E. Husserl phenomenology was a discipline that endeavoured to describe how the world is constituted and experienced through a series of conscious acts. His fundamental concept was that of intentional consciousness. What did drag Wittgenstein into working on phenomenology? In his "middle period" work, Wittgenstein used the headline "Phenomenology is Grammar". These cornerstones can be signalled by notions like language, grammar, rule, visual space versus Euclidean space, *minima visibilia* and colours. L. Wittgenstein's main interest takes the form of a research on language.

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