
THE REASONER

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§1

EDITORIAL

Reasoning is a research topic that spans several disciplines; consequently it is hard for researchers to keep abreast of the latest developments in the field as a whole. Blogs are useful in this respect, but many find that the time they have for reading about developments in the field is not the time they are in front of the computer. This calls for a freely-available digest that can be printed as well as read on screen.

The Reasoner is a monthly digest highlighting exciting new research on reasoning and interesting new arguments. It is interdisciplinary, covering research in, e.g., philosophy, logic, AI, statistics, cognitive science, law, psychology, mathematics and the sciences.

The Reasoner welcomes submissions

- Submitted articles should concern some exciting new research on reasoning, or an interesting new

argument (concerning anything), or a new perspective on a topic or historical figure connected with reasoning. Submissions should be 100–1000 words, should be comprehensible and of interest to those in other disciplines, and should be positive in outlook.

- Submitted items of news can be of any length, though shorter pieces are more likely to be published.
- Letters should be 100 words or less, and may concern, e.g., previously published articles.
- Conference announcements should be kept brief, and should include a title, dates, location and url.
- Job announcements should be brief, including a job title, the name of the hiring institution or company, and url.
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All submissions should be sent to TheReasoner@kent.ac.uk; please see www.thereasoner.org for further submission instructions. And please submit liberally! We want this gazette to reflect the views and interests of the reasoning community, so please send us your thoughts on a regular basis.

Jon Williamson, editor
Philosophy, University of Kent

§2 FEATURES

Why the substitution of co-referential expressions in a statement may result in change of truth-value

This, you might think, is one of the simplest examples of a valid inference:

Fx
 $x = y$
Therefore Fy

But there are well-known instances in which it fails. For ‘ F ’ substitute ‘You know . . . to be your brother’, for ‘ x ’ substitute ‘your brother’ and for ‘ y ’ substitute ‘this man wearing a hood’, and suppose that your brother is indeed the man in question wearing a hood. This delivers the ancient paradox of the Hooded Man (and also reminds us of why the police want ‘hoodies’ banned in shopping malls in England). Again, for ‘ F ’ substitute ‘Hammurabi believes that . . . is identical with the Morning Star’; for ‘ x ’, ‘The Morning Star’ and for ‘ y ’, ‘The Evening Star’. This delivers a variant of a famous puzzle due to Frege, for, as readers of this bulletin know (but Hammurabi didn’t), The Morning Star=The Evening Star=Phosphorus=Hesperus=Venus.

The examples just cited are of intensional (propositional attitude) contexts that are said to be ‘referentially opaque’. Since, in each case, the reasoning from premises to conclusion is no good, it might seem that what we need is an intensional logic that declares the inference invalid (e.g. Graham Priest 2002: ‘The Hooded Man’, *JPL* 31(5): 445–467). But there are two difficulties with this suggestion. First, the non-substitutivity phenomenon (i.e. the fact that we may not preserve the truth-value of ‘ Fa ’ if, for ‘ a ’ we substitute the co-referential ‘ b ’) does not appear to be restricted to intensional contexts. Superman flies. Superman is identical with Clark Kent. But Clark Kent doesn’t fly. No mention of intension. Similarly, we are inclined to say (of course, such inclinations and intuitions need to be examined) that Lois kissed Superman before she kissed

Clark Kent, but obviously she did not kiss Superman before she kissed Superman, so the argument to that conclusion is invalid. (This type of example was first introduced into the literature by Jenny Saul.) Second, an intensional logic, like any other formal logic, studies the *form* of arguments, and, if the form of an argument is declared valid (invalid) then every argument of that form is declared valid (invalid). Yet it appears that there are arguments that share the form of the ‘kissing Superman’ one, but that are valid. As Julia Tanney elegantly explains (University of Kent teaching resource):

Normally, I would be very sympathetic with the claim that there was a time, t_1 , at which Lois kissed Superman but not (yet) Clark Kent. I note however that the sense in which Lois (at t_1) had not (yet) kissed Clark Kent would be the same as that in which Oedipus, although having slept with Jocasta had not slept with his mother. But Jocasta hanged herself and Oedipus gouged out his eyes because there was no question for them of not accepting substitutivity.

The only noteworthy change from the first (kissing) argument to the second is that, sexually, we have moved from second base to fourth, but the arguments have a common structure—yet differ in validity-value. And this is traceable to the fact that we think ‘Oedipus slept with Jocasta before he slept with his mother’ is *false*. So it seems that the formal logical (non-semantic, non-pragmatic) route to solving the substitutivity problem is a dead end.

Difficult problems sometimes attract desperate measures for dealing them. One might, for example, simply brush aside the non-intensional cases—since Clark Kent really is Superman, if one of them flies then so does the other, because he’s not really ‘other’, but exactly the same guy. As for intensional contexts, one could say, as Frege did, that, in such contexts, a referring expression does not refer to its normal referent, but to something entirely different—its *sense* (Sinn). In Frege’s theory two expressions that refer to the same object may nevertheless possess different senses. The sense (Sinn) of a referring expression is, roughly speaking, the way to locate its referent. Hence, even when $a = b$, for intensional ‘ F ’, the statements ‘ Fa ’ and ‘ Fb ’ may be about different subjects (different Sinne) and hence may differ in truth-value.

Frege’s solution smells badly of adhocery and, besides, his theory about the senses of names has been refuted (well, as close as anything gets to being refuted in philosophy) by a clutch of delightfully clear arguments marshalled by Saul Kripke in *Naming and Necessity*. However if, under the influence of Kripke, you become a Direct Reference theorist, holding that the sole semantic contribution made by a proper name is to name the

name's bearer, then, if you are willing to assert that Lois believes that Superman flies, you must also say that the statement 'Lois believes that Clark Kent flies' is true, and somehow persuade yourself and others that those who think it false are making a certain kind of mistake. This also does not look like a good road to follow.

I have sketched some versions of the problem of non-substitutivity and indicated that the two standard approaches to the problem fail. Where does that leave us? We noticed a *difference* between the case of Lois kissing Superman and that of Oedipus sleeping with Jocasta. Here's another difference to consider: Lois is ignorant of the fact that Clark Kent is Superman, and so we (or most of us, anyway) want to say that someone who tells us 'Lois believes that Clark Kent flies' is speaking falsely. But suppose that I am addressing someone whom I know [knows Clark Kent, often sees him donning his supersuit, but does not know that, when suited up, he goes under the name of 'Superman', and may not even know that, when so kitted out, he flies]. I could speak the *truth* (and intend to speak the truth) by telling that person: 'Lois believes that Clark Kent flies'. Two token utterances of the same type sentence, but *differing* in truth-value on different occasions of use. I shall, in the next issue of this bulletin, try to show how the non-substitutivity problem is solved by attending to the difference that context makes to the meaning of an utterance.

Laurence Goldstein

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Humanists and Scientists

C.P. Snow observed that universities are largely made up of two broad types of people, literary intellectuals and scientists, yet a typical individual of each type is barely able, if able at all, to communicate with his counterpart. Snow's observation, popularized in his 1959 lecture *Two Cultures and the Scientific Revolution* (reissued by Cambridge 1993), goes some way to explaining the two distinct cultures one hears referred to as "the humanities" and "the sciences."

Snow's lecture is a study of these two cultures, their rules, hierarchies, and educational traditions, which raises the following question: to what degree are "the humanities" and "the sciences" a consequence of how we organize and fund modern universities? Rather than a happenstance of interests and temperament, perhaps "humanist" and "scientist" are largely bureaucratic categories.

Certainly there is some basis for grouping academic subjects as we do. Physics, chemistry, and biology are the pillars of experimental science. Although the skill-sets and methods differ from each, all aim to reconcile theory purporting to govern some part of the natural world against the evidence. However the subjects

studied by the humanities typically don't yield to experimental data; there are no experimental branches of history, no laboratories of literature. It is tempting to view the importance placed on experimental data as an indication of how scientific a subject is. The hard sciences put experimental evidence front and center, whereas the humanities either do not or cannot.

Although this is a familiar picture, it is nevertheless misleading. Mathematics has no more to do with experimental data than poetry, and professional cooking is as concerned with experimentation as any of the social sciences. But cooking is clearly a trade, not an academic subject, much less a science.

I want to suggest that we should instead think of academic subjects as dividing into three categories rather than two. There are *formal* disciplines, *experimental* disciplines, and *interpretive* disciplines. This three-way distinction was proposed by Henry Kyburg in *Science and Reason* (1990, 16) to better represent the activities which make up a field of study. There is much to recommend this way of thinking about academic disciplines, particularly to those who are engaged in interdisciplinary work.

Mathematics is essentially a formal discipline, the empirical sciences are largely empirical disciplines, and the traditional fine arts and letters are the leading exemplars of the interpretive disciplines. But nearly all fields draw upon skills from each category. Biology and literature are often concerned with formal structures, mathematics and psychology are sometimes concerned with interpretation, and psychology and literature are at various times interested in the facts about the society or group that produced an observed behavior, or whose members wrote a series of plays.

Moreover, some fields are a turbulent mix of disciplinary types, and one can trace many ideological disputes which erupt in those fields to a disagreement over what type of discipline the subject is taken to be. Philosophy is often regarded to be a turbulent field, although I think that it is primarily a formal discipline and that most of the fuss is misplaced. Artificial intelligence, on the other hand, is a good example of a turbulent field: there are very sophisticated formal and empirical branches to the field, and these types continue to clash in nearly all of the main branches of research.

It is unclear whether this 3-way distinction would help in organizing a university, as Kyburg suggested when he proposed it. But the categories are helpful for a researcher to have in mind when working on a topic like *reasoning*. It is not so much that the topic of reasoning calls upon results from the cognitive, computational, and decision sciences, and insights from philosophy, mathematics, and linguistics—although it certainly does. Rather, the more important point is that a topic like reasoning (and biology, I would add) calls upon a range of formal, experimental, and interpretive *skills*.

And these demands do not readily match the university culture that Snow described.

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The Case of Sally Clark: Some Thoughts on Probability, Law and their Intersection

The controversy about the usage of statistical evidence in the criminal context has a long history. A recent case provides a good opportunity to question its prospects and limits. Sally Clark's two baby boys, Christopher and Harry, were both found dead in two separate events. Christopher's death was at first treated as SIDS ("cot death"). Post mortem examination revealed unexplained injuries on Harry, and Sally was later charged with the murder of both children. In her defence, Sally insisted that she did not kill the babies and suggested that they died from cot death. To dispute this, the prosecution brought Professor Sir Roy Meadow, an expert paediatrician, who testified that the chance of two cot deaths in one family is 1 per 73 million. Sally was convicted of murder (*R v Clark* Crown Court, 9.11.1999). She appealed and adduced expert testimony of two distinguished statisticians (Professor Phil Dawid and Dr Ian Evett), who pointed out some implausible assumptions and crude mistakes made by Professor Meadow. The court accepted that the statistical analysis was erroneous but upheld the convictions because the case against Sally Clark was still "overwhelming" (*R v Clark* (No 1) [2000] EWCA Crim 54, [238]). However, a few years later, her husband found evidence in the hospital archives of microbiological results indicating that Harry died from natural causes. Based on this fresh evidence, a second appeal was allowed. Sally Clark was set free on 29 January 2003 after serving more than three years in prison (*R v Clark* (No 2) [2003] EWCA Crim 1020).

This case raises several interesting issues about the usage of statistical evidence in the criminal context. First, the calculation that led to the 1 per 73 million likelihood of two SIDS in the same family was challenged by the defence because the calculation assumed the two events to be independent and thus the probability of each to be the same. Professor Dawid and Dr Evatt emphasised that the chance of a second cot death in the same family might be more likely than the chance of a first cot death. ([139]-[140]). In the media, a genetic study published after the conviction (February 2001) was presented as a breakthrough undermining the conviction (Sweeney and Law, "Gene find casts doubt on double 'cot death' murders", *The Observer*, 15.7.2001). Mr Clark regarded this number as "an arrow through the fog" which gave the jury a compelling case against Sally (*ibid*).

However, the importance of the flaws in the statistical calculation should not be overrated. The assump-

tion of independence was challenged repeatedly during the actual trial in the Crown Court, *before expert statisticians were involved*. The defence referred to a study which showed that cases of a second cot death are much commoner than argued by Professor Meadow (Professor Emory's study, at [116] and [118]). The defence also brought testimony which emphasised the possibility of unknown factors (Professor Berry's testimony, at [122]-[123]). The alternative figure suggested by the defence was 1 per 46,000. The jury was warned by the trial judge that the 73 million figure should be regarded with caution ([128]) and the judge reminded the jury about the evidence that the risks were inherently greater in a family which had already had a SIDS death ([124]).

Moreover, it seems that the role played by statistical evidence, regardless of whether it was correctly calculated or not, was not vital to the prosecution case anyway. Putting aside the rhetorical influence this evidence had on the jury, the statistical evidence was unessential to the prosecution's case because even the defence's experts admitted that contrary to Sally's position, SIDS could be excluded as a possibility ([109]) and therefore the statistical evidence was not required to support this exclusion. Thus, it is hard to accept that the erroneous conviction resulted solely from flaws in the statistical analysis. The judges in the first appeal were right in regarding the statistics as a "side-show" ([126]) and in dismissing mistakes in the statistical analysis as a ground of appeal.

Even if the statistical evidence had been correctly analysed and had been crucial to the case, using it properly would have encountered further practical and theoretical difficulties. The defence's statistician experts argued that the figure had significance only when compared with the probability of the alternative hypothesis, a double infant murder in two separate events by their mother ([152] and [160]). Yet, the practical feasibility of gathering such statistical information is questionable. Counting convictions for double infant murder amongst the general population of mothers is too crude. It assumes that murderers are always successfully caught and convicted and that convictions are always correct, an assumption which is ironically undermined by the case of Sally Clark itself.

The more serious difficulties are theoretical. In his testimony, Professor Dawid identified some generic difficulties in deriving case-specific probability from frequencies ([138]). However, the problem of using statistical evidence in the legal context is unique in at least one way. The criminal law assumes that human beings should be regarded as autonomous individuals who have the capacity to freely choose their conduct, at least to some extent. Admittedly, this assumption is contentious in metaphysics, yet it is a fundamental element in our contemporary criminal law (Ashworth, 28-30). Using statistical evidence to prove the individual's mis-

conduct means inferring his/her misconduct from that of other people similar to him/her. Such an inference treats the accused as a predetermined mechanism whose behaviour can be learned from the behaviour of other similar mechanisms (David Wasserman, “The Morality of Statistical Proof and The Risk of Mistaken Liability”, 13 *Cardozo Law Review* 935, 952). It ‘ignores the defendant’s capacity to diverge from his associates or from his past, thereby demeaning his individuality and autonomy’ (Wasserman, 943). Whilst the use of generalisations in legal fact-finding is inevitable, some types of inference should be restricted. Perhaps then this case suggests some caution with regards to using statistical evidence and analysis in the criminal context.

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Why Counterpossibles are Non-Trivial¹

Subjunctive conditionals with impossible antecedents (or counterpossibles) are standardly treated as vacuously true, the classical lore being that if an impossibility were to obtain, anything would follow. We provide several reasons to steer clear of the standard reading.

NON-TRIVIAL COUNTERPOSSIBLES

On Lewis’ account (1973: *Counterfactuals*, Harvard University Press), a subjunctive of the form ‘if it were the case that p , it would be the case that q ’ (represented as ‘ $p \square \rightarrow q$ ’) is true iff every closest p -world is a q -world. The account entails that a subjunctive with an impossible antecedent is counterpossibles are vacuously true. For if there are no p -worlds, then vacuously all closest p -worlds are q -worlds. Accordingly, counterpossibles are trivially and uninformatively true: an impossible antecedent counterfactually implies the truth of anything, and the truth-value of a counterpossible does not depend on the truth-value of the consequent.

Lewis’ semantics makes good predictions about ordinary subjunctives. But it fails to accommodate the intuition that some counterpossibles are false and some non-trivially true. Consider:

(1) If Hobbes had (secretly) squared the circle, sick children in the mountains of South America at the time would not have cared. (Daniel Nolan 1997: ‘Impossible Worlds: A Modest Approach’, *NDJFL*, 38(4): 325–527)

(2) If intuitionistic logic were the correct logic, then the law of excluded middle would be valid.

¹Thanks to the following for helping us to think more clearly about counterpossibles: JC Beall, Dave Chalmers, Scott Crothers, John Greco, Carrie Jenkins, Boris Kment, Tim Pawl, Graham Priest and Timothy Williamson.

The intuition is that (1) is non-vacuously true and (2) false. The consequent of each seems relevant to the truth-value of the whole. But, on Lewis’ account, both are vacuously true. This is one piece of evidence against the account.

AN OBJECTION TO NON-TRIVIAL COUNTERPOSSIBLES

Timothy Williamson (2006: *The Philosophy of Philosophy* Lecture 3, Carl G. Hempel Lectures, Princeton) argues that such intuitions run into severe difficulties. Consider:

(3) If $5 + 7$ were 13, then $5 + 6$ would be 12.

The intuitive pull is to think that (3) is non-vacuously true. But Williamson argues that if we play along and think through the case, trouble emerges. Accepting (3) as non-vacuously true, $5+5$ would be 11, and $5+4$ would be 10, and ..., and $5+(-5)$ would be 1. Accordingly, 0 would be 1. Holding the context fixed, it follows that

(4) If the number of answers I gave (to a given question) were 0, then the number of answers I gave would be 1,

which is plainly false.

Williamson’s discussion is not convincing. The reading of (4) which is plainly false is one where the closest antecedent-worlds are *possible*. For the closest possible worlds in which the number of answers I gave is 0, are not worlds where the number I gave is 1. Instead, if we play along with the intuition, the following counterpossible comes out true:

(5) if 0 were 1 and the number of answers I gave were 0, then the number of answers I gave would be 1.

This sounds non-vacuously true, and should be treated as such by one countenancing (non-deductively closed) impossible worlds.²

Our reply to Williamson might appear unsatisfying if you think we wrongly interpreted Williamson as holding the context fixed across the inference from (3) to (4). But if context is not held fixed then (4) doesn’t follow from (3), and Williamson loses his point against a non-vacuous reading of (3). Either way (context fixed or not), Williamson’s objection fails to convince.

SOME ARGUMENTS FOR NON-TRIVIAL COUNTERPOSSIBLES

A further piece of evidence against the vacuity account is this: counterpossibles are frequently employed by philosophers to informatively develop various necessarily false theories. If all counterpossibles were trivially

²An impossible worlds account is proposed in Nolan (1997) and is further developed by the present authors in an unpublished manuscript.

true, much of philosophy would be less substantial than it is.³ Even Williamson's reasoning in places tacitly assumes non-trivial counterpossibles. For instance, while considering the view that all counterpossibles are vacuously false, he writes,

If all counterpossibles were false, $\diamond A$ would be equivalent to $A \Box \rightarrow A$, ... correspondingly, $\Box A$ would be equivalent to the dual $\neg(\neg A \Box \rightarrow \neg A)$. (2006)

This utterance is a counterpossible. If all counterpossibles are in fact true, what Williamson just said is vacuously true. But so is the corresponding counterfactual with a negated consequent—viz.,

If all counterpossibles were false, $\diamond A$ would *not* be equivalent to $A \Box \rightarrow A$...

So why didn't Williamson make his point with the latter, which says as much as the former given the vacuous truth account? Because the latter claim is true, only if both claims are vacuous and *not* informative! Presumably Williamson did not intend to assert something vacuous and uninformative. Rather he tacitly assumes that the consequent contributes to the truth-value of his claim. The vacuity treatment of counterpossibles that he favors is then not the view he intends his readers to employ when evaluating his assertion.

Since Williamson (above) and many others make deep and interesting claims with their counterpossible assertions, a non-vacuous reading is called for. Counterpossible philosophy is sometimes non-trivial and informative.

There are other motivations to avoid vacuity. Kit Fine (1994: 'Essence and Modality', [Philosophical Perspectives](#) 8: 1–16) points out⁴ that essential properties are not reducible to necessary properties. While Kripke's wooden table, Tabby, is necessarily a member of the set {Tabby}, it is not essential to Tabby that it be a member of that set. Nor is it essential to Tabby that seven is prime. The properties: being a member of the set {Tabby}, being such that seven is prime, etc., seem irrelevant to the question of what it is to be Tabby.

It is tempting to offer the following explanation: if there hadn't been sets, Tabby might still have existed; and if seven hadn't been prime, Tabby might still have existed. But this sort of explanation requires, for its non-triviality and informativeness, that counterpossibles be non-trivial and informative. At the closest (impossible) worlds at which there are no sets or numbers (perhaps because there are no abstract entities), Tabby might still exist. But following Kripke's (*Naming and*

Necessity, 1980), Tabby does not exist at the closest worlds without wood. Non-trivial counterpossibles thus make a modal analysis of essences possible. *a* is essentially *F* iff *a* would not have existed if nothing had been *F*.

We conclude that there are several good reasons for embracing a non-vacuous treatment of counterpossibles: besides preserving the familiar pre-theoretic intuitions, such a treatment protects against the triviality of philosophy and facilitates a modal analysis of essence.

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[Joe Salerno](#)

Philosophy, Saint Louis University

§3

NEWS

CALL FOR PAPERS: [Combining Probability and Logic](#), special issue of the Journal of Applied Logic, deadline 1 July 2007.

CALL FOR PAPERS: [Special Issue of Foundations of Science](#): Mathematics and Argumentation, deadline 1 November 2007.

§4

EVENTS

[FoTFS VI](#): Foundations of the Formal Sciences VI: Reasoning about Probabilities and Probabilistic Reasoning, Amsterdam, 2-5 May 2007.

[WORKSHOP ON LINEAR LOGIC, LUDICS, IMPLICIT COMPLEXITY, OPERATOR ALGEBRAS](#): Dedicated to Jean-Yves Girard on his 60th birthday, Siena, (Italy), May 17-20 2007.

[THE SQUARE OF OPPOSITION](#): Montreux, Switzerland, 1-3 June 2007.

[TALK](#): Royal Institute of Philosophy seminars, University of Sussex, 8th June, Dr Ron Chrisley 'A realist, bivalent semantics for logics that reject the law of excluded middle'.

[ARCHE VAGUENESS CONFERENCE](#): 8-9 June 2007, St. Andrews.

[OBAYES6](#): The 6th International Workshop on Objective Bayesian Methodology, Rome, Italy 8-12 June, 2007.

[LOGICA 2007](#): Hejnice Monastery, Czech Republic, 18-22 June 2007.

[CIE 2007](#): Computability in Europe 2007: Computation and Logic in the Real World University of Siena, Siena, 18-23 June 2007.

[TARK XI](#): Eleventh Conference on Theoretical Aspects of Rationality and Knowledge, Brussels, 25-27

³A version of the point is made in Nolan (1997: 539-540).

⁴See also Kment (2006: 'Counterfactuals and Explanation', *Mind* 115: 261–310).

June 2007.

BSPS: British Society for the Philosophy of Science, Bristol, 5-6 July 2007.

MAXENT 2007: The 27th International Workshop on Bayesian Inference and Maximum Entropy Methods in Science and Engineering, The Saratoga Hotel Saratoga Springs, New York, USA, July 8-13, 2007.

LCC'07: Workshop on Logic and Computational Complexity, (affiliated with LICS 2007), Wroclaw, Poland, 15th July 2007.

CADE-21: Workshop on Empirically Successful Automated Reasoning in Large Theories (ESARLT), 15th July 2007.

LFMTP'07: International Workshop on Logical Frameworks and Meta-Languages: Theory and Practice, Affiliated with CADE-21, Bremen, Germany, July 16 2007.

ISBA08: 9th World Meeting of the International Society for Bayesian Analysis (ISBA), Hamilton Island, Australia, 21st-25th July 2008.

LORI: Logic, Rationality and Interaction, Beijing, 5-9 August 2007.

TANCL'07: Algebraic and topological methods in non-classical logics III, 5-9 August 2007, Oxford.

LMPS: 13th International Congress of Logic, Methodology and Philosophy of Science, Beijing, 9-15 August 2007.

UNI-LOG: 2nd World Congress and School on Universal Logic, Xi'an, 16-19 August 2007.

C&O:RR-2007: The Third International Workshop on Contexts and Ontologies: Representation and Reasoning, August 21, 2007, CONTEXT Workshop Program, Roskilde University, Denmark.

ASAI 2007: IX Argentine Symposium on Artificial Intelligence Mar del Plata, Argentina, August 27-28, 2007.

PROGIC 2007

The Third Workshop on Combining Probability and Logic, University of Kent, 5-7 September 2007.

IDA 2007: The 7th International Symposium on Intelligent Data Analysis, Ljubljana, Slovenia, September 6-8, 2007.

DYNAMICS OF KNOWLEDGE AND BELIEF: Workshop at KI-2007, 30th Annual German Conference on Artificial Intelligence, Osnabrück, 10 September 2007.

CSL 2007: Computer Science Logic 11-15 September, 2007, Lausanne (CH).

TBILISI: The Seventh International TBILISI Symposium on Language, Logic and Computation, 1-5 October 2007.

REASON, INTUITION, OBJECTS: The Epistemology and Ontology of Logic, Buffalo, 13 October 2007.

ECSQARU'07: Ninth European Conference on Symbolic and Quantitative Approaches to Reasoning

with Uncertainty, October 31, November 1-2 2007, Hammamet, Tunisia.

EPSA07: 1st Conference of the European Philosophy of Science Association, Madrid, 15-17 November 2007.

§5

JOBS

EIGHT-HOUR OR SIX-HOUR STIPENDIARY LECTURESHIP IN PHILOSOPHY: Somerville College, University of Oxford.

LECTURESHIP IN LOGIC: Department of Philosophy, University of Auckland, Applications close 18 May 2007,

§6

COURSES AND STUDENTSHIPS

Courses

MASTER PROGRAM IN INTELLIGENT SYSTEMS: University of Lugano in collaboration with IDSIA, Switzerland, Enrolment deadline: 1 July 2007.

RESEARCH MASTER IN LANGUAGE, COGNITION, ACTION, AND MIND STUDIES: The Institute for Logic, Cognition, Language, and Information of the University of the Basque Country (Donostia-San Sebastian).

LOGIC SUMMER SCHOOL: Italian Association of Logic and its Applications (AILA), Italian Society for Logic and Philosophy of Science (SILFS), Palazzo Feltrinelli, Gargnano, Italy, 26 August - 1 September 2007.

SECOND INDIAN WINTER SCHOOL ON LOGIC:, January 14-26, 2008, IIT Kanpur.

Studentships

MSc IN INTELLIGENT SYSTEMS ENGINEERING, Computer Science, University of Birmingham, closing date 13 May 2007.

TILBURG CENTER FOR LOGIC AND PHILOSOPHY OF SCIENCE, Tilburg University, closing date 15 May 2007.

COMPUTATIONAL LOGIC OF EUCLIDEAN SPACES, School of Computer Science, University of Manchester, closing date 18 May 2007.

BSPS DOCTORAL SCHOLARSHIP IN PHILOSOPHY OF SCIENCE, closing date 1st August 2005.

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