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The University of the Sunshine Coast
June 29–July 2, 2000

The annual conference of the Australasian Association for Logic was hosted by the University of the Sunshine Coast and held at Halse Lodge, Noosa, Queensland, from Thursday, June 29, through Sunday, July 2, 2000. Fourteen papers were presented. We welcomed Professor Hartry Field, of New York University, as our guest speaker and we also welcomed another international visitor: Professor William Lycan of the University of North Carolina. The conference was organized by Lesley Roberts of the University of the Sunshine Coast.

Abstracts of contributed talks given at the conference follow.

Abstracts of contributed talks

► J. C. BEALL AND GREG RESTALL, *Logic, impossibility, and contradiction*: *Avoiding the slippery slope from paraconsistency to dialetheism*.
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Dialetheism is the view that some sentences are true and false. Trivialism is the view that all sentences are true and false. Whilst some philosophers endorse dialetheism no philosophers (and certainly no normal people) endorse trivialism. Accordingly, anyone endorsing dialetheism must endorse a paraconsistent logic, a logic that allows for inconsistency without exploding into trivialism. So much is perfectly plain: dialetheism requires paraconsistency. But what about the converse? Does paraconsistency require dialetheism? In other words, does rationality lead directly from endorsing a paraconsistent logic to endorsing dialetheism? Graham Priest thinks so, and our papers addresses his argument. Priest has recently argued that endorsing a paraconsistent logic leads, by the weight of rational gravity, down a slippery slope to dialetheism. We shall argue that, pace Priest, the slope is not slippery at all, and that, in particular, a proper understanding of Logic affords the opportunity to endorse explosion (EFQ) and non-explosion without thereby endorsing dialetheism. In the end, the key turns on how one treats one's "cases" in explicating validity, where validity amounts to truth-preservation over all cases.

► ROSS BRADY, *A rejection system for first-degree metacomplete logic*.
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The standard Hilbert-style of axiomatic system yields the assertion of theorems, via the

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assertion of axioms and the use of rules. There has been very little work done on the axiomatic rejection of appropriate formulae, which we will call rejection-theorems. This rejection would be achieved by rejection of certain rejection-axioms and, by use of rejection-rules, to establish these rejection-theorems. The ideal to aim for would be for the theorems and rejection-theorems to be mutually exclusive and exhaustive.

That is, if a formula A is a theorem then it is not a rejection-theorem, and if A is a non-theorem then it is a rejection-theorem. The first of these which ensures no overlap between the theorems and the rejection-theorems, we will call rejection-soundness. The second of these which ensures that all non-theorems are rejected, we will call rejection-completeness.

It would be nice to develop rejection-sound and rejection-complete systems for a good range of (decidable) sentential relevant logics. To start this process, we provide such a rejection system for the first-degree metacomplete logic L_1, which is the common first-degree fragment of a range of weak metacomplete logics which are all (Slaney) M1 logics (including basic logic B and logic DJ of meaning containment).

► MARTIN BUNDER, *Conditions under which theorems in intuitionistic implicational logic have more than one normalised proof*.
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We show, using simple type theory, that if a theorem of $H\rightarrow$ has more than one normalised proof then some propositional variable has at least three occurrences in it, one positive and two negative.

► HARTRY FIELD, *Non-objectivity in mathematics and logic*.
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Do questions that are undecidable in our fullest mathematics nonetheless have determinately correct answers? A recent type of argument advanced (with some variations) by McGee, Shapiro, Parsons and Lavine purport to show that the answer is 'yes' pretty much across the board, even in the case of such set-theoretic questions as the size of the continuum, where a non-objectivist view has been frequently held. I will begin by criticizing this type of argument. While I think that non-objectivity is highly plausible for such undecidable questions in set theory, it is extremely implausible in the case of number theory. But can this division be given a principled basis? I will consider two very views of objectivity that try to provide such a basis, and some awkward consequences that might arise from accepting one of them.

► DOMINIC HYDE, *Vague murmurings*.
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A re-evaluation of the various logical responses to the phenomenon of vagueness. Just how radical a logical challenge is the phenomenon? Is completeness or consistency threatened; i.e., must a logic of vagueness be paracomplete or paraconsistent? What of modus ponens and identity principles? What consequences does the phenomenon of higher order vagueness have for the meta-theory of a logic of vagueness? It is hoped that my vague murmurings on the matter will give an idea of where I think the truth lies and invite debate.

► WILLIAM LYCAN, *Conditionals damn well do have truth-values*.
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This paper attacks both the idea (Adams, Gibbard, Edgington) that indicative conditionals are not truth-apt and the New Horseshoe theory (Jackson, Bennett) that indicative conditionals are truth-functional despite having different assertion conditions. A number of direct arguments are given for the more standard view that indicatives have non-truth-functional truth conditions.

► EDWIN MARES, *A paraconsistent theory of belief revision*.
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The classically based AGM theory of belief revision takes consistency and conservativeness to be the driving forces of belief revision: When integrating new information, we attempt to maintain a consistent belief set and to do so we sometimes have to relinquish those beliefs that are relatively less entrenched. Strong paraconsistentists hold that we should abandon the consistency constraint. But what should replace it? I present a theory in which an agent's epistemic attitude towards the world is represented by a set of beliefs and a set of propositions that she denies. On this view, consistency is replaced with a weaker notion of coherence—the sets of beliefs and denials cannot overlap one another. The details of the resulting theory are explained and we will discuss the nature of the revision, contraction and expansion operators of the theory.

► ROBERT K. MEYER AND JOHN SLANEY, *A, still adorable*.
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Our paper will develop further the system of (ordered Abelian group) logic A that I presented with Slaney in 1981 (JSL abstract). A has a characteristic model in the integers, with non-negative ones counting as *true*. It extends Girard's linear logic LL (minus Girard's "exponentials"). It is naturally *paraconsistent* as well (and, being Post complete, is a *maximal logic* in its class). We present a Łukasiewicz style rejection formulation of A, whence non-theorems as well as theorems are recursively enumerable. (This clinches the point, not that further evidence was needed, that A is decidable.) Moreover while LL makes sense of the *addition* of information, A also allows its *subtraction*.

► GRAHAM PRIEST, *Fuzzy relevant logic*.
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This paper raises the question of what a logic should be like if it is both fuzzy and relevant. Three answers are investigated. In the first, standard world-semantics for relevant logics are "fuzzified". In the second, algebraic semantics for relevant logics are simply reinterpreted, showing that we can think of standard relevant logics as already fuzzy. The third approach is like the second, except that some extra machinery is employed to enable the definition of a defeasible conditional. The second approach validates modus ponens; the first and third do not.

► GREG RESTALL, *Constructive logic for all*: *Formal issues*.
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In recent work with J. C. Beall, I have argued that one can and should be pluralist about logical consequence. One issue for this view is as follows: constructive reasoning seems to motivate results inconclusive with classical reasoning, especially when it comes to higher mathematics, such as analysis. In this paper I explain why this is no problem for the pluralist. I show how results about choice sequences, and realisability semantic only *seem* to motivate a conflict with classical logic. When understood properly, constructive theories are genuinely subtheories of classical ones.

► LESLEY ROBERTS, *Ifs, buts and maybes*: *Probabilistic semantics for B+, B and BM*.
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I give a probabilistic semantics for three relevant logics. While the world structure of the simplified standard semantics is given analogous probabilistic treatment, the semantics for B and BM do not appeal to an analogue of the Routley Star.

► SUSAN ROGERSON, *Investigations into a class of robustly contraction free logics*.
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In this paper I investigate a class of purely implicational logics that are robustly contraction free (there is no contracting connective definable in terms of the primitive connectives of the logic) and that trivialize naïve comprehension. In doing so I shall show that there are an infinite number of counter-examples to Restall's conjecture that a logic will support naïve comprehension if and only if that logic is robustly contraction free, strengthening the result of Butchart and Rogerson. (*Naive comprehension and contracting implications* presented at the AAL conference, July 2–4, 1999, University of Melbourne.)