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$\Phi$ NEWS • Volume 10 • April 2007

Published by  $\Phi$ LOG and Springer

Edited by Vincent F. Hendricks, Pelle Guldberg Hansen, Stig Andur Pedersen and Dov M. Gabbay

is published by

$\Phi$ LOG  
The Network for Philosophical Logic and Its Applications

Department of Philosophy and Science Studies  
Roskilde University, P6  
P.O. Box 260  
DK4000 Roskilde, Denmark  
Phone: (+45) 4674 2343 Fax: (+45) 4674 3012  
Website: <http://www.phinews.ruc.dk>  
Website: <http://www.philog.ruc.dk>

and

Springer

P.O. Box 17  
3300 AA Dordrecht, The Netherlands  
Website: <http://www.springeronline.com>

Editors-in-Chief:

Vincent F. Hendricks ([vincent@ruc.dk](mailto:vincent@ruc.dk))  
Pelle Guldborg Hansen ([pgh@ruc.dk](mailto:pgh@ruc.dk))  
Stig Andur Pedersen ([sap@ruc.dk](mailto:sap@ruc.dk))  
Dov M. Gabbay ([dg@dc.s.kcl.ac.uk](mailto:dg@dc.s.kcl.ac.uk))

Managing Editor:

Rasmus Rendsvig ([rendsvig@gmail.com](mailto:rendsvig@gmail.com))

Volume 10, April 2007

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Concept,  $\LaTeX$  2 $\epsilon$ -Layout, Graphics and Sleeve Designs by Vincent F. Hendricks

Typeset in  $\LaTeX$  2 $\epsilon$

Printed by Roskilde University Press, Denmark 2007

ISSN 1602-1444

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$\Phi$ LOG and Springer

$\Phi$ LOG is sponsored by The Danish Research Council for the Humanities

# EDITORIAL

ΦNEWS

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Welcome to the tenth volume of ΦNEWS—The Free Newsletter for Philosophical Logic and Its Applications, published jointly by ΦLOG—The Network for Philosophical Logic and Its Applications and Springer. ΦLOG is sponsored by The Danish Research Council for the Humanities.

ΦNEWS is published biannually. The newsletter is freely distributed to subscribers and an on-line copy may be obtained from the ΦNEWS website at

<http://www.phinews.ruc.dk>

Volume 10 includes the papers ‘Logic’ by Graham Priest and ‘Degrees of Irrationality’ by Jeffrey Helzner, information about the interview books project from Automatic Press / VIP, information about the upcoming 1st Synthese Annual Conference, announcements of upcoming conferences, new publications, initiatives, programs and announcements from AiML – Advances in Modal Logic, ASL – Association for Symbolic Logic, FoLLI – Foundation of Logic, Language and Information, TARK – Theoretical Aspects of Reasoning about Knowledge.

The next volume of ΦNEWS is scheduled for October 2007. ΦNEWS publishes contributions in terms of expositional papers, announcements of workshops, seminars, conferences, forthcoming publications, new initiatives and other material within the aim and scope of the newsletter. Send your written contribution (preferably in  $\text{\TeX}$ ,  $\text{\LaTeX}$ ,  $\text{\LaTeX} 2_{\epsilon}$ ) to either one of the ΦNEWS editors. Contact information, and additional information on how to submit material, is available on page 94.

Finally we would like to welcome our new ΦNEWS managing editor, Rasmus Rendsvig, who have done a very nice job with this issue of the newsletter. We are looking forward to the future cooperation.

April, 2007  
Vincent F. Hendricks  
Pelle Guldberg Hansen  
Stig Andur Pedersen  
Dov M. Gabbay  
Editors

# LOGIC

GRAHAM PRIEST

Departments of Philosophy  
Universities of Melbourne and St Andrews, AU and UK  
g.priest@unimelb.edu.au

ΦNEWS

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*The following is a draft of an entry to appear in The Dictionary, ed. Giandomenico Sica (Polymetrica, to appear). The book is a scholarly dictionary of the most important terms used in the different fields of scientific research.*

**Logic.** One of the most important cognitive abilities of people (and perhaps some other species) is the ability to reason. For example:

- from the axioms of Euclidean Geometry, mathematicians deduce theorems about geometric figures that follow from these.
- given some new theory in sub-atomic physics, physicists infer that certain observable consequences follow. These can be tested to assess the theory.
- appealing to the facts of the matter, and various legal principles, statutes, and precedents, a barrister may argue that their client is innocent.
- after we have read a book or seen a film, we may argue that a fictional character had certain motives (never stated explicitly) for acting in the way that they did.

Logic is the study of reasoning. It is not the study of how people *actually* reason. All too evidently, people often make mistakes when they reason. More importantly, the literature in cognitive psychology shows that people's reasoning ability appears to make systematic and predictable mistakes. Rather, logic is the theorisation of the *norms* of correct reasoning.

A central object of theorisation is the notion of *validity*. In a piece of reasoning, or *inference*, there is a *conclusion* (that which is meant to be established) and *premises* (things which are meant to ground the conclusion). The inference is valid if the premises, assuming them to be true, really do support the conclusion. Investigations of the notion of validity often require the theorisation of the behaviour of words and phrases that seem to be integral to much reasoning, such as (in English) 'if ... then ...' and 'it is not the case that ...'. Moreover, it seems impossible to form an adequate understanding of validity without understanding at least certain things about notions

such as truth, probability, necessity, meaning. Issues in logic therefore find themselves at the core of numerous central philosophical debates.

In Western logic there have been three great periods, in between which much of the sophisticated theorisation has, for various reasons, been forgotten. (There is a more continuous tradition in the East—especially India. But this never developed into anything like the sophisticated theorisation of modern Western logic.) The first was in Ancient Greece, where Aristotle and the Stoic logicians provided distinctive accounts of various forms of inference that they took to be valid, and why. The Aristotelian forms are called *syllogistic*, and are things like:

$$\begin{array}{l} \text{All As are Bs.} \\ \text{All Bs are Cs.} \\ \hline \text{Hence, all As are Cs.} \end{array}$$

The second period was in the Middle Ages, and particularly in the great Medieval universities of Oxford and Paris. Logicians such as Ockham, Scotus, Buridan, took their Greek heritage, and developed sophisticated new theories on the basis of them concerning, for example, *suppositio*, *obligationes*, and *insolubilia*—loosely, reference, the rules of debate, and paradoxes, respectively.

The third great period started towards the end of the 19th Century and continues today. Following the general 19th Century drive for rigor in mathematics, mathematician/philosophers such as Gottlob Frege, and Bertrand Russell, applied to logic mathematics techniques, such as those of abstract algebra, with a degree of sophistication never before used in the area. The result was a system (or family of systems) of logic (so called *classical logic*) much more powerful than anything achieved before, which could accommodate all mathematical reasoning of the time. Central to this was an analysis of the logic of quantifier phrases, such as ‘all numbers’, ‘some sets’.

The structures pioneered by Frege and Russell provided fertile ground for investigation/elaboration/variation throughout the 20th Century, by logicians of the stature of David Hilbert, Kurt Gödel, and many others. The foundations for the theory of machine computation was laid down by Alonzo Church, Alan Turing, and others in the 1930s. And when practical computing machines became available 30 years later, this, in return, had a major impact on logic.

Central to modern logical investigations is the notion of a *formal language*. A formal language is an artificial language with a precisely defined vocabulary and syntax (like a computer programming language). Such languages behave in many ways like natural languages, but abstract away from the many vicissitudes and idiosyncracies of the latter. Studying the validity of inferences couched in formal languages therefore permits a clarity and precision that would not otherwise be available.

Generally speaking, there are two different approaches to the study of validity in formal languages. The first is purely combinatorial (*proof theoretic*). Thus, a valid inference is defined as one that can be obtained by performing certain formal

operations on strings of symbols in the language, with no reference to what those strings may mean. For example, whenever we have a string of the form  $A \rightarrow B$ , and a string of the form  $A$ , we may obtain a string of the form  $B$ . (The symbol ‘ $\rightarrow$ ’ is often used as the formal counterpart of the English construction ‘if ... then ...’.) The combinatorial systems are themselves of different possible kinds. Historically, the oldest are axiom systems. But nowadays logicians tend to prefer systems called *natural deduction* systems or *sequent calculi*, which mirror more closely ordinary reasoning in natural language. *Tableau systems* are yet a different kind of system, which are particularly efficient when reasoning is mechanised.

The second general approach to validity is set-theoretic (*semantic*). In this, symbols of the language are assigned meanings in certain ways. This allows one to define what it is for a sentence of the language to be true of a certain situation—in the same sort of way that the English sentence ‘The head of state is elected’ is true of the contemporary political situation in the USA, but is not true of the contemporary political situation in the UK. The situations themselves (which are often called *models* or *interpretations*) may be actual, merely possible, or maybe even impossible, and are defined in precise mathematical (set theoretic) terms. Valid inferences are then characterised as ones that preserve truth in an appropriate sense: namely, whenever the premises are true in any situation of a certain kind, so is the conclusion.

For many languages, it is possible to give both a proof theoretic characterisation and a semantic characterisation of validity which are equivalent (that is, such that the inferences that are valid according to the one characterisation are exactly the same as those that are valid according to the other). But there are cases (e.g., so called *second order* logic) in which the semantic characterisation is such that it is demonstrably impossible for there to be any corresponding proof-theoretic characterisation. Conversely, there are cases where there is a proof theoretic characterisation, but adequate semantic characterisations are still highly contentious (e.g., for so called *sub-structural* logics).

Another important distinction between two notions of validity, which is much more traditional, and which cuts across the one we have just been looking at, is that between *deductively* valid inferences and *non-deductively* (sometimes, *inductively*) valid inferences. Loosely, deductively valid inferences are those such that the premises could not be true without the conclusion also being true, such as:

Dana is a married person.  
Hilary is an unmarried person.  


---

Hence, Dana and Hilary are not the same person.

In a non-deductively valid inference, the premises provide some ground, possibly excellent ground, for the conclusion. Yet it is nonetheless possible for the premises to

be true whilst the conclusion is not. E.g.:

Dana is a 45 year old woman.  
 -----  
 Hence, Dana will not give birth to children in the future.

A feature of the latter kind of inference, but not the former, is that the inference can be made invalid by the *addition* of further premises. Witness:

Dana is a 45 year old woman.  
 Dana is 8 months pregnant.  
 -----  
 Hence, Dana will not give birth to children in the future.

This feature is called *non-monotonicity*.

Historically, deductively validity has been studied much more intensively than non-deductive validity. It is natural to suppose that non-deductive validity has something to do with the notion of probability—though that notion was itself not available until the 18th Century. But contemporary investigations of non-monotonicity deploy the same sort of proof-theoretic and semantic techniques that are deployed in the study of deductive validity. Where probability does play a role in contemporary logic is in that branch of logic termed *decision theory*. This is the study of reasoning, where conclusions are of the form that one ought to act in such and such a way, and premises contain information about the probable outcomes of one's various possible actions, together with the values of those outcomes.

The contemporary study of logic is carried out in university departments of philosophy, mathematics, and computer science (and, occasionally, linguistics and economics). The development of novel ideas, techniques, and results triggered by the revolution in logic just over 100 years ago shows no sign of slowing down.

# SYNTHESE ANNUAL CONFERENCE

ΦNEWS

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*1st Synthese Annual Conference:* Synthese hosts its first annual conference at the Carlsberg Academy in Copenhagen, October 3–5, 2007. The conference is sponsored by PHIS – The Danish Research School in Philosophy, History of Ideas and History of Science and Springer.

**TITLE:** Between Logic and Intuition: David Lewis and the Future of Formal Methods in Philosophy

**ABSTRACT:** David Lewis is one of the most important figures in contemporary philosophy. His approach balances elegantly between the use of rigorous formal methods and sound philosophical intuitions. The benefit of such an approach is reflected in the substantial impact his philosophical insights have had not only in many core areas of philosophy, but also in neighboring disciplines ranging from computer science to game theory and linguistics. The interplay between logic and intuition to obtain results of both philosophical and interdisciplinary importance makes Lewis' work a prime example of formal philosophy.

Lewis' work exemplifies the fruitful interplay between logic and intuition that is central to contemporary philosophy. This conference serves as a tribute to Lewis and as a venue for addressing questions concerning the relationship between logic and philosophical intuition. This first Synthese Annual Conference is the venue for discussing the future of formal methods in philosophy.

**CALL FOR PAPERS:** Deadline April 1, 2007. Synthese invites papers on the work of David Lewis and formal philosophy in accordance with the conference abstract. The final papers should be submitted electronically directly to editor-in-chief Vincent F. Hendricks, [vincent@ruc.dk](mailto:vincent@ruc.dk), classified as a "SAC"-submission in the subject entry. The deadline for submitting a paper for consideration is April 1, 2007. Notification of acceptance for presentation at the conference is August 1, 2007

**INVITED SPEAKERS:** John Collins, Alan Hajék, Hannes Leitgeb, Rohit Parikh and L.A. Paul

**PROGRAM COMMITTEE AND CONFERENCE CHAIRS:** Johan van Benthem, Vincent F. Hendricks, John Symons (SYNTHESE) and Stig Andur Pedersen (PHIS)

**CONFERENCE MANAGER:** Pelle Guldberg Hansen



PUBLICATION: A selection of the best papers will be published as an anthology in the Synthese Library book series.

WEBSITE:

[http://www.springer.com/west/home/  
philosophy?SGWID=4-40385-70-35761018-0](http://www.springer.com/west/home/philosophy?SGWID=4-40385-70-35761018-0)

# DEGREES OF IRRATIONALITY

JEFFREY HELZNER

Department of Philosophy  
Columbia University, USA  
jh2239@columbia.edu

ΦNEWS

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Let  $X$  be a set of alternatives and let  $\mathcal{X}$  be the set of all finite subsets of  $X$ . Each  $Y$  in  $\mathcal{X}$  may be viewed as a distinct choice problem where the available alternatives are the elements of  $Y$ .  $C : \mathcal{X} \rightarrow \mathcal{X}$  is a *choice function* on  $X$  iff  $C(Y) \subseteq Y$  for every  $Y$  in  $\mathcal{X}$  and  $Z \neq \emptyset$  implies  $C(Z) \neq \emptyset$  for every  $Z$  in  $\mathcal{X}$ . A choice function may be used to encode an agent’s admissibility judgements regarding each of the choice problems in  $\mathcal{X}$  in the sense that, according to the intended interpretation, the agent, when presented with an opportunity to select an element of  $Y$ , judges  $C(Y)$  to be the set of admissible alternatives.<sup>1</sup>

Among the most well-known choice functions are those that can be “rationalized” by a weak order on the set of alternatives.<sup>2</sup> More precisely, these are the choice functions for which there exists a weak order  $R$  on  $X$  such that

$$C(Y) = \{y \mid y \in Y \text{ and } yRz \text{ for all } z \in Y\}$$

for all  $Y$  in  $\mathcal{X}$ . For such a  $C$ , this rationalizing  $R$ , which may be recaptured from  $C$  by noting that  $yRz$  iff  $y \in C(\{y, z\})$ , is usually interpreted as a representation of the agent’s weak preferences:  $yRz$  is read as the agent’s judgement that  $y$  is at least as good as  $z$ . It is well-known that a choice function can be rationalized by a weak order iff it satisfies the following conditions:

$\alpha$  For all  $S$  and  $T$  in  $\mathcal{X}$  such that  $S \subseteq T$ , if  $x \in S \cap C(T)$ , then  $x \in C(S)$ .

$\beta$  For all  $S$  and  $T$  in  $\mathcal{X}$  such that  $S \subseteq T$ , if  $x, y \in C(S)$  and  $y \in C(T)$ , then  $x \in C(T)$ .

---

<sup>1</sup> For the reader in search of something a bit more operational  $C(Y)$  can be interpreted as the set of those alternatives that the agent would be willing to select if given an opportunity to choose an alternative from  $Y$ .

<sup>2</sup>  $R$  is a weak order on  $X$  iff it is reflexive, transitive and complete in the sense that, for all  $x, y \in X$ ,  $xRy$  or  $yRx$ .

## Implicit violations

Suppose that we have recorded the following data concerning an agent's judgments:  $a$  is judged to be uniquely admissible from  $\{a, b\}$ ,  $b$  is judged to be uniquely admissible from  $\{b, c\}$ , and  $c$  is judged to be uniquely admissible from  $\{a, c\}$ . While not explicit in this data – we have not been provided with a complete choice function on  $\{a, b, c\}$  – it is easy to see that these admissibility judgements cannot be rationalized by a weak ordering of the alternatives involved. If  $R$  is a weak order that rationalizes these choices, then it must be the case that  $aRb$  and  $bRc$  hold while  $aRc$  does not. This is impossible since  $R$ , as a weak order, is transitive. Thus, there is no choice function  $C$  on  $\{a, b, c\}$  such that  $C$  can be rationalized by a weak order on  $\{a, b, c\}$  while also agreeing with the data. In what follows we will be concerned with finite sets of admissibility judgments. Each admissibility judgement may be represented as a pair  $(U, V)$  such that  $V$  is a finite set,  $U \subseteq V$ , and  $V \neq \emptyset$  implies  $U \neq \emptyset$ . According to the intended interpretation,  $V$  is a set of alternatives such that, when presented with an opportunity to select an element of  $V$ , the agent judges  $U$  to be the set of admissible alternatives.

Let  $C = \{(U_i, V_i)\}_{i \in I}$  be a finite set of admissibility judgements. Such a  $C$  can be *rationalized by a weak order* iff there exists a weak order  $R$  on  $V_C = \bigcup_{i \in I} V_i$  such that  $U_i = \{y \mid y \in V_i \text{ and } yRx \text{ for all } x \in V_i\}$  holds for each  $i \in I$ .  $C$  is said to be a *violation* just in case it cannot be rationalized by a weak order.  $C$  is *coherent* iff the following condition holds for all  $x, y \in V_C$ : if there exists an  $i \in I$  such that  $x, y \in V_i$  and  $x \notin U_i$  and  $y \in U_i$ , then there does not exist a  $j \in I$  such that  $x, y \in V_j$  and  $x \in U_j$ . Observe that if  $C$  can be rationalized by a weak order then  $C$  must be coherent. The following may serve to illustrate these definitions:

$$\{(\{a\}, \{a, b, c\}), (\{b, c\}, \{b, c\})\} \tag{4.1}$$

$$\{(\{a\}, \{a, b, c\}), (\{b\}, \{a, b\})\} \tag{4.2}$$

$$\{(\{a\}, \{a, b\}), (\{b\}, \{b, c\}), (\{c\}, \{a, c\})\} \tag{4.3}$$

$$\{(\{a, b\}, \{a, b, c\}), (\{a\}, \{a, b\})\} \tag{4.4}$$

4.1 is rationalized by the weak order  $R$  defined as follows:  $aRa$ ,  $bRb$ ,  $cRc$ ,  $aRb$ ,  $aRc$ ,  $bRc$ ,  $cRb$ . 4.2 cannot be rationalized by a weak order. If it could be, then there would be a weak order that ranks  $a$  strictly above  $b$  (from the first pair) and  $b$  strictly above  $a$  (from the second pair).<sup>3</sup> 4.3 is coherent, although it cannot be rationalized by a weak order. If it could be, then there would be a weak order that ranks  $a$  strictly

---

<sup>3</sup>  $R$  ranks  $x$  strictly above  $y$  just in case  $(x, y) \in R$  but  $(y, x) \notin R$ .

above  $b$  (from the first pair) and  $b$  strictly above  $c$  (from the second pair) and  $c$  strictly above  $a$  (from the third pair). 4.4 is not coherent.

As before,  $C = \{(U_i, V_i)\}_{i \in I}$  is a set of admissibility judgements and  $V_C = \bigcup_{i \in I} V_i$ . Define the binary relation  $R_C$  on  $V_C$  as follows:  $yR_Cx$  iff there exists an  $i \in I$  such that  $x, y \in V_i$  and  $y \in U_i$ . Define the binary relation  $E_C$  on  $V_C$  as follows:  $xE_Cy$  iff  $xR_Cy$  and  $yR_Cx$ . Define the binary relation  $P_C$  on  $V_C$  as follows:  $yP_Cx$  iff  $yR_Cx$  and not  $xR_Cy$ . Let  $\mathcal{E}$  denote the set of all equivalence relations on  $V_C$  that contain  $E_C$ . Let  $\sim_C = \bigcap_{E \in \mathcal{E}} E$ . That is, let  $\sim_C$  be the smallest equivalence relation on  $V_C$  that contains  $E_C$ . Define the binary relation  $P_C^+$  on  $V_C$  as follows:  $yP_C^+x$  iff there exist  $x'$  and  $y'$  in  $V_C$  such that  $x' \sim_C x$ ,  $y' \sim_C y$ , and  $y'P_Cx'$ .

**Proposition 1**  *$C$  can be rationalized by a weak order iff  $C$  is coherent and  $P_C^+$  is acyclic.*

**Proof.** Let  $C = \{(U_i, V_i)\}_{i \in I}$  be a finite set of admissibility judgements. Assume that  $C$  can be rationalized by a weak order. Hence, there is a weak order  $R$  on  $V_C = \bigcup_{i \in I} V_i$  such that  $U_i = \{y \mid y \in V_i \text{ and } yRx \text{ for all } x \in V_i\}$  holds for each  $i \in I$ . Define the binary relation  $P$  on  $V_C$  as follows:  $yPx$  iff  $yRx$  and not  $xRy$ . It is easy to see that  $P_C^+ \subseteq P$  (i. e.  $xP_C^+y$  implies  $xPy$ ). Since  $R$  is a weak order,  $P$  is an *irreflexive* and *transitive* extension of  $P_C^+$ . It follows immediately that  $P_C^+$  is *acyclic* – otherwise, it could not have an irreflexive and transitive extension. As noted above, coherence follows easily from the assumption that  $C$  can be rationalized by a weak order.

Assume that  $C$  is coherent and that  $P_C^+$  is acyclic. For each  $x \in V_C$ , let  $[x]_C$  denote the *equivalence class* of  $x$  under  $\sim_C$  – that is,  $[x]_C = \{x' \mid x \sim_C x'\}$ . Let  $V_C^* = \{[x]_C \mid x \in V_C\}$ . Define the binary relation  $\succ$  on  $V_C^*$  as follows:  $[y]_C \succ [x]_C$  iff  $yP_C^+x$ . Since  $P_C^+$  is acyclic, it is straightforward to verify that  $\succ$  is also acyclic. By Szpilrajn’s theorem, it follows that  $\succ$  can be extended to a *linear order*  $>$  on  $V_C^*$ . Define a binary relation  $R$  on  $V_C$  as follows:  $yRx$  iff  $x \sim_C y$  or  $[y]_C > [x]_C$ . It is straightforward to verify that  $R$  is a weak order on  $V_C$ .

We now verify that  $R$  has the required properties. Assume that  $y \in U_i$  and that  $x \in V_i$ . By definition, it follows that  $yR_Cx$ . If it is not the case that  $xR_Cy$ , then it follows that  $yP_Cx$ . Hence,  $yP_C^+x$  and (ultimately)  $[y]_C > [x]_C$ , from which we may conclude that  $yRx$ . If  $xR_Cy$  does hold, then  $x \sim_C y$  and it immediately follows that  $yRx$ . Hence,  $U_i \subseteq \{y \mid y \in V_i \text{ and } yRx \text{ for all } x \in V_i\}$ . Conversely, assume that  $y \in V_i$  and  $yRx$  for all  $x \in V_i$ . Suppose that  $y \notin U_i$ . There is some element  $z_0 \in U_i$ . It follows immediately that  $z_0R_Cy$ . Since  $C$  is coherent, it follows that there is no  $j \in I$  such that  $y, z_0 \in V_j$  and  $y \in U_j$ . Hence, it is not the case that  $yR_Cz_0$  – thus,  $z_0P_Cy$ . Hence,  $z_0P_C^+y$  and it follows that  $[z_0]_C > [y]_C$ . It follows that it is not the case that  $yRz$ , which contradicts the assumption that  $yRx$  for all  $x \in V_i$ . Thus,

$\{y \mid y \in V_i \text{ and } yRx \text{ for all } x \in V_i\} \subseteq U_i$ . ■

## Assessing the extent of the irrationality

One may simply classify sets of admissibility judgements based on whether or not they can be rationalized by a weak order. However, such a classification fails to make distinctions that may be of interest. Consider the following:

$$C_1 = \{(\{f\}, \{e, f, g\}), (\{e\}, \{e, f\}), (\{f\}, \{f, g\})\}$$

and

$$C_2 = \{(\{f\}, \{e, f, g\}), (\{e\}, \{e, f\}), (\{g\}, \{f, g\})\}$$

It is straightforward to verify that neither  $C_1$  nor  $C_2$  can be rationalized by a weak order. Yet, while  $\{(\{f\}, \{e, f, g\}), (\{e\}, \{e, f\})\}$  is the only violation that is contained in  $C_1$ ,  $C_2$  contains two violations, namely  $\{(\{f\}, \{e, f, g\}), (\{e\}, \{e, f\})\}$  and  $\{(\{f\}, \{e, f, g\}), (\{g\}, \{f, g\})\}$ .

A simple enumeration of violations will differentiate between  $C_1$  and  $C_2$ . However, consider the following:

$$C_3 = \{(\{d\}, \{a, d\}), (\{b, c\}, \{a, b, c\}), (\{a\}, \{a, b\}), (\{d\}, \{c, d\})\}$$

and

$$C_4 = \{(\{a\}, \{a, d\}), (\{c\}, \{a, b, c\}), (\{b\}, \{a, b\}), (\{d\}, \{c, d\})\}.$$

Observe that

$$\{(\{b, c\}, \{a, b, c\}), (\{a\}, \{a, b\})\} \tag{4.5}$$

is a violation that is contained in  $C_3$ . Every subset of  $C_3$  that contains 4.5 is a violation. Conversely, every violation that is contained in  $C_3$  must contain 4.5. Suppose that  $X$  is a subset of  $C_3$  that does not contain  $(\{b, c\}, \{a, b, c\})$ . It is easy to see that  $X$  is consistent with the smallest weak order that satisfies  $dRa, aRb, bRc$ . Suppose that  $X$  does not contain  $(\{a\}, \{a, b\})$ . It is easy to see that  $X$  is consistent with the smallest weak order that satisfies  $dRb, bRc, cRb, cRa$ . Hence, all of the violations in  $C_3$  are generated by a single “atomic” violation, namely 4.5. Now observe that

$$\{(\{a\}, \{a, d\}), (\{c\}, \{a, b, c\}), (\{d\}, \{c, d\})\} \tag{4.6}$$

is a violation that is contained in  $C_4$ . Every subset of  $C_4$  that contains 4.6 is a violation. Conversely, every violation that is contained in  $C_4$  must contain 4.6. If  $X$  is a subset of  $C_4$  that does not contain  $(\{a\}, \{a, d\})$ , then  $X$  is consistent with the smallest weak order that satisfies  $dRc, cRb, bRa$ . If  $X$  does not contain  $(\{c\}, \{a, b, c\})$ , then  $X$  is consistent with the smallest weak order that satisfies  $bRa, aRd, dRc$ . If  $X$  does not contain  $(\{d\}, \{c, d\})$ , then  $X$  is consistent with the smallest weak order that satisfies  $cRb, bRa, aRd$ . Hence, as in the case of  $C_3$ , all of the violations all of the violations in  $C_4$  are generated by a single “atomic” violation, namely 4.6. A simple

enumeration of the number of violations contained in the record would give  $C_3$  a score of four while giving  $C_4$  a score of two. However, each contains but a single atomic generator and in this sense  $C_3$ 's degree of incompatibility with weak ordering is the same as that of  $C_4$ .

Simply counting the number of atomic violators contained in the record will address the problems encountered in the previous paragraph. However, consider the following:

$$C_5 = \{(\{b, c\}, \{a, b, c, d\}), (\{b\}, \{a, b, c\}), (\{a\}, \{a, b\}), (\{b, c\}, \{b, c, d\})\}$$

and

$$C_6 = \{(\{a, b, c\}, \{a, b, c, d\}), (\{a\}, \{a, b, c\}), (\{a\}, \{a, b\}), (\{c\}, \{b, c, d\})\}.$$

Note that there are four atomic violations contained in  $C_5$ , namely

$$\begin{aligned} & \{(\{b, c\}, \{a, b, c, d\}), (\{b\}, \{a, b, c\})\}, \\ & \{(\{b, c\}, \{a, b, c, d\}), (\{a\}, \{a, b\})\}, \\ & \{(\{b\}, \{a, b, c\}), (\{a\}, \{a, b\})\}, \\ & \{(\{b\}, \{a, b, c\}), (\{b, c\}, \{b, c, d\})\} \end{aligned}$$

while there are three atomic violations contained in  $C_6$ , namely

$$\begin{aligned} & \{(\{a, b, c\}, \{a, b, c, d\}), (\{a\}, \{a, b, c\})\}, \\ & \{(\{a, b, c\}, \{a, b, c, d\}), (\{a\}, \{a, b\})\}, \\ & \{(\{a, b, c\}, \{a, b, c, d\}), (\{c\}, \{b, c, d\})\}. \end{aligned}$$

Counting the number of atomic violations contained the record gives  $C_5$  a score of four and  $C_6$  a score of three. However, it might be argued that the degree of violation for  $C_5$  should be less than that of  $C_6$  since the atomic violations for  $C_5$  follow from just two atomic violations while those of  $C_6$  cannot be further reduced. More precisely, if  $T \subseteq C_5$  and  $T$  contains

$$\{(\{b, c\}, \{a, b, c, d\}), (\{a\}, \{a, b\})\} \tag{4.7}$$

and

$$\{(\{b\}, \{a, b, c\}), (\{b, c\}, \{b, c, d\})\} \tag{4.8}$$

as subsets, then  $T$  already contains the remaining two atomic violations as subsets. One might think of 4.7 and 4.8 as “covering” the set of atomic violations for  $C_5$  in the sense that their union contains all of atomic violations in  $C_5$ . On the other hand, without using all three atomic violations, one cannot cover all of the atomic violations of  $C_6$ . As the failures of  $C_5$  are essentially the result of two atomic violations while the failures of  $C_6$  are the result of three atomic violations,  $C_6$  ought to count as more serious offender than  $C_5$ .

Considerations such as those expressed in the examples above motivate the following definitions. Let  $W$  be a finite set of finite sets.  $A$  is an *atom* of  $W$  iff  $A \in W$  and there does not exist a  $B \in W$  such that  $B \subset A$ .  $W'$  is a *cover* of  $W$  iff  $W' \subseteq W$  and  $\bigcup_{A \in W} A \subseteq \bigcup_{A' \in W'} A'$ . The *degree* of  $W$  is equal to  $\min\{\text{Card}(W') \mid W' \text{ is a cover of } W\}$ , where  $\text{Card}(X)$  denotes the cardinality of the set  $X$ . The *degree of irrationality* that is present in  $C$  is the degree of the set of atomic violations contained in  $C$  – that is, the degree of irrationality that is present in  $C$  is the degree of the set  $\{C' \mid C' \subseteq C \text{ and } C' \text{ is an atomic violation}\}$ .

The “degree of irrationality” approach discussed above addresses the difficulties described in examples above. The only atomic violation contained in  $C_1$  is

$$\{(\{f\}, \{e, f, g\}), (\{e\}, \{e, f\})\}.$$

Clearly the degree of irrationality that is present in  $C_1$  is equal to one. The atomic violations contained in  $C_2$  are

$$\{(\{f\}, \{e, f, g\}), (\{e\}, \{e, f\})\}$$

and

$$\{(\{f\}, \{e, f, g\}), (\{g\}, \{f, g\})\}.$$

Both violations are needed for a cover. Hence, the degree of irrationality that is present in  $C_2$  is equal to two. The only atomic violation contained in  $C_3$  is

$$\{(\{b, c\}, \{a, b, c\}), (\{a\}, \{a, b\})\}.$$

The degree of irrationality that is present in  $C_3$  is equal to one. The only atomic violation contained in  $C_4$  is

$$\{(\{a\}, \{a, d\}), (\{c\}, \{a, b, c\}), (\{d\}, \{c, d\})\}.$$

The degree of irrationality that is present in  $C_4$  is equal to one. As discussed, the four atomic violations contained in  $C_5$  are

$$\begin{aligned} &\{(\{b, c\}, \{a, b, c, d\}), (\{b\}, \{a, b, c\})\}, \\ &\{(\{b, c\}, \{a, b, c, d\}), (\{a\}, \{a, b\})\}, \\ &\{(\{b\}, \{a, b, c\}), (\{a\}, \{a, b\})\}, \\ &\{(\{b\}, \{a, b, c\}), (\{b, c\}, \{b, c, d\})\} \end{aligned}$$

and, since there is no cover smaller than that formed by using the first and the third of these atomic violations, it follows that the degree of irrationality that is present in  $C_5$  is equal to two. As discussed, the three atomic violations contained in  $C_6$  are:

$$\begin{aligned} &\{(\{a, b, c\}, \{a, b, c, d\}), (\{a\}, \{a, b, c\})\}, \\ &\{(\{a, b, c\}, \{a, b, c, d\}), (\{a\}, \{a, b\})\}, \\ &\{(\{a, b, c\}, \{a, b, c, d\}), (\{c\}, \{b, c, d\})\} \end{aligned}$$

and, since there is no cover smaller than that formed by using all three of these atomic violations, it follows that the degree of irrationality that is present in  $C_6$  is equal to three.

## References

1. D. Kreps, *Notes on the theory of choice*, Westview, 1988.
2. A. Sen, *Choice functions and revealed preference*, Review of Economic Studies (1971).
3. A. Sen, *Social choice theory: A re-examination*, Econometrica (1977).
4. E. Szpilrajn, *Sur l'extension de l'ordre partiel*, Fund. Math. (1930).



# AUTOMATIC PRESS / VIP

ΦNEWS

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Automatic Press / VIP [1] was started in 2005 and is an independent publishing house specializing in interview books featuring prominent and influential scholars from philosophy and its broader intellectual environment. Each book published by Automatic Press / VIP has a separate website where snippets from the interviewees may be read freely. So far, the following books have or will appear:

*Formal Philosophy*, edited by Vincent F. Hendricks (Editor) & John Symons (Editor); Automatic Press / VIP (October 2005); \$26.00 (Paperback) 264 pages; ISBN 8799101300. Contributions from Johan van Benthem, Brian F. Chellas, Anne Fagot-Largeault, Melvin Fitting, Dagfinn Føllesdal, Haim Gaifman, Clark Nøren Glymour, Adolf Grønbaum, Susan Haack, Sven Ove Hansson, Jaakko Hintikka, Isaac Levi, H. Jerome Keisler, Ruth Barcan Marcus, Rohit Parikh, Jeff Paris, Gabriel Sandu, Krister Segerberg, Wolfgang Spohn, Patrick Suppes, Timothy Williamson.

Read snippets at [www.formalphilosophy.com](http://www.formalphilosophy.com)

*Masses of Formal Philosophy* by Vincent F. Hendricks (Editor) & John Symons (Editor); Automatic Press / VIP (January 10, 2006); \$20.00 (Paperback) 180 pages; ISBN: 8799101335. Contributions from Ken Binmore, Alexandre Costa-Leite, Branden Fitelson, Donald Gillies, Paul Gochet, Valentin Goranko, Alan Hajék, Jeffrey Helzner, Dale Jacquette, Mark Jago, Edwin Mares, Greg Restall, John F. Sowa, Alasdair Urquhart, Heinrich Wansing, Dag Westerståhl, Jan Wolenski, John Woods.

Read snippets at [www.formalphilosophy.com/masses](http://www.formalphilosophy.com/masses).

*Game Theory: 5 Questions*, edited by Vincent F. Hendricks (Editor) & Pelle Guldberg Hansen (Editor); Automatic Press / VIP (May 2007); (Paperback); ISBN 8799101343. Contributions from Robert Aumann, Johan van Benthem, Cristina Bicchieri, Ken Binmore, Adam Brandenburger, Colin F. Camerer, Alan Grafen, Peter Hammerstein, Sergiu Hart, Ehud Kalai, David M. Kreps, Herve Moulin, Rohit Parikh, Ariel Rubinstein, Larry Samuelson, Thomas C. Schelling, Brian Skyrms, Robert Sugden, H. Peyton Young.

Read snippets at [www.gametheorists.com](http://www.gametheorists.com)

*Philosophy of Mathematics: 5 Questions*, edited by Vincent F. Hendricks (Editor) & Hannes Leitgeb (Editor); Automatic Press / VIP (July 2007); (Paperback); ISBN 8799101351. Contributions from Jeremy Avigad, Steve Awodey, John L. Bell, Paul Benacerraf, Douglas Bridges, Charles S. Chihara, Mark Colyvan, E. Brian Davies, Michael Detlefsen, Solomon Feferman, Harvey Friedman, Bob Hale, Geoffrey Hellman, Jaakko Hintikka, Thomas Jech, H. Jerome Keisler, Ulrich Kohlenbach, Penelope Maddy, Paolo Mancosu, Charles Parsons, Michael D. Resnik, Stewart Shapiro, Wilfried Sieg, Steven Simpson, William Tait, Albert Visser, Alan Weir, Philip Welch, Crispin Wright, Ed Zalta.

Read snippets at [www.phil-math.org](http://www.phil-math.org)

*Political Questions: 5 Questions on Political Philosophy*, edited by Morten E.J. Nielsen (Editor); Automatic Press / VIP (December 2006); \$26.00 (Paperback) 252 pages; ISBN 8799101327. Contributions from Kwame Anthony Appiah, Richard Bellamy, Allen Buchanan, William A. Galston, Amy Gutmann, Andrew Mason, Martha Nussbaum, Chandran Kukathas, Philippe van Parijs, Philip Pettit, John E. Roemer, George Sher, Larry S. Temkin, Peter Vallentyne, Michael Walzer, Andrew Williams, Jonathan Wolff, Bernard Yack.

Read snippets at [www.politicalquestions.org](http://www.politicalquestions.org)

*Philosophy of Technology: 5 Questions*, edited by Jan-Kyrre Berg Olsen (Editor) & Evan Selinger (Editor); Automatic Press / VIP (February 2007); \$28.00 (Paperback) 284 pages; ISBN 8799101386. Contributions from Joseph Agassi, Albert Borgmann, Mario Bunge, Harry Collins, Paul Durbin, Andrew Feenberg, Joan H. Fujimura, Peter Galison, Allan Hanson, Donna J. Haraway, N. Katherine Hayles, Don Ihde, Ian C. Jarvie, Bruno Latour, Bill McKibben, Carl Mitcham, Andrew Pickering, Daniel Sarewitz, Evan Selinger, Dan A. Seni, Peter Singer, Susan Leigh Star, Isabelle Stengers, Lucy Suchman.

Read snippets at [www.philosophytechnology.com](http://www.philosophytechnology.com)

*Normative Ethics: 5 Questions*, edited by Thomas S. Petersen (Editor) & Jesper Ryberg (Editor); Automatic Press / VIP (May 2007); (Paperback); ISBN 8792130003. Contributors: Elizabeth S. Anderson, John Broome, Roger Crisp, Gerald Dworkin, Fred Feldman, John Harris, David Heyd, Thomas Hurka, Rosalind Hursthouse, Frances Kamm, Jeff McMahan, Jan Narveson, Onora O'Neill, Ingmar Persson, Wlodek Rabinowicz, Janet Radcliffe Richards, John Skorupski, Michael Slote, Wayne Sumner, Torbjørn Tønnsjø, Larry Temkin, Peter Vallentyne.

Read snippets at [www.normativeethics.com](http://www.normativeethics.com)

*Legal Philosophy: 5 Questions*, edited by Ian Farrell (Editor) & Morten E.J. Nielsen (Editor); Automatic Press / VIP (August 2007); (Paperback); ISBN 8792130011. Contributions from Robert Alexy, Tom Campbell, Jules Coleman, Antony Duff, John Gardner, Ruth Gavison, Leslie Green, Andrew von Hirsch, Tony Honore, Doug Husak, Nicola Lacey, Brian Leiter, David Lyons, Neil MacCormick, Mark Murphy, Stanley L. Paulson, Stephen Perry, Fred Schauer, Scott Shapiro, Nicos Stavropoulos.

Read snippets at [www.legalphilosophy.org](http://www.legalphilosophy.org)

*Foundations of Physics: 6 Questions*, edited by Juan Ferret (Editor) & John Symons (Editor); Automatic Press / VIP (August 2007), (Paperback), ISBN 879213002X. Contributions from Jeremy Butterfield, Craig Callender, Joy Christian, Dennis Dieks, Arthur Fine, Steven French, Nick Huggett, Chris Isham, Tim Maudlin, John D. Norton, Roland Omnes, Carlo Rovelli, Simon Saunders, Lawrence Sklar, Paul Teller, Roberto Torretti, Bill Unruh, Bas van Fraassen, Andrew Wayne, Edward Witten

Read snippets at [www.foundationsofphysics.com](http://www.foundationsofphysics.com)

*Thought<sub>2</sub>Talk* by Vincent F. Hendricks (Author); Automatic Press / VIP (June 26, 2006); \$16.00 (Paperback) 100 pages; ISBN: 8799101378. Thought<sub>2</sub>Talk is a crash course on argument, reasoning and logical method honoring the Swedish poet and Bishop of Lund, Esaias Tegnér, who once said: "The words and thoughts of men are born together: To speak obscurely is to think obscurely." In 100 humorous yet erudite pages, Thought<sub>2</sub>Talk takes the reader through key concepts like statement, argument, validity, fallacy, modality and demonstration.

# ANNOUNCEMENTS

ΦNEWS

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## CONFERENCES

*University of Florida Year in Logic*, September 2006–June 2007, Gainesville, Florida. Throughout the year there will be a series of special lectures and week-long meetings. The topics of the upcoming meetings, with dates in parentheses, include: Model theory and computable model theory (February 5–10, 2007), Singular cardinal combinatorics and inner models (March 5–11, 2007), and Set theory of the reals (May 5–11, 2007). Detailed information about each meeting appears on the ASL 'other meetings' webpages. In addition, the 2007 ASL Annual Meeting will be held on March 10–13, 2007 (see 'ASL meetings' and <http://www.aslonline.org>). For further information about the special year, visit the website below.

<http://www.math.ufl.edu/~jal/logicyear/>

*European Joint Conferences on Theory and Practice of Software (ETAPS 2007)*, March 24–April 1, 2007, Braga, Portugal. ETAPS is the primary European forum for academic and industrial researchers working on topics relating to Software Science. It is a confederation of five main annual conferences, accompanied by satellite workshops and other events, many of which are of interest to logicians. For further information, visit the website below.

<http://www.di.uminho.pt/etaps07/>

*First International Conference on Language and Automata Theory and Applications (LATA 2007)*, March 29–April 4, 2007, Tarragona, Spain. Invited tutorials by V. Diekert on "Equations: From Words to Graph Products" and by E. Graedel on "Infinite Games" are planned. The invited speakers include: N. Francez/M. Kaminski, N. Immerman, and H. Juergensen. The Co-chairs of the Program Committee are Z. Esik, C. Martin-Vide, and V. Mitrana. The Chair of the Organizing Committee is C. Martin-Vide. For further information, visit the website below.

<http://www.grammars.grlmc.com/LATA2007/>

*Mathematical Foundations of Programming Semantics (MFPS XXIII)*, April 11–14, 2007, New Orleans, Louisiana. The invited speakers include: S. Brookes,

J. Hillston, J. Mitchell, G. Plotkin, and J. Power. A tutorial on domain theory is planned for the opening day of the meeting. There also will be special sessions on: physics, information and computation; security; systems biology; and a session to honor Gordon Plotkin on his sixtieth birthday. The Chair of the Program Committee is M. Fiore, and local arrangements are being overseen by M. Mislove. The deadline for submission of papers is December 22, 2006. For further information, visit the website below.

<http://www.math.tulane.edu/~mfps/mfps23.htm>

***Second International Symposium on Fundamentals of Software Engineering (FSEN 2007)***, April 17–19, 2007, Tehran, Iran. This event aims to bring together researchers, engineers, developers and practitioners from universities and industry working in every area of formal methods. The topics may cover any aspect in formal methods, especially those related to advancing the application of formal methods in the software industry and promoting their integration with practical engineering techniques. The General Co-chairs are A. Movaghar and J. Rutten. The Co-chairs of the Program Committee are F. Arbab and M. Sirjani. For further information, visit the website below.

<http://cs.ipm.ac.ir/FSEN07>

***Set Theory of the Reals***, May 5–11, 2007, Gainesville, Florida. This event is part of the University of Florida Special Year in Logic. Introductory tutorials (with speakers in parentheses) will be offered on Banach spaces (G. Godefroy), Borel equivalence relations (V. Kanovei), and Ergodic theory (B. Weiss). Invited speakers include: S. Argyros, I. Farah, D. Fremlin, M. Foreman, J. Moore, E. Odell, and D. Rudolph. The members of the Organizing Committee are: A. Kechris, S. Todorcevic, and J. Zapletal. For further information, visit the website below.

<http://www.math.ufl.edu/~jal/logicyear/str/>

***Workshop on Logics for Coalgebras***, May 10-11 2007, Institute for Logic, Language and Computation (ILLC), Plantage Muidergracht 24, 1018 TV Amsterdam, The Netherlands

[http://staff.science.uva.nl/~gfontain/logics\\_for\\_coalgebras/](http://staff.science.uva.nl/~gfontain/logics_for_coalgebras/)

Coalgebras have been expanding and reshaping the mathematical environment of modal logic: pivoting on the crucial notion of ‘bisimulation invariance’, a wide range of languages based on Set-endofunctors have been recognized as modal in nature and conversely, the coalgebraic nature of modal logic is clearly recognizable by its model theory. This workshop aims at giving a snapshot of the advances in the resulting

field of coalgebraic modal logic. The program also includes a tutorial on coalgebras for modal logicians. Expressions of interests are very welcome. If you intend to participate, please contact Alessandra Palmigiano.

**LIST OF SPEAKERS:** Jiri Adamek (Technical University of Braunschweig); Nick Bezhanishvili (University of Leicester); Marcello M. Bonsangue (University of Leiden); H. Peter Gumm (University of Marburg); Bart Jacobs (University of Nijmegen); Bartek Klin (University of Edinburgh); Alexander Kurz (University of Leicester); Dirk Pattinson (Imperial College London); Lutz Schroeder (University of Bremen); Yde Venema (University of Amsterdam).

**ORGANIZERS:** Gaelle Fontaine (gfontaine@science.uva.nl); Alessandra Palmigiano (apalmigi@science.uva.nl); Yde Venema (yde@science.uva.nl).

***Interpolations: A conference in honor of William Craig***, The University of California at Berkeley, May 13, 2007. The interpolation theorem is part of the standard logic curriculum. This and other results of Craig's have had a profound significance in logic, philosophy of science, philosophy of logic, and computer science. Six internationally distinguished speakers will reflect on the importance and impact of Craig's work: Solomon Feferman (Stanford), Michael Friedman (Stanford), Cesare Tinelli (University of Iowa), Dana Scott (Carnegie Mellon), Jouko Väänänen (University of Amsterdam and University of Helsinki), Johan van Benthem (University of Amsterdam and Stanford University). The organizers are Branden Fitelson, John MacFarlane, Paolo Mancosu, and Sherri Roush. Further information can be found at

<http://philosophy.berkeley.edu/events/detail/275>

***The Square of Opposition - International Congress***, Montreux, Switzerland, June 1-3, 2007. This will be the first international congress dedicated entirely to the square of opposition, considered in its various aspects. There will be talks by the best specialists of the square and this will be also an interdisciplinary event gathering people from various fields: logic, philosophy, mathematics, psychology, linguistics, anthropology, semiotics. Visual and artistic representations of the square will also be presented.

Invited speakers include Pascal Engel, Laurence Horn, Saul Kripke, Terence Parsons, Pieter Seuren, Jan Wolenski. The extended deadline for submission of contributed papers is March 1st 2007. Any contribution related to the square is welcome. For further information, visit the website below:

<http://square-of-opposition.org>

***Differential Fields Workshop***, June 8–10, 2007, Leeds, England. This is a workshop on differential algebra and differential algebraic geometry, with an emphasis on

model theoretic ideas and methods. The meeting is organized by A. Pillay, and supported by research funds from a Marie Curie Chair. For further information, visit the website below.

<http://www.maths.leeds.ac.uk/Pure/staff/pillay/differentialfields.htm>

**SIGMOD/PODS 2007**, June 11–14, 2007, Beijing, China. This event brings together the annual A.C.M. Symposium on Principles of Database Systems (PODS) and the A.C.M. Special Interest Group on Management of Data (SIGMOD) conference. PODS provides a premier annual forum for the communication of new advances in the theoretical foundation of database systems. The SIGMOD conference is a leading international forum for database researchers, developers, and users to explore cutting-edge ideas and results, and to exchange techniques, tools, and experiences. The Chair of the PODS Program Committee is L. Libkin and the Chair of the SIGMOD Program Committee is B.C. Ooi. The deadline for submission of abstracts is November 12, 2006 for SIGMOD and November 28, 2006 for PODS. For further information, visit the website below.

<http://sigmod07.riit.tsinghua.edu.cn>

**Order, Algebra, and Logics**, June 12–16, 2007, Nashville, Tennessee. Recent years have witnessed increased research activity on the interface between logic and universal algebra. In particular, the use of algebraic methods has proved fruitful in the study of non-classical logics such as modal logic and substructural logics, and ordered structures play a central role in this relationship. This conference aims to bring together researchers from all these fields to foster collaboration and further research. The Chair of the Program Committee is Y. Venema, and the Co-chairs of the Organizing Committee are R. McKenzie and C. Tsinakis. For further information, visit the website below.

<http://www.math.vanderbilt.edu/~oal2007>

**Workshop on Universal Algebra and the Constraint Satisfaction Problem**, June 17–20, 2007, Nashville, Tennessee. This event, to follow the International Conference on Order, Algebra, and Logics, will bring together researchers from the universal algebra/lattice theory and Constraint Satisfaction Problem communities to further the algebraic approach to several conjectures and problems related to constraint satisfaction. Tutorials and invited hour lectures will be given. The invited speakers include: A. Atserias, M. Bodirsky, A. Bulatov, H. Chen, V. Dalmau, A. Krokhin, G. Kun, B. Larose, M. Maroti, P. Markovic, R. McKenzie, P. Tesson, R. Willard, and L. Zadori. The members of the Organizing Committee are: A. Bulatov, V. Dalmau, R. McKenzie (Chair), and M. Valeriote. The deadline for submission

of an abstract for a contributed talk is February 28, 2007. Financial support is available to a limited number of participants, with preference given to graduate students and postdoctoral fellows whose participation is not fully supported by other sources. Requests for support should be submitted no later than March 15, 2007. For further information, visit the website below.

<http://www.math.vanderbilt.edu/~uacsp2007/>

*CiE 2007, Computation and Logic in the Real World*, 18 to 23 June 2007. Siena, Italy. Computability has played a crucial role in mathematics and computer science, leading to the discovery, understanding and classification of decidable/undecidable problems, paving the way to the modern computer era, and affecting deeply our view of the world. Recent new paradigms of computation, based on biological and physical models, address in a radically new way questions of efficiency and challenge assumptions about the so-called Turing barrier.

CiE 2007 will address various aspects of the ways computability and theoretical computer science enable scientists and philosophers to deal with mathematical and real world issues, ranging through problems related to logic, mathematics, physical processes, real computation and learning theory. At the same time it will focus on different ways in which computability emerges from the real world, and how this affects our way of thinking about everyday computational issues. List of conference topics.

CiE 2007 is hosted by the Department of Mathematics and Computer Science “Roberto Magari” of the University of Siena, a leading research institution in logic and computability theory, with links to a number of other Italian research centres strong in the computational sciences.

#### IMPORTANT DATES:

- Submission of papers: Jan. 12, 2007
- Notification of authors: Feb. 16, 2007
- Deadline for final revisions: Mar. 9, 2007
- Submission of informal presentations: Apr. 27, 2007
- Post-conference special issues of journals deadline: October 1, 2007

INVITED PLENARY SPEAKERS: Tutorials: Pieter Adriaans (Amsterdam), Kobi Benenson (Harvard). Plenary lectures: Anne Condon (Vancouver), Stephen Cook (Toronto), Yuri Ershov (Novosibirsk), Wolfgang Maass (Graz), Sophie Laplante (Paris), Anil Nerode (Cornell), Roger Penrose (Oxford), Michael Rathjen (Leeds), Dana Scott (Carnegie Mellon), Robert I. Soare (Chicago), Philip Welch (Bristol).



PROGRAMME COMMITTEE:: M. Agrawal (Kanpur), M. Arslanov (Kazan), G. Ausiello (Roma), A. Bauer (Ljubljana), A. Beckmann (Swansea), U. Berger (Swansea), A. Cantini (Firenze), B. Cooper (Leeds, co-chair), L. Crosilla (Firenze), J. Diaz (Barcelona), C. Dimitracopoulos (Athens), F. Ferreira (Lisbon), S. Goncharov (Novosibirsk), P. Grünwald (Amsterdam), D. Harel (Rehovot), A. Hodges (Oxford), J. Kempe (Paris), G. Longo (Paris), B. Löwe (Amsterdam), J. Makowsky (Haifa), E. Mayor-domo Cámara (Zaragoza), W. Merkle (Heidelberg), F. Montagna (Siena), D. Normann (Oslo), T. Pheidas (Heraklion), G. Rozenberg (Leiden), G. Sambin (Padova), H. Schwichtenberg (München), W. Sieg (Carnegie Mellon), A. Sorbi (Siena, co-chair), I. Soskov (Sofia), P. van Emde Boas (Amsterdam).

ORGANISERS: M. Affatato, G. Barmपालias, B. Cooper, T. Flaminio, G. Gherardi, T. Kent, A. Lewis, B. Löwe, F. Montagna, A. Sorbi, L. Spada, and the Servizio Congressi of the University of Siena.

<http://www.amsta.leeds.ac.uk/~pmt6sbc/cie07.html>

***EUROLAN'07, EUROLAN Summer School. Semantics, Opinion and and Sentiment in Text***, 23 July to 3 August 2007, Iasi, Romania. The EUROLAN 2007 Summer School offers two weeks of intensive study in the emerging areas of sentiment and opinion analysis complementing deep semantic analysis, and their applications to discourse and dialogue. The Summer School will cover topics relevant to the new Web 2.0, with lectures covering the application of Natural Language Processing to blogs, wikis, etc.

Invited lecturers will include internationally known researchers in the field. Lectures will consist of half- and full-day seminars, together with hands-on labs to provide students with in-depth understanding and experience.

Topics to be covered include the following: \*automatic and semi-automatic discovery of subjectivity indicators; \*extracting sentiments from unstructured text; \*tracking opinions over time; \*computational approaches to humor recognition and generation; \*annotation for deep semantics, sentiment, and subjectivity; \*subjectivity/sentiment and analysis of discourse and dialogue; \*subjectivity and sentiment analysis in blogs; \*discourse and dialogue in blogs; \*lexical semantics in the Web 2.0 (blogs, wikis, etc.); \*attribution of opinion and sentiment; \*applications of opinion and sentiment analysis.

The school will host two satellite events, including a Doctoral Consortium that provides PhD students working in Computational Linguistics and Natural Language Processing the opportunity to present their current work and receive constructive feedback and guidance on future research, from both the general audience and the invited lecturers at the Summer School.

The venue of EUROLAN 2007 is Iași, Romania, the capital city of the historical region of Moldavia. EUROLAN 2007 will include a one or one-and-a-half day excursion

sion to the Northern part of the Romanian province of Moldavia, including famous monasteries such as those from Bucovina and Neamț.

Program Committee: Dan Cristea, “Al. I. Cuza” University of Iași, Romania; Nancy Ide, Vassar College, USA; Rada Mihalcea, University of North Texas, USA; Oliviero Stock, ITC-IRST, Trento, Italy; Dan Tufiş, Romanian Academy, Bucharest, Romania.

Organising Committee: (local co-chairs): Dan Cristea, "Al. I. Cuza" University of Iași, Romania; Corina Forăscu, “Al. I. Cuza”; University of Iași, Romania; Dan Tufiş, Romanian Academy, Bucharest, Romania.

<http://eurolan.info.uaic.ro/html/home.html>

***Workshop Logic, Rationality and Interaction***, Beijing, China, August 5-9, 2007. In the past decade it has become increasingly clear that studying information, first and foremost, means studying information exchange. This acknowledgement of the inherently social character of information shows up at many places in modern logical theories. More generally, information exchange is a form of interaction where agents act together in strategic ways. This new perspective has led to contacts between logic and game theory, bringing a new set of disciplines into the scope of logic: viz., economics, and the social sciences. New interfaces are arising, such as epistemic studies of rational behavior in games. Another interesting development in this area is the rise of the notion of ‘social software’, the idea of using computational techniques for analyzing patterns of social behavior. And finally, interaction is also crucial to intelligent behavior in the field of natural language. Here pragmatics, the study of the actual use of language between different agents, has become the primary focus of research. Notions from game theory, in particular evolutionary games, are being used to-day to answer all kinds of pragmatic issues, for instance, how linguistic conventions can arise. This workshop aims to bring together researchers working on these and related topics in logic, philosophy, computer science, and related areas in order to arrive at an integrated perspective on knowledge acquisition, information exchange, and rational action.

PEOPLE INVOLVED: Chair: Johan van Benthem; Vice-Chairs: Shier Ju and Frank Veltman; General Organizers: Minghui Xiong and Fenrong Liu; Local Organizer: Liwen Xiong.

INVITED SPEAKERS: Alexandru Baltag (Oxford University, UK); Vincent F. Hendricks (Roskilde University, Denmark); Wiebe van der Hoek (Liverpool University, UK); Gerhard Jäger (University of Bielefeld, Germany); Yossi Feinberg (Stanford University, USA); Jialong Zhang (Chinese Academy of Social Sciences, China).

PROGRAMME COMMITTEE: The Programme Committee consists of the chairs and invited speakers.

COMMITTEE OF RECOMMENDATION: Patrick Blackburn (European Association of Logic, Language and Information); Giacomo Bonanno (LOFT); Joseph Halpern (TARK); Jacek Malinowski (Studia Logica); Gabriel Sandu (Eurocores Program).

CALL FOR PAPERS: Researchers from various fields, including artificial intelligence, game theory, linguistics, logic, philosophy, and cognitive science are invited to submit a paper to this workshop which aims to arrive at an interdisciplinary perspective on knowledge acquisition, information exchange, and rational action. Topics of interest include, but are not limited to: \*semantic models for knowledge, for belief, and for uncertainty; \*dynamic logics of knowledge, information flow, and action; \*logical analysis of the structure of games; \*belief revision, belief merging; \*logics for preferences and utilities; \*logics of probability and uncertainty

Paper submission will be electronic via the workshop website, instructions will be available:

<http://www.illc.uva.nl/LORI>.

PUBLICATION OF CONTRIBUTED PAPERS: The proceedings of the Workshop will be published by College Publications in London. A selection of the accepted papers will be published in a special issue of *Knowledge, Rationality and Interaction*.

IMPORTANT DATES:

- Paper submission deadline: 15 April 2007
- Notification of authors: 7 May 2007
- Camera-ready copies due: 1 June 2007
- Workshop dates: 5-9 August 2007

CONTACT: If you have any questions or comments regarding the organization of the workshop or the paper submission procedure, please do not hesitate to contact Minghui Xiong (hssxmh@mail.sysu.edu.cn) or Fenrong Liu (fenrong@science.uva.nl).

SPONSORS: The workshop is generously supported by the following institutions:

- Institute of Logic and Cognition, Sun Yat-sen University, China
- Institute for Logic, Language and Computation, University of Amsterdam, Netherlands

- Department of Philosophy and Science Studies, Roskilde University, Denmark
- College of Philosophy and Sociology, Beijing Normal University, China

For more information, please visit our website at

<http://www.illc.uva.nl/LORI>

*International Workshop on Hybrid Logic 2007 (HyLo 2007)*, 6–10 August, 2007 Dublin, organized as part of the European Summer School on Logic, Language and Information ESSLLI 2007, 6 - 17 August, 2007 in Dublin.

ORGANIZERS: Torben Braüner (Roskilde University, Denmark, chair, [torben@ruc.dk](mailto:torben@ruc.dk)); Jørgen Villadsen (Technical University of Denmark, [jv@imm.dtu.dk](mailto:jv@imm.dtu.dk)).

WORKSHOP PURPOSE: Hybrid logic is a branch of modal logic allowing direct reference to worlds/times/states. It is easy to justify interest in hybrid logic on the grounds of applications as the additional expressive power is very useful. In addition, hybrid-logical machinery improves the behaviour of the underlying modal formalism. For example, it becomes considerably simpler to formulate modal proof systems, and one can prove completeness and interpolation results of a generality that is not available in orthodox modal logic. The topic of the HyLo workshop of 2007 is not only standard hybrid-logical machinery like nominals, satisfaction operators, and the downarrow binder, but generally extensions of modal logic that increase its expressive power. The workshop HyLo 2007 will be relevant to a wide range of people, including those interested in description logic, feature logic, applied modal logics, temporal logic, and labelled deduction. The workshop continues a series of previous workshops on hybrid logic, most recently the LICS-affiliated HyLo 2006 (<http://hylomol.ruc.dk/HyLo2006/>). The workshop aims to provide a forum for advanced PhD students and researchers to present and discuss their work with colleagues and researchers who work in the broad subject areas represented at ESSLLI.

For more general background on hybrid logic, and many of the key papers, see the Hybrid Logics homepage

<http://hylo.loria.fr/>

SUBMISSION DETAILS: We invite the contribution of papers reporting new work from researchers interested in hybrid logic. Details about the submission procedure will be announced in the second call for papers. The accepted papers will appear in the workshop proceedings published by ESSLLI. One author for each accepted paper must attend the workshop in order to present the paper. It is planned to

publish revised versions of the accepted papers in a special issue of Journal of Logic, Language and Information.

**WORKSHOP FORMAT:** The workshop is part of ESSLLI and is open to all ESSLLI participants. It will consist of five 90-minute sessions held over five consecutive days in the first week of ESSLLI. There will be 2 or 3 slots for paper presentation and discussion per session. On the first day the workshop organizers will give an introduction to the topic.

**INVITED SPEAKERS:** Balder ten Cate (University of Amsterdam, The Netherlands); Ian Hodkinson (Imperial College, UK)

**PROGRAM COMMITTEE:** Carlos Areces (INRIA Lorraine, France); Patrick Blackburn (INRIA Lorraine, France); Co-Chair: Thomas Bolander (Technical University of Denmark); Chair: Torben Braüner (Roskilde University, Denmark); Mai Gehrke (New Mexico State University, USA); Valeria de Paiva (PARC, USA); Jørgen Villadsen (Technical University of Denmark).

**IMPORTANT DATES:** \*Deadline for submissions: March 22, 2007; \*Notification of acceptance: April 21, 2007; \*Preliminary programme: April 24, 2007; \*ESSLLI early registration: May 1, 2007; \*Deadline for final versions: May 17, 2007; \*Final programme: June 21, 2007; \*Workshop dates: 6 - 10 August, 2007.

**LOCAL ARRANGEMENTS:** All workshop participants including the presenters will be required to register for ESSLLI. The registration fee for authors presenting a paper will correspond to the early student/workshop speaker registration fee. Moreover, a number of additional fee waiver grants will be made available by the ESSLLI local organizing committee on a competitive basis and workshop participants are eligible to apply for those. There will be no reimbursement for travel costs and accommodation. Workshop speakers who have difficulty in finding funding should contact the local organizing committee to ask for the possibilities for a grant.

**FURTHER INFORMATION:**

About the workshop: <http://hylo.mol.ruc.dk/HyLo2007/>

About ESSLLI: <https://www.cs.tcd.ie/esslli2007>

***Federated Conference on Rewriting, Deduction, and Programming (RDP 2007)***, June 25–29, 2007, Paris, France. This event consists of two main colocated conferences, Rewriting Techniques and Applications (RTA'07) and Typed Lambda

Calculi and Applications (TLCA'07), and several workshops. The meeting also includes a colloquium in honor of Giuseppe Longo, entitled "From Type Theory to Morphologic Complexity." The invited speakers for RTA'07 include X. Leroy, R. Nieuwenhuis, and F. Pfenning (joint with TLCA'07). The invited speakers for TLCA'07, in addition to Pfenning, are P. Baillot, G. Morrisett, and, in a session to celebrate the seventy-fifth anniversary of the lambda calculus, H. Barendregt. The Chair of the Program Committee for RTA'07 is F. Baader, and the Chair of the Program Committee for TLCA'07 is S. Ronchi Della Rocca. For further information, visit the website below.

<http://www.lsv.ens-cachan.fr/rdp07/>

***Carnegie Mellon Summer School in Logic and Formal Epistemology***, June 11–29, 2007, Pittsburgh, Pennsylvania. This is a three-week summer school for promising undergraduates in philosophy, mathematics, computer science, linguistics, and other sciences. The school is free; full tuition and dormitory accommodations are provided at no charge. Applications must be received by March 15, 2007. For further information, visit the website below.

<http://www.phil.cmu.edu/summerschool/>

***Fourteenth International Symposium on Temporal Representation and Reasoning (TIME 2007)***, June 28–30, 2007, Alicante, Spain. This symposium, organized within the annual TIME series (see <http://time.dico.unimi.it>), is intended to bring together active researchers from distinct areas involving representation of, and reasoning about, temporal phenomena. The main tracks of the symposium are: Temporal Representation/Reasoning in AI and Linguistics, Time Management in Databases, and Temporal Logic in Computer Science. The General Chair is C. Dixon and the Program Chairs are V. Goranko and X.S. Wang. The Local Organization Chairs are R. Munoz, P.M. Barco, and E. Saquete. The deadline for paper submissions is February 12, 2007. For further information visit the website below.

<http://gplsi.dlsi.ua.es/congresos/time07/>

***Fourteenth Workshop on Logic, Language, Information and Computation (WoLLIC'2007)***, July 2–5, 2007, Rio de Janeiro, Brazil. This is the fourteenth in a series of workshops intended to foster interdisciplinary research in pure and applied logic. The Chair of the Program Committee is D. Leivant. The Co-chairs of the Organizing Committee are: R. de Queiroz and P. Viana. For further information, visit the website below.

<http://www.cin.ufpe.br/~wollic/wollic2007>

***2007 International Colloquium on Automata, Languages and Programming (ICALP 2007)***, July 9–13, 2007, WrocLaw, Poland. This event is the main

conference and annual meeting of the European Association for Theoretical Computer Science. It will be co-located with the 2007 ASL European Summer Meeting (Logic Colloquium 2007; see ASL Meetings webpage and <http://www.aslonline.org>) and with the Twenty-second Annual IEEE Symposium on Logic In Computer Science (LICS 2007; see the ASL 'other meetings' webpage and <http://www2.informatik.hu-berlin.de/lics/lics07/>). For further information, visit the website below.

<http://www.eatcs.org/>

***Twenty-second Annual IEEE Symposium on Logic in Computer Science (LICS 2007)***, July 10–14, 2007, Wrocław, Poland. LICS is an annual international forum on theoretical and practical topics in computer science that relate to logic in a broad sense. LICS 2007 will be co-located with the 2007 ASL European Summer Meeting (Logic Colloquium 2007; see the 'ASL meetings' webpage and with the 2007 International Colloquium on Automata, Languages and Programming (ICALP 2007; see the ASL 'other meetings' webpage and also <http://www.eatcs.org/>). The Program Chair is L. Ong; the Conference Chair is J. Marcinkowski; and the LICS General Chair is M. Abadi. For more information, visit the website below.

<http://users.comlab.ox.ac.uk/luke.ong/LICS07/>

***2007 ASL European Summer Meeting (Logic Colloquium '07)***, July 14–19, 2007, Wrocław, Poland. This conference will be co-located with the 2007 International Colloquium on Automata, Languages and Programming (ICALP 2007; see ASL OTHER MEETINGS webpages and <http://www.eatcs.org/>) and the Twenty-second Annual IEEE Symposium on Logic In Computer Science (LICS 2007; see ASL OTHER MEETINGS or visit: <http://www2.informatik.hu-berlin.de/lics/lics07/>). Invited joint ASL-LICS hour lectures will be given by M. Hyland, C. Stirling, and invited joint ASL-LICS thirty-minute lectures will be offered by C. Calcagn, M. Escardó, R. Iemhoff, and A. Simpson. Tutorials will be offered by S. Jackson on Cardinal arithmetic of L(R) and related models and B. Khoushainov on Automatic structures. Additional program information will be available soon. The Program Committee includes: A. Andretta, F. Delon, U. Kohlenbach, S. Lempp (Chair), P. Maddy, J. Marcinkowski, L. Newelski, A. Pitts, P. Pudlak, S. Solecki, F. Stephan, and G. Sundholm. The Local Organizing Committee includes: T. Jurdzinski, E. Kieronski, P. Kowalski, J. Marcinkowski (Chair), and B. Rusiecka. Abstracts of contributed talks submitted by ASL members will be published in The Bulletin of Symbolic Logic if they satisfy the Rules for Abstracts (see above). Abstracts—hard copy or email—should be received before the deadline of May 15, 2007 at the official meeting address: Piotr Kowalski, Instytut Matematyczny, Uniwersytetu Wrocławskiego, pl. Grunwaldzki 2/4, 50-384 Wrocław, Poland ; email: [lc2007@ii.uni.wroc.pl](mailto:lc2007@ii.uni.wroc.pl). For further information visit the website below.

<http://www.math.uni.wroc.pl/~pkowa/lc2007.html>

*Thirteenth International Congress of Logic, Methodology and Philosophy of Science*, August 9–15, 2007, Beijing, China. This event, held every four years, is the main international conference organized by the Division of Logic, Methodology and Philosophy of Science (DLMPS) of the International Union of History and Philosophy of Science (IUHPS). The program is divided into several sections under the general headings of Logic, General Philosophy of Science, Philosophical Issues of Particular Sciences, and Science and Society. The deadline for submission of contributed papers is March 10, 2007. For further information, visit the website below.

<http://www.clmps2007.org>

*2nd World Congress and School on Universal Logic - UNILOG'07*, Xi'an, China, August 16–22, 2007. This event is the second in a series of events whose objective is to gather logicians from all orientations (philosophy, mathematics, computer science, linguistics, artificial intelligence, etc) - people not focusing only on some specific systems of logic or some particular problems, but inquiring the fundamental concepts of logic. There will be a four days school with about 20 tutorials followed by a 3 days congress. Among the speakers there will be Walter Carnielli, Valentin Goranko, Vincent Hendricks, Wilfrid Hodges, Arnold Koslow, Marcus, Istvan Németi, Gabriel Sandu, Peter Schröder-Heister, Stan Surma, Heinrich Wansing and many others. The deadline for submission of contributed papers is March 15, 2007. There will also be a contest with subject: how to translate a logic into another one? This event, supported by the Association for Symbolic Logic, will take place in Xi'an, the ancient capital of China, just after the 13th LMPs to happen in Beijing. For further information, visit the website below:

[www.uni-log.org](http://www.uni-log.org)

*Second Conference on Algebra and Coalgebra in Computer Science (CALCO 2007)*, August 20–24, 2007, Bergen, Norway. This event brings together researchers and practitioners to exchange new results related to foundational aspects and both traditional and emerging uses of algebras and coalgebras in computer science. The Co-chairs of the Program Committee are U. Montanari and T. Mossakowski. The deadline for submission of abstracts is January 28, 2007; for technical paper submissions, the deadline is February 7, 2007. For further information, visit the website below.

<http://www.ii.uib.no/calco07/>

*RUC-ILLC Workshop on Deontic Logic*, 8-9 November 2007, Roskilde University, Denmark. Roskilde University (RUC), Denmark and ILLC, University of Amsterdam, would like to invite researchers and students to Denmark for a two-day workshop



on deontic logic. The workshop will consist of presentations by Ph.D. students as well as lectures by leading figures in the field.

INVITED SPEAKERS: John F. Horty, University of Maryland; Frank Veltman, ILLC; Eric Pacuit, ILLC.

Deadline for submission of abstracts: August 1, 2007.

Costs: Some travel grants are available for Ph.D. students.

For more information, see

<http://akira.ruc.dk/~mamobe/deonticworkshop>

Questions regarding the workshop can be sent to Martin M. Bentzen, (mamobe@ruc.dk).

***LogKCA-07 — ILLCI International Workshop on Logic and Philosophy of Knowledge, Communication and Action***, Donostia, 28-30 November 2007. This Workshop seeks to examine and explore issues concerning the logical and philosophical aspects of knowledge, communication and action in an integrated view.. Perspectives are sought from those engaged in the fields of logic, history and philosophy of logic, logic applied to artificial intelligence and cognitive systems, general epistemology, social epistemology, belief theory, communication theory, discourse theory, formal semantics, pragmatics, philosophy of action, and history of philosophy connected with those topics. These disciplines are indicative only as papers are welcomed from any area, in which logic and philosophy of KCA play a part.

Contributed papers may be presented on any of the following themes: \*applied logics of knowledge, knowledge acquisition and transmission, knowledge in a social setting; \*logics of belief, belief formation and justification, belief updating and revision, rationality problems; \*philosophical grounds of communication theory.; \*philosophy of information, incomplete information, imperfect information; \*logics of communication; \*formal dimensions of interpersonal communication; \*background aspects of effective communication; \*learning logical systems; \*general logics of action, dynamic logic, logic of intentions and goals, game-theoretical frames; \*logics for social action, collective action, and cooperative action; \*dynamic epistemic logics linked to security constraints; \*probability logics, non-monotonic logics, and hybrid logics connected to KCA; \*the history of logics of KCA.

6-page abstracts should be submitted by September 6, 2007. Notification of acceptance/rejection: September 20, 2007. If selected for presentation, 15-20 pages papers should be submitted by September 27, 2007. Papers will be blind peer reviewed, by the Programme Committee. The Proceedings with the contributed papers will be published by The University of the Basque Country Press, before the beginning of the Workshop. Further information: Dr. Xabier Arrazola (Secretary of the Organizing Committee: [ylparitx@sf.ehu.es](mailto:ylparitx@sf.ehu.es)).

<http://www.sc.ehu.es/ilcli>

**M4M-5, Methods for Modalities 5**, 29 to 30 November 2007, Cachan, France. The workshop "Methods for Modalities" (M4M) aims to bring together researchers interested in developing algorithms, verification methods and tools based on modal logic. Here the term "modal logics" is conceived broadly, including description logic, guarded fragments, conditional logic, temporal and hybrid logic, etc. To stimulate interaction and transfer of expertise, M4M will feature a number of invited talks by leading scientists, research presentation aimed at highlighting new developments, and submissions of system demonstrations. We strongly encourage young researchers and students to submit papers and posters, especially for experimental and prototypical software tools which are related to modal logics.

<http://m4m.loria.fr/M4M5/>

**10th International Conference on Relational Methods in Computer Science (RelMiCS 10)**, **5th International Conference on Applications of Kleene Algebra (AKA 5)**, April 7-11, 2008, Frauenwoerth (near Munich), Germany. Over the past fifteen years, the RelMiCS meetings have been a main forum for researchers who use the calculus of relations and similar algebraic formalisms as methodological and conceptual tools. The workshop series on Applications of Kleene algebra started with a Dagstuhl seminar in 2001 and has been co-organised with the RelMiCS conference since. Due to their considerable overlap, the two events have a joint PC and joint proceedings. Their scope comprises relation algebra, fixpoint calculi, semiring theory, iteration algebras, process algebras and dynamic algebras. Applications include formal algebraic modelling, the semantics, analysis and development of programs, formal language theory and combinatorial optimisation. We invite submissions on the general topics of: Relation Algebra and Kleene Algebra in computer science. Special focus will lie on formal methods for software engineering, logics of programs and links with neighbouring disciplines. Particular topics of the conference cover, but are not limited to the theory of: \*relation algebras and Kleene algebras; \*related formalisms such as process algebras, fixed point calculi, idempotent semirings, quantales, allegories, dynamic algebras, cylindric algebras — and their applications in areas such as: \*verification, analysis and development of programs and algorithms; \*relational formal methods such as B or Z, tabular methods; \*algebraic approaches to logics of programs, modal and dynamic logics, interval and temporal logics; \*algebraic semantics of programming languages; \*graph theory and combinatorial optimisation; \*games, automata and language theory; \*mechanised and automated reasoning, decision procedures; \*spatio-temporal reasoning, knowledge acquisition, preference and scaling methods; \*information systems.

PROGRAMME COMMITTEE: R. Backhouse (Nottingham, UK), R. Berghammer (Kiel, Germany), B. de Baets (Gent, Belgium), H. de Swart (Tilburg, Netherlands),

J. Desharnais (Laval, Canada), M. Frias (Buenos Aires, Argentina), H. Furusawa (Kagoshima, Japan), P. Jipsen (Chapman, USA), W. Kahl (McMaster, Canada), Y. Kawahara (Kyushu, Japan), B. Möller (Augsburg, Germany), C. Morgan (Sydney, Australia), M. Ojeda Aciego (Malaga, Spain), E. Orłowska (Warsaw, Poland), S. Saminger (Linz, Austria), G. Schmidt (Munich, Germany), R. Schmidt (Manchester, UK), G. Scollo (Catania, Italy), A. Szalas (Linköping, Sweden), G. Struth (Sheffield, UK), J. van Benthem (Amsterdam, Netherlands), M. Winter (Brock, Canada),

INVITED SPEAKERS: Marc Pauly (Stanford University); Gunther Schmidt (University German Armed Forces, Munich).

IMPORTANT DATES: \*Call for Papers: Feb 1 2007; \*Submission (full papers): Aug 31 2007; \*Notification: Dec 15 2007; \*Final versions due: Jan 15 2008; \*Conference: April 6-11 2008.

PROCEEDINGS AND SUBMISSION: All papers will be formally reviewed. We plan to publish the proceedings as ‘Lecture Notes in Computer Science’, ready at the conference. The proceedings editors will be R. Berghammer, B. Möller and G. Struth. Submissions must be in English, in postscript or pdf format and provide sufficient information to judge their merits. They must be unpublished and not submitted for publication elsewhere. They may not exceed 15 pages in Springer LNCS style and must be produced with LaTeX. Additional material may be provided by a clearly marked appendix or a reference to a manuscript on a website. This may be considered at the discretion of the PC. Deviation from these requirements may cause immediate rejection. One author of each accepted paper is expected to present the paper at the conference. Detailed instructions for electronic submission can be found at the conference website. Formatting instructions and the LNCS style files can be obtained via

<http://www.springer.de/comp/lncs/authors.html>

STUDENT PROGRAMME: The conference will be accompanied by a PhD training programme. Details will be published in due time in a special call and on the conference website.

VENUE: Frauenwoerth is a charming and architecturally very interesting nunnery on the isle of Frauenchiemsee in lake Chiemsee in South Bavaria (see the web site <http://www.frauenwoerth.de/>). The distance from the lake to Munich is about 90 kilometres and there are good train connections from Munich and Munich Airport to the village Prien at the lakes west shore. From Prien there are boats to the isle almost every half hour. Neighbouring Frauenchiemsee there is the isle of Herrenchiemsee with one of King Ludwig II’s castles, modelled after Versailles, but partly unfinished. From

Prien it is about 50 kilometres to the Austrian city of Salzburg, where the famous composer Wolfgang Amadeus Mozart was born in 1756 and lived until 1781.

Further details can be found under

[http://www.uni-augsburg.de/rel\\_aka](http://www.uni-augsburg.de/rel_aka)

## NEW PUBLICATIONS

*Handbook of Spatial Logics* by Marco Aiello (Editor), Ian. E. Pratt-Hartmann (Editor), Johan F.A.K. van Benthem (Editor); Springer; 1 edition (April 2007); \$389.00 (Hardcover) 1000 pages; ISBN: 1402055862.

*Automata Theory with Modern Applications* by James A. Anderson (Author); Cambridge University Press; 1 edition (July 10, 2006); \$45.00 (Paperback) 260 pages; ISBN: 0521613248. Recent applications to biomolecular science and DNA computing have created a new audience for automata theory and formal languages. This is the only introductory book to cover such applications. It begins with a clear and readily understood exposition of the fundamentals that assumes only a background in discrete mathematics. The first five chapters give a gentle but rigorous coverage of basic ideas as well as topics not found in other texts at this level, including codes, retracts and semiretracts. Chapter 6 introduces combinatorics on words and uses it to describe a visually inspired approach to languages. The final chapter explains recently-developed language theory coming from developments in bioscience and DNA computing. With over 350 exercises (for which solutions are available), many examples and illustrations, this text will make an ideal contemporary introduction for students; others, new to the field, will welcome it for self-learning.

*Constraint Logic Programming using Eclipse* by Krzysztof R. Apt (Author), Mark Wallace (Author); Cambridge University Press; 1st edition (January 15, 2007); \$65.00 (Hardcover) 348 pages; ISBN: 0521866286. Constraint logic programming lies at the intersection of logic programming, optimisation and artificial intelligence. It has proved a successful tool in many areas including production planning, transportation scheduling, numerical analysis and bioinformatics. Eclipse is one of the leading software systems that realise its underlying methodology. Eclipse is exploited commercially by Cisco, and is freely available and used for teaching and research in over 500 universities. This book has a two-fold purpose. It's an introduction to constraint programming, appropriate for one-semester courses for upper undergraduate or graduate students in computer science or for programmers wishing to master the practical aspects of constraint programming. By the end of the book, the reader will be able to understand and write constraint programs that solve complex problems. Second, it

provides a systematic introduction to the Eclipse system through carefully-chosen examples that guide the reader through the language and illustrate its power, versatility and utility.

*The Philosophy of Jaakko Hintikka (Library of Living Philosophers)* by Randall E. Auxier (Editor), Lewis Edwin Hahn (Editor); Open Court (May 11, 2006); \$42.95 (Paperback) 736 pages; ISBN: 0812694635. One of the world's most influential logicians, Jaakko Hintikka is a leading figure on the international philosophical scene. Here, he responds to his critics. The 27 critical and descriptive essays in this book, written by important scholars from a variety of fields, challenge Hintikka's innovations in philosophy, logic, and linguistics. His replies, and the essays themselves, all previously unpublished, form a lively, provocative exchange of ideas. Also included is an intellectual autobiography and a complete bibliography of Hintikka's writings.

*Category Theory (Oxford Logic Guides)* by Steve Awodey (Author); Oxford University Press, USA (July 27, 2006); \$124.50 (Hardcover) 272 pages; ISBN: 0198568614. This text and reference book on Category Theory, a branch of abstract algebra, is aimed not only at students of Mathematics, but also researchers and students of Computer Science, Logic, Linguistics, Cognitive Science, Philosophy, and any of the other fields that now make use of it. Containing clear definitions of the essential concepts, illuminated with numerous accessible examples, and providing full proofs of all important propositions and theorems, this book aims to make the basic ideas, theorems, and methods of Category Theory understandable to this broad readership. Although it assumes few mathematical pre-requisites, the standard of mathematical rigour is not compromised. The material covered includes the standard core of categories; functors; natural transformations; equivalence; limits and colimits; functor categories; representables; Yoneda's lemma; adjoints; monads. An extra topic of cartesian closed categories and the lambda-calculus is also provided; a must for computer scientists, logicians and linguists!

*Intuitionistic Fuzzy Measures: Theory And Applications* by Adrian I. Ban (Author); Nova Science Publishers (December 30, 2006); \$129.00 (Hardcover) 264 pages; ISBN: 1594549117.

*Logic, Combined Volume* by Stan Baronett (Author); Prentice Hall; 1 edition (July 1, 2007); \$50.67 (Paperback) 640 pages; ISBN: 0131933124.

*Truth, Etc.* by Jonathan Barnes (Author); Oxford University Press, USA (March 15, 2007); \$65.00 (Hardcover) 496 pages; ISBN: 0199282811. Truth, etc. is a wide-ranging study of ancient logic based upon the John Locke lectures given by the eminent philosopher Jonathan Barnes in Oxford. The book presupposes no knowledge of logic

and no skill in ancient languages: all ancient texts are cited in English translation; and logical symbols and logical jargon are avoided so far as possible. Anyone interested in ancient philosophy, or in logic and its history, will find much to learn and enjoy here.

*Philosophy at the Edge of Chaos: Gilles Deleuze and the Philosophy of Difference (Toronto Studies in Philosophy)* by Jeffrey A. Bell (Author); University of Toronto Press (November 12, 2006); \$32.95 (Paperback) 320 pages; ISBN: 0802094090. From the early 1960s until his death, French philosopher Gilles Deleuze (1925–1995) wrote many influential works on philosophy, literature, film, and fine art. One of Deleuze’s main philosophical projects was a systematic inversion of the traditional relationship between identity and difference. This Deleuzian philosophy of difference is the subject of Jeffrey A. Bell’s *Philosophy at the Edge of Chaos*. Bell argues that Deleuze’s efforts to develop a philosophy of difference are best understood by exploring both Deleuze’s claim to be a Spinozist, and Nietzsche’s claim to have found in Spinoza an important precursor. Beginning with an analysis of these claims, Bell shows how Deleuze extends and transforms concepts at work in Spinoza and Nietzsche to produce a philosophy of difference that promotes and, in fact, exemplifies the notions of dynamic systems and complexity theory. With these concepts at work, Deleuze constructs a philosophical approach that avoids many of the difficulties that linger in other attempts to think about difference. Bell uses close readings of Plato, Aristotle, Spinoza, Nietzsche, Heidegger, Derrida, and Whitehead to illustrate how Deleuze’s philosophy is successful in this regard and to demonstrate the importance of the historical tradition for Deleuze. Far from being a philosopher who turns his back on what is taken to be a mistaken metaphysical tradition, Bell argues that Deleuze is best understood as a thinker who endeavoured to continue the work of traditional metaphysics and philosophy.

*Intelligent Data Analysis* by Michael Berthold (Editor), David J. Hand (Editor); Springer; 2nd edition (January 2007); \$79.95 (Hardcover) 525 pages; ISBN: 3540430601. This monograph is a detailed introductory presentation of the key classes of intelligent data analysis methods. The twelve coherently written chapters by leading experts provide complete coverage of the core issues. The first half of the book is devoted to the discussion of classical statistical issues, ranging from the basic concepts of probability, through general notions of inference, to advanced multivariate and time series methods, as well as a detailed discussion of the increasingly important Bayesian approaches and Support Vector Machines. The following chapters then concentrate on the area of machine learning and artificial intelligence and provide introductions into the topics of rule induction methods, neural networks, fuzzy logic, and stochastic search methods. The book concludes with a chapter on Visualization and a higher-level overview of the IDA processes, which illustrates the breadth of application of the presented ideas.

*Deflationism: A Use-theoretic Analysis of the Truth-predicate (Stockholm Studies in Philosophy)* by Arvid Bave (Author); Stockholm Universitet (September 30, 2006); \$79.50 (Paperback) 207 pages; ISBN: 9185445339.

*The Age of Alternative Logics: Assessing Philosophy of Logic and Mathematics Today (Logic, Epistemology, and the Unity of Science)* by Johan van Benthem (Editor), Gerhard Heinzmann (Editor), Manuel Rebuschi (Editor), Henk Visser (Editor); Springer; 1 edition (November 14, 2006); \$169.00 (Hardcover) 348 pages; ISBN: 1402050119.

*An Introduction to Many-Valued and Fuzzy Logic: Semantics, Algebras, and Derivation Systems* by Merrie Bergmann (Author); Cambridge University Press (November 30, 2007); \$34.99 (Paperback) 375 pages; ISBN: 0521707579. This volume is an accessible introduction to the subject of many-valued and fuzzy logic suitable for use in relevant advanced undergraduate and graduate courses. The text opens with a discussion of the philosophical issues that give rise to fuzzy logic – problems arising from vague language – and returns to those issues as logical systems are presented. For historical and pedagogical reasons, three-valued logical systems are presented as useful intermediate systems for studying the principles and theory behind fuzzy logic.

*Nonmonotonic Reasoning: A Unifying Framework* by Dritan Berzati (Editor); Nova Science Publishers (June 2006); \$89.00 (Hardcover); ISBN: 1594545626.

*Non-Locality and Possible Worlds: A Counterfactual Perspective on Quantum Entanglement* by Tomasz Bigaj (Author); Ontos Verlag (February 28, 2007); \$112.95 (Hardcover) 286 pages; ISBN: 3938793295.

*Handbook of Modal Logic, Volume 3 (Studies in Logic and Practical Reasoning)* by Patrick Blackburn (Editor), Johan F.A.K. van Benthem (Editor), Frank Wolter (Editor); Elsevier Science (December 11, 2006); \$220.00 (Hardcover) 1260 pages; ISBN: 0444516905. The Handbook of Modal Logic contains 20 articles, which collectively introduce contemporary modal logic, survey current research, and indicate the way in which the field is developing. The articles survey the field from a wide variety of perspectives: the underlying theory is explored in depth, modern computational approaches are treated, and six major applications areas of modal logic (in Mathematics, Computer Science, Artificial Intelligence, Linguistics, Game Theory, and Philosophy) are surveyed. The book contains both well-written expository articles, suitable for beginners approaching the subject for the first time, and advanced articles, which will help those already familiar with the field to deepen their expertise. Please visit: [http://people.uleth.ca/~woods/RedSeriesPromo\\_WP/PubSLPR.html](http://people.uleth.ca/~woods/RedSeriesPromo_WP/PubSLPR.html).

*Self-Reference (Csl Lecture Notes)* by Thomas Bolander (Author), Vincent F. Hendricks (Author), Stig Andur Pedersen (Author); Center for the Study of Language

and Inf; New Ed edition (November 1, 2006); \$27.50 (Paperback) 200 pages; ISBN: 1575865165. An anthology of previously unpublished essays from some of the most outstanding scholars working in philosophy, mathematics, and computer science today, Self-Reference reexamines the latest theories of self-reference, including those that attempt to explain and resolve the semantic and set-theoretic paradoxes. With a thorough introduction that contextualizes the subject for students, this book will be important reading for anyone interested in the general area of self-reference and philosophy.

*Formal Models of Communicating Systems: Languages, Automata, and Monadic Second-Order Logic (Texts in Theoretical Computer Science. An Eates Series)* by Benedikt Bollig (Author); Springer; 1 edition (October 10, 2006); \$64.95 (Hardcover) 182 pages; ISBN: 3540329226.

*The Essentials Of Logic: Being Ten Lectures On Judgment And Inference* by Bernard Bosanquet (Author); Kessinger Publishing, LLC (May 26, 2006); \$22.95 (Paperback) 180 pages; ISBN: 1428615555.

*Techniques of Constructive Analysis (Universitext)* by Douglas S. Bridges (Author), Luminita Simona Vita (Author); Springer; 1 edition (September 19, 2006); \$49.95 (Paperback) 216 pages; ISBN: 038733646X. This book is an introduction to constructive mathematics with an emphasis on techniques and results that have been obtained in the last twenty years. The text covers fundamental theory of the real line and metric spaces, focusing on locatedness in normed spaces and with associated results about operators and their adjoints on a Hilbert space. Some of the other areas that are discussed in this book are the Ishihara's tricks, Separation theorems, and Locally convex spaces. There are two appendices to the book. The first gathers together some basic notions about sets and orders, the second gives the axioms for intuitionistic logic. The intended readership of the book consists of postgraduate or senior undergraduate students, and professional research mathematicians. No background in intuitionistic logic or constructive analysis is needed in order to read the book, but some familiarity with the classical theories of metric, normed and Hilbert spaces is recommended.

*Extending the Frontiers of Mathematics: Inquiries into argumentation and proof* by Edward B. Burger (Author); Key College; 1 edition (January 2007); \$49.95 (Paperback) 128 pages; ISBN: 1597570427.

*The Art of Deception: An Introduction to Critical Thinking* by Nicolas Capaldi (Author), Miles Smit (Editor); Prometheus Books; Revised edition (April 3, 2007); \$14.96 (Paperback) 256 pages; ISBN: 159102532X. This classic work on critical thinking—now fully updated and revised—uses a novel approach to teach the basics of informal logic.



On the assumption that “it takes one to know one,” the authors have written the book from the point of view of someone who wishes to deceive, mislead, or manipulate others. Having mastered the art of deception, readers will then be able to detect the misuse or abuse of logic when they encounter it in others—whether in a heated political debate or while trying to evaluate the claims of a persuasive sales person. Using a host of real-world examples, the authors show you how to win an argument, defend a case, recognize a fallacy, see through deception, persuade a skeptic, and turn defeat into victory. Not only do they discuss the fundamentals of logic (premises, conclusions, syllogisms, common fallacies, etc.), but they also consider important related issues often encountered in face-to-face debates, such as gaining a sympathetic audience, responding to audience reaction, using nonverbal devices, clearly presenting the facts, refutation, and driving home a concluding argument. Whether you’re preparing for law school or you just want to become more adept at making your points and analyzing others’ arguments, *The Art of Deception* will give you the intellectual tools to become a more effective thinker and speaker. Helpful exercises and discussion questions are also included.

*Symbolic Logic And The Game Of Logic* by Lewis Carroll (Author); Kessinger Publishing, LLC (July 25, 2006); \$31.95 (Paperback) 348 pages; ISBN: 1428650059. Over 350 ingenious problems involving classical logic: logic is expressed in terms of symbols; syllogisms and the sorites are diagrammed; logic becomes a game played with two diagrams and a set of counters. Two books bound as one.

*The VLSI Handbook, Second Edition (Electrical Engineering Handbook)* by Wai-Kai Chen (Editor); CRC; 2 edition (December 26, 2006); \$169.95 (Hardcover) 2320 pages; ISBN: 084934199X. Written by a stellar international panel of expert contributors, this handbook remains the most up-to-date, reliable, and comprehensive source for real answers to practical problems. In addition to updated information in most chapters, this edition features several heavily revised and completely rewritten chapters, new chapters on such topics as CMOS fabrication and high-speed circuit design, heavily revised sections on testing of digital systems and design languages, and two entirely new sections on low-power electronics and VLSI signal processing. An updated compendium of references and other resources—such as software, databases, standards, and seminars—points toward more in-depth information.

*Public Reason and Deliberation* by Simone Chambers (Author); Routledge; 1 edition (September 1, 2007); \$110.00 (Hardcover); ISBN: 0415242045.

*Mathematical Logic (Oxford Texts in Logic)* by Ian Chiswell (Author), Wilfrid Hodges (Author); Oxford University Press (May 31, 2007); (Hardcover) 304 pages; ISBN: 0198571003. Assuming no previous study in logic, this informal yet rigorous text covers the material of a standard undergraduate first course in mathematical logic, using

natural deduction and leading up to the completeness theorem for first-order logic. At each stage of the text, the reader is given an intuition based on standard mathematical practice, which is subsequently developed with clean formal mathematics. Alongside the practical examples, readers learn what can and can't be calculated; for example the correctness of a derivation proving a given sequent can be tested mechanically, but there is no general mechanical test for the existence of a derivation proving the given sequent. The undecidability results are proved rigorously in an optional final chapter, assuming Matiyasevich's theorem characterising the computably enumerable relations. Rigorous proofs of the adequacy and completeness proofs of the relevant logics are provided, with careful attention to the languages involved. Optional sections discuss the classification of mathematical structures by first-order theories; the required theory of cardinality is developed from scratch. Throughout the book there are notes on historical aspects of the material, and connections with linguistics and computer science, and the discussion of syntax and semantics is influenced by modern linguistic approaches. Two basic themes in recent cognitive science studies of actual human reasoning are also introduced. Including extensive exercises and selected solutions, this text is ideal for students in Logic, Mathematics, Philosophy, and Computer Science.

*Putting Logic in Its Place: Formal Constraints on Rational Belief* by David Christensen (Author); Oxford University Press, USA; New Ed edition (April 15, 2007); \$29.95 (Paperback) 200 pages; ISBN: 0199204314. What role, if any, does formal logic play in characterizing epistemically rational belief? Traditionally, belief is seen in a binary way - either one believes a proposition, or one doesn't. Given this picture, it is attractive to impose certain deductive constraints on rational belief: that one's beliefs be logically consistent, and that one believe the logical consequences of one's beliefs. A less popular picture sees belief as a graded phenomenon. This picture (explored more by decision-theorists and philosophers of science than by mainstream epistemologists) invites the use of probabilistic coherence to constrain rational belief. But this latter project has often involved defining graded beliefs in terms of preferences, which may seem to change the subject away from epistemic rationality. *Putting Logic in its Place* explores the relations between these two ways of seeing beliefs. It argues that the binary conception, although it fits nicely with much of our commonsense thought and talk about belief, cannot in the end support the traditional deductive constraints on rational belief. Binary beliefs that obeyed these constraints could not answer to anything like our intuitive notion of epistemic rationality, and would end up having to be divorced from central aspects of our cognitive, practical, and emotional lives. But this does not mean that logic plays no role in rationality. Probabilistic coherence should be viewed as using standard logic to constrain rational graded belief. This probabilistic constraint helps explain the appeal of the traditional deductive constraints, and even underlies the force of rationally persuasive deductive

arguments. Graded belief cannot be defined in terms of preferences. But probabilistic coherence may be defended without positing definitional connections between beliefs and preferences. Like the traditional deductive constraints, coherence is a logical ideal that humans cannot fully attain. Nevertheless, it furnishes a compelling way of understanding a key dimension of epistemic rationality.

*Essentials of Logic (2nd Edition)* by Irving M. Copi (Author), Carl Cohen (Author), Daniel Flage (Author); Prentice Hall; 2 edition (July 17, 2006); \$80.67 (Paperback) 464 pages; ISBN: 013238034X. Rendered from the 11th Edition of Copi/Cohen, Introduction to Logic, the most respected introductory logic book on the market, this concise version presents a simplified yet rigorous introduction to the study of logic. It covers all major topics and approaches, using a three-part organization that outlines specific topics under logic and language, deduction, and induction. For individuals intrigued by the formal study of logic.

*Handbook of Combinatorial Designs, Second Edition (Discrete Mathematics and Its Applications)* by Charles J. Colbourn (Editor), Jeffrey H. Dinitz (Editor); Chapman & Hall/CRC; 2 edition (November 2, 2006); \$129.95 (Hardcover) 984 pages; ISBN: 1584885068. Continuing in the bestselling, informative tradition of the first edition, this second edition remains the only resource to contain all of the most important results and tables in the area of combinatorial design. The handbook covers the constructions of designs, existence results, properties of designs, and applications of designs. Over 30% longer than the first edition, it contains new chapters on the history of design theory, various codes, bent functions, and numerous designs as well as updated tables, including BIBDs, PBDs, MOLS, and Hadamard matrices. With expanded and updated coverage, the book features new applications in cryptography, computer science, and finance.

*Maude - A High-Performance Logical Framework: Tutorial of the Maude Rewriting Logic System, with Program and Complete Reference Manual on CD-ROM (Lecture Notes in Computer Science)* by Manuel Clavel (Author), Francisco Durán (Author), Steven Eker (Author), Patrick Lincoln (Author), Narciso Martí-Oliet (Author), José Meseguer (Author), Carolyn Talcott (Author); Springer; 1 edition (June 2007); \$109.00 (Unknown Binding) 812 pages; ISBN: 3540719407.

*Other Times (Cambridge Studies in Philosophy)* by David Cockburn (Author); Cambridge University Press; New Ed edition (December 30, 2006); \$60.00 (Paperback) 372 pages; ISBN: 0521034086. Current approaches to the question of our position in time—such as those seen in disputes between tensed and tenseless theories, and between realist and anti-realist treatments of past and future—misconstrue the relation between metaphysics and ethics, and the way to characterize the kind of sense which

tensed language has. In this original and thought-provoking study, David Cockburn argues that the notion of "reasons for emotion" must have a central place in any account of meaning, and that the present should have no priority in our understanding of tense.

*Formal Models of Operating System Kernels* by Iain D. Craig (Author); Springer; 1 edition (November 14, 2006); \$84.95 (Hardcover) 338 pages; ISBN: 1846283752.

*Semigroups Underlying First-order Logic (Memoirs of the American Mathematical Society)* by William Craig (Author); American Mathematical Society (October 5, 2006); \$83.00 (Paperback) 263 pages; ISBN: 0821841491. Table of Contents: Boolean, relation-induced, and other operations for dealing with first-order definability Uniform relations between sequences Diagonal relations Uniform diagonal relations and some kinds of bisections or bisectable relations Presentation of  $S_q$ ,  $S_p$  and related structures Presentation of  $S_{pq}$ ,  $S_{pe}$  and related structures Appendix. Presentation of  $S_{pqe}$  and related structures Bibliography Index of symbols Index of phrases and subjects List of relations involved in presentations Synopsis of presentations.

*Classic Works on the Dempster-Shafer Theory of Belief Functions (Studies in Fuzziness and Soft Computing)* by Arthur P. Dempster (Editor), Ronald Yager (Editor), Liping Liu (Editor); Springer; 1 edition (May 1, 2007); \$199.00 (Hardcover) 680 pages; ISBN: 3540253815. This book brings together a collection of classic research papers on the Dempster-Shafer theory of belief functions. This book will serve as the authoritative reference in the field of evidential reasoning and an important archival reference in a wide range of areas including uncertainty reasoning in artificial intelligence and decision making in economics, engineering, and management. The carefully selected contributions are grouped into seven sections, including conceptual foundations, theoretical perspectives, theoretical extensions, alternative interpretations, and applications to artificial intelligence, decision-making, and statistical inferences. The book also includes a foreword by Dempster and Shafer reflecting the development of the theory in the last forty years, and an introduction describing the basic elements of the theory and how each paper contributes to the field.

*Studies In Logical Theory* by John Dewey (Author); Kessinger Publishing, LLC (July 9, 2006); \$34.95 (Paperback) 408 pages; ISBN: 1428644989.

*Dynamic Epistemic Logic (Synthese Library)* by Hans van Ditmarsch (Author), Wiebe van der Hoek (Author), Barteld Kooi (Author); Springer; 1 edition (April 2007); \$132.00 (Hardcover) 300 pages; ISBN: 1402058381.

*Mathematical Logic in Asia* by R. Downey (Author); World Scientific Publishing Company (October 23, 2006); \$78.00 (Hardcover) 300 pages; ISBN: 9812700455.

*Formalizing Medieval Logical Theories: Suppositio, Consequentiae and Obligationes (Logic, Epistemology, and the Unity of Science)* by Catarina Dutilh Novaes (Author); Springer; 1 edition (May 2007); \$149.00 (Hardcover) 350 pages; ISBN: 1402058527.

*Ernst Zermelo: An Approach to His Life and Work* by Heinz-Dieter Ebbinghaus (Author), V. Peckhaus (Author); Springer; 1 edition (April 2007); \$64.95 (Hardcover) 356 pages; ISBN: 3540495517.

*The Best of All Possible Worlds: Mathematics and Destiny* by Ivar Ekeland (Author); University Of Chicago Press (October 1, 2006); \$16.50 (Hardcover) 208 pages; ISBN: 0226199940. Optimists believe this is the best of all possible worlds. And pessimists fear that might really be the case. But what is the best of all possible worlds? How do we define it? Is it the world that operates the most efficiently? Or the one in which most people are comfortable and content? Questions such as these have preoccupied philosophers and theologians for ages, but there was a time, during the seventeenth and eighteenth centuries, when scientists and mathematicians felt they could provide the answer. This book is their story. Ivar Ekeland here takes the reader on a journey through scientific attempts to envision the best of all possible worlds. He begins with the French physicist Maupertuis, whose least action principle asserted that everything in nature occurs in the way that requires the least possible action. This idea, Ekeland shows, was a pivotal breakthrough in mathematics, because it was the first expression of the concept of optimization, or the creation of systems that are the most efficient or functional. Although the least action principle was later elaborated on and overshadowed by the theories of Leonhard Euler and Gottfried Leibniz, the concept of optimization that emerged from it is an important one that touches virtually every scientific discipline today. Tracing the profound impact of optimization and the unexpected ways in which it has influenced the study of mathematics, biology, economics, and even politics, Ekeland reveals throughout how the idea of optimization has driven some of our greatest intellectual breakthroughs. The result is a dazzling display of erudition—one that will be essential reading for popular-science buffs and historians of science alike.

*Classical Mathematical Logic: The Semantic Foundations of Logic* by Richard L. Epstein (Author), Leslaw W. Szczerba (Contributor); Princeton University Press (July 3, 2006); \$79.50 (Hardcover) 544 pages; ISBN: 0691123004. In *Classical Mathematical Logic*, Richard L. Epstein relates the systems of mathematical logic to their original motivations to formalize reasoning in mathematics. The book also shows how mathematical logic can be used to formalize particular systems of mathematics. It sets out the formalization not only of arithmetic, but also of group theory, field theory, and linear orderings. These lead to the formalization of the real numbers and Euclidean plane geometry. The scope and limitations of modern logic are made clear in these

formalizations. The book provides detailed explanations of all proofs and the insights behind the proofs, as well as detailed and nontrivial examples and problems. The book has more than 550 exercises. It can be used in advanced undergraduate or graduate courses and for self-study and reference. Classical Mathematical Logic presents a unified treatment of material that until now has been available only by consulting many different books and research articles, written with various notation systems and axiomatizations.

*A Practical Introduction to PSL (Series on Integrated Circuits and Systems)* by Cindy Eisner (Author), Dana Fisman (Author); Springer; 1 edition (July 20, 2006); \$114.00 (Hardcover) 240 pages; ISBN: 0387353135. This book describes the Property Specification Language PSL, recently standardized as IEEE Std 1850-2005. PSL was specifically developed to fulfill the following requirements: \*easy to learn, write, and read; \*concise syntax; \*rigorously well-defined formal semantics; \*expressive power, permitting the specification for a large class of real world design properties; \*known efficient underlying algorithms in simulation, as well as formal verification. This book is primarily targeted to hardware designers and verification engineers who plan to use PSL. It presents PSL using extensive examples in the form of timing diagrams and associated PSL properties. In addition to language elements, it touches on methodological issues in the use of PSL. While primarily oriented to users of PSL for simulation, formal verification is addressed as well. All the basic features of the language are covered, as well as advanced topics such as the use of PSL in multiply-clocked designs and the issue of embedding asynchronous properties in synchronous ones. One chapter is devoted to errors commonly made by beginners gathered through the authors' many years of experience in using and teaching the language, and will be helpful to both beginners and more experienced users. The book is accessible to the typical hardware designer and verification engineer with no interest in the theory behind temporal logic. However, the formal semantics are included as an appendix, so that those with such an interest will be able to refer to them.

*David Hilbert's Lectures on the Foundations of Arithmetic and Logic, 1894-1917* by William Ewald (Editor), Michael Hallett (Editor), Wilfried Sieg (Editor), Ulrich Majer (Editor); Springer; 1 edition (November 2007); \$99.00 (Hardcover) 700 pages; ISBN: 3540206051. This volume focuses on notes for lectures on the foundations of the mathematical sciences held by Hilbert in the period 1894-1917. They document Hilbert's first engagement with 'impossibility' proofs; his early attempts to formulate and address the problem of consistency, first dealt with in his work on geometry in the 1890s; his engagement with foundational problems raised by the work of Cantor and Dedekind; his early investigations into the relationship between arithmetic, set theory, and logic; his advocacy of the use of the axiomatic method generally; his first engagement with the logical and semantical paradoxes; and the first formal at-

tempts to develop a logical calculus. The Volume also contains Hilbert's address from 1895 which formed the preliminary version of his famous *Zahlbericht* (1897).

*On the Philosophy of Logic* by Jennifer Fisher (Author); Wadsworth Publishing; 1 edition (August 15, 2007); \$15.95 (Paperback); ISBN: 0495008885. Jennifer Fisher's 'On the Philosophy of Logic' explores questions about logic often overlooked by philosophers. Which of the many different logics available to us is right? How would we know? What makes a logic right in the first place? Is logic really a good guide to human reasoning? An ideal companion text for any course in symbolic logic, this lively and accessible book explains important logical concepts, introduces classical logic and its problems and alternatives, and reveals the rich and interesting philosophical issues that arise in exploring the fundamentals of logic. The Wadsworth Philosophical Topic Series (under the general editorship of Robert Talisse, Vanderbilt University) presents readers with concise, timely, and insightful introductions to a variety of traditional and contemporary philosophical subjects. With this series, students of philosophy will be able to discover the richness of philosophical inquiry across a wide array of concepts, including hallmark philosophical themes and themes typically underrepresented in mainstream philosophy publishing. Written by a distinguished list of scholars who have garnered particular recognition for their excellence in teaching, this series presents the vast sweep of today's philosophical exploration in highly accessible and affordable volumes. These books will prove valuable to philosophy teachers and their students as well as to other readers who share a general interest in philosophy.

*Attitude Problems: An Essay on Linguistic Intensionality* by Graeme Forbes (Author); Oxford University Press, USA (September 14, 2006); \$45.00 (Hardcover) 206 pages; ISBN: 0199274940. Ascriptions of mental states to oneself and others give rise to many interesting logical and semantic problems. *Attitude Problems* presents an original account of mental state ascriptions that are made using intensional transitive verbs such as "want," "seek," "imagine," and "worship." Forbes offers a theory of how such verbs work that draws on ideas from natural language semantics, philosophy of language, and aesthetics.

*Proof in Geometry: With "Mistakes in Geometric Proofs"* by A. I. Fetisov (Author), Ya. S. Dubnov (Author); Dover Publications (November 17, 2006); \$9.95 (Paperback) 128 pages; ISBN: 0486453545. This single-volume compilation of two books, *Proof in Geometry* and *Mistakes in Geometric Proofs*, explores the construction of geometric proofs. In addition to offering useful criteria for determining correctness, it presents examples of faulty proofs that illustrate common errors. High-school geometry is the sole prerequisite. 1963 edition.

*Incompleteness in the Land of Sets* by Melvin Fitting (Author); College Publications

(February 19, 2007); \$30.00 (Paperback) 156 pages; ISBN: 1904987346. Russell's paradox arises when we consider those sets that do not belong to themselves. The collection of such sets cannot constitute a set. Step back a bit. Logical formulas define sets (in a standard model). Formulas, being mathematical objects, can be thought of as sets themselves-mathematics reduces to set theory. Consider those formulas that do not belong to the set they define. The collection of such formulas is not definable by a formula, by the same argument that Russell used. This quickly gives Tarski's result on the undefinability of truth. Variations on the same idea yield the famous results of Gödel, Church, Rosser, and Post. This book gives a full presentation of the basic incompleteness and undecidability theorems of mathematical logic in the framework of set theory. Corresponding results for arithmetic follow easily, and are also given. Gödel numbering is generally avoided, except when an explicit connection is made between set theory and arithmetic. The book assumes little technical background from the reader. One needs mathematical ability, a general familiarity with formal logic, and an understanding of the completeness theorem, though not its proof. All else is developed and formally proved, from Tarski's Theorem to Gödel's Second Incompleteness Theorem. Exercises are scattered throughout.

*Modelling with Differential and Difference Equations (Australian Mathematical Society Lecture Series)* by Glenn Fulford (Author), Peter Forrester (Author), Arthur Jones (Author); Cambridge University Press (November 30, 2006); \$120.00 (Hardcover) 416 pages; ISBN: 0521440696. The theme of this book is modeling the real world using mathematics. The authors concentrate on the techniques used to set up mathematical models and describe many systems in full detail, covering both differential and difference equations in depth. Among the broad spectrum of topics studied in this book are: mechanics, genetics, thermal physics, economics and population studies.

*Handbook Of The History Of Logic* by Dov M. Gabbay (Editor); Elsevier Science Ltd (January 2007); (Hardcover); ISBN: 0444515968.

*Logic and the Modalities in the Twentieth Century, Volume 7 (Handbook of the History of Logic)* by Dov M. Gabbay (Editor), John Woods (Editor); North Holland (July 11, 2006); \$198.00 (Hardcover) 732 pages; ISBN: 0444516220. Logic and the Modalities in the Twentieth Century is an indispensable research tool for anyone interested in the development of logic, including researchers, graduate and senior undergraduate students in logic, history of logic, mathematics, history of mathematics, computer science and artificial intelligence, linguistics, cognitive science, argumentation theory, philosophy, and the history of ideas. This volume is number seven in the eleven volume Handbook of the History of Logic. It concentrates on the development of modal logic in the 20th century, one of the most important undertakings in logics



long history. Written by the leading researchers and scholars in the field, the volume explores the logics of necessity and possibility, knowledge and belief, obligation and permission, time, tense and change, relevance, and more. Both this volume and the Handbook as a whole are definitive reference tools for students and researchers in the history of logic, the history of philosophy, and any discipline, such as mathematics, computer science, artificial intelligence, for whom the historical background of his or her work is a salient consideration. The book includes: \*Detailed and comprehensive chapters covering the entire range of modal logic; \* the latest scholarly discoveries and interpretative insights that answer many questions in the field of logic.

*The Many Valued and Non-Monotonic Turn in Logic, Volume 8 (Handbook of the History of Logic)* by Dov M. Gabbay (Editor), John Woods (Editor); North Holland; 1 edition (August 13, 2007); \$187.00 (Hardcover) 600 pages; ISBN: 0444516239. The present volume of the Handbook of the History of Logic brings together two of the most important developments in 20th century non-classical logic. These are many-valuedness and non-monotonicity. On the one approach, in deference to vagueness, temporal or quantum indeterminacy or reference-failure, sentences that are classically non-bivalent are allowed as inputs and outputs to consequence relations. Many-valued, dialethic, fuzzy and quantum logics are, among other things, principled attempts to regulate the flow-through of sentences that are neither true nor false. On the second, or non-monotonic, approach, constraints are placed on inputs (and sometimes on outputs) of a classical consequence relation, with a view to producing a notion of consequence that serves in a more realistic way the requirements of real-life inference. Many-valued logics produce an interesting problem. Non-bivalent inputs produce classically valid consequence statements, for any choice of outputs. A major task of many-valued logics of all stripes is to fashion an appropriately non-classical relation of consequence. The chief preoccupation of non-monotonic (and default) logicians is how to constrain inputs and outputs of the consequence relation. In what is called left non-monotonicity, it is forbidden to add new sentences to the inputs of true consequence-statements. The restriction takes notice of the fact that new information will sometimes override an antecedently (and reasonably) derived consequence. In what is called right non-monotonicity, limitations are imposed on outputs of the consequence relation. Most notably, perhaps, is the requirement that the rule of or-introduction not be given free sway on outputs. Also prominent is the effort of paraconsistent logicians, both preservationist and dialethic, to limit the outputs of inconsistent inputs, which in classical contexts are wholly unconstrained. In some instances, our two themes coincide. Dialethic logics are a case in point. Dialethic logics allow certain selected sentences to have, as a third truth value, the classical values of truth and falsity together. So such logics also admit classically inconsistent inputs. A central task is to construct a right non-monotonic consequence relation that allows for these many-valued, and inconsistent, inputs. The Many Valued and

Non-Monotonic Turn in Logic is an indispensable research tool for anyone interested in the development of logic, including researchers, graduate and senior undergraduate students in logic, history of logic, mathematics, history of mathematics, computer science, AI, linguistics, cognitive science, argumentation theory, and the history of ideas.

*Residuated Lattices: An Algebraic Glimpse at Substructural Logics, Volume 151 (Studies in Logic and the Foundations of Mathematics)* by Nikolaos Galatos (Author), Peter Jipsen (Author), Tomasz Kowalski (Author), Hiroakira Ono (Author); Elsevier Science (June 1, 2007); \$132.00 (Hardcover) 532 pages; ISBN: 0444521410. The book is meant to serve two purposes. The first and more obvious one is to present state of the art results in algebraic research into residuated structures related to substructural logics. The second, less obvious but equally important, is to provide a reasonably gentle introduction to algebraic logic. At the beginning, the second objective is predominant. Thus, in the first few chapters the reader will find a primer of universal algebra for logicians, a crash course in nonclassical logics for algebraists, an introduction to residuated structures, an outline of Gentzen-style calculi as well as some titbits of proof theory - the celebrated Hauptsatz, or cut elimination theorem, among them. These lead naturally to a discussion of interconnections between logic and algebra, where we try to demonstrate how they form two sides of the same coin. We envisage that the initial chapters could be used as a textbook for a graduate course, perhaps entitled Algebra and Substructural Logics.

As the book progresses the first objective gains predominance over the second. Although the precise point of equilibrium would be difficult to specify, it is safe to say that we enter the technical part with the discussion of various completions of residuated structures. These include Dedekind-McNeille completions and canonical extensions. Completions are used later in investigating several finiteness properties such as the finite model property, generation of varieties by their finite members, and finite embeddability. The algebraic analysis of cut elimination that follows, also takes recourse to completions. Decidability of logics, equational and quasi-equational theories comes next, where we show how proof theoretical methods like cut elimination are preferable for small logics/theories, but semantic tools like Rabin's theorem work better for big ones. Then we turn to Glivenko's theorem, which says that a formula is an intuitionistic tautology if and only if its double negation is a classical one. We generalise it to the substructural setting, identifying for each substructural logic its Glivenko equivalence class with smallest and largest element. This is also where we begin investigating lattices of logics and varieties, rather than particular examples. We continue in this vein by presenting a number of results concerning minimal varieties/maximal logics. A typical theorem there says that for some given well-known variety its subvariety lattice has precisely such-and-such number of minimal members (where values for such-and-such include, but are not limited to, continuum, countably

many and two). In the last two chapters we focus on the lattice of varieties corresponding to logics without contraction. In one we prove a negative result: that there are no nontrivial splittings in that variety. In the other, we prove a positive one: that semisimple varieties coincide with discriminator ones.

Within the second, more technical part of the book another transition process may be traced. Namely, we begin with logically inclined technicalities and end with algebraically inclined ones. Here, perhaps, algebraic rendering of Glivenko theorems marks the equilibrium point, at least in the sense that finiteness properties, decidability and Glivenko theorems are of clear interest to logicians, whereas semisimplicity and discriminator varieties are universal algebra par excellence. It is for the reader to judge whether we succeeded in weaving these threads into a seamless fabric. The book: \*considers both the algebraic and logical perspective within a common framework; \*is written by experts in the area; \*is easily accessible to graduate students and researchers from other fields; \*in it results summarized in tables and diagrams to provide an overview of the area; \*is useful as a textbook for a course in algebraic logic, with exercises and suggested research directions; \*provides a concise introduction to the subject and leads directly to research topics; \*and in it the ideas from algebra and logic are developed hand-in-hand and the connections are shown in every level.

*Doing Mathematics: An Introduction to Proofs and Problem-Solving*, Steven Galovich (Author); Brooks Cole; 2 edition (July 7, 2006); \$53.95 (Paperback) 240 pages; ISBN: 0495108162. This book introduces students to the process of doing mathematics and prepares them to succeed in higher-level mathematics courses. By discussing proof techniques, problem solving methods, and the understanding of mathematical ideas, the book provides a solid foundation for students majoring in mathematics, science, and engineering. Students will learn to grasp the underlying concepts of a subject and how to apply these concepts to solving problems. While being able to understand and reproduce proofs of theorems, they will also gain the ability to comprehend the connections among the important concepts and techniques of each subject. This book is intended for a course on proofs and mathematical reasoning, and could also be used as a supplemental text in courses such as algebra, analysis, and linear algebra.

*Modal Logic for Philosophers* by James W. Garson (Author); Cambridge University Press (August 14, 2006); \$34.99 (Paperback) 470 pages; ISBN: 0521682290. Designed for use by philosophy students, this book provides an accessible, yet technically sound treatment of modal logic and its philosophical applications. Every effort has been made to simplify the presentation by using diagrams in place of more complex mathematical apparatus. These and other innovations provide philosophers with easy access to a rich variety of topics in modal logic, including a full coverage of quantified modal logic, non-rigid designators, definite descriptions, and the de-re de-dictio distinction. Discussion of philosophical issues concerning the development of modal

logic is woven into the text. The book uses natural deduction systems and also includes a diagram technique that extends the method of truth trees to modal logic. This feature provides a foundation for a novel method for showing completeness, one that is easy to extend to systems that include quantifiers.

*Fuzzy Choice Functions: A Revealed Preference Approach (Studies in Fuzziness and Soft Computing)* by Irina Georgescu (Author); Springer; 1 edition (April 2007); (Hardcover) 201 pages; ISBN: 3540689974.

*Fact, Fiction, and Forecast, Fourth Edition* by Nelson Goodman (Author), Hilary Putnam (Author); Harvard University Press; 4th edition (October 6, 2006); \$17.50 (Paperback) 160 pages; ISBN: 0674290712. Here, in a new edition, is Nelson Goodman's provocative philosophical classic—a book that, according to Science, “raised a storm of controversy” when it was first published in 1954, and one that remains on the front lines of philosophical debate. How is it that we feel confident in generalizing from experience in some ways but not in others? How are generalizations that are warranted to be distinguished from those that are not? Goodman shows that these questions resist formal solution and his demonstration has been taken by nativists like Chomsky and Fodor as proof that neither scientific induction nor ordinary learning can proceed without an a priori, or innate, ordering of hypotheses. In his new foreword to this edition, Hilary Putnam forcefully rejects these nativist claims. The controversy surrounding these unsolved problems is as relevant to the psychology of cognitive development as it is to the philosophy of science. No serious student of either discipline can afford to misunderstand Goodman's classic argument.

*Computation Engineering: Applied Automata Theory and Logic* by Ganesh Gopalakrishnan (Author); Springer; 1 edition (June 2, 2006); \$89.95 (Hardcover) 476 pages; ISBN: 0387244182. The computer hardware and software industry is committed to using formal methods. As a result, it is crucial that students who take automata theory and logic courses retain what they have learned and understand how to use their knowledge. Yet many textbooks typically emphasize automata theory only, not logic, thus losing a valuable opportunity to tie these subjects together and reinforce learning. In fact, automata theory and logic evolved hand-in-hand, yet this connection was severed in the '70s as separate automata-theory and logic courses became possible. Now, with computer science departments suffering from overcrowded syllabi, it is often possible for undergraduates to get a BS without having had to take a course in mathematical logic! Today's students want to know how knowledge can work for them – learning theory as a tool is preferable to learning theory for theory's sake. To prove that theoretical tenets are not only applicable, but also necessary and relevant, useful examples must be presented. This textbook uses interactive tools throughout, such as simple BDD and SAT tools. By providing a blend of theory and practical

applications the material is shown to be both inviting and current. Topics are also illustrated in multiple domains so that information is reinforced and students can begin to tie automata theory and logic together. They will also learn multiple uses of fixed-points, including BDD based model checking and understanding context-free productions. Having used this book, students will not only know and understand automata theory, but also be able to apply their knowledge in real practice.

*The Logic of Scientific Revolutions* by Chris Glynn (Author); Exposure Publishing (January 25, 2007); \$35.00 (Hardcover) 368 pages; ISBN: 1846855829. In this innovative and groundbreaking work, the structure and evolution of scientific theories is examined in meticulous detail and rigorously analysed as never before. For the first time, scientific revolutions are presented as a natural consequence of the evolution of scientific theories and described with mathematical precision. Many new techniques are introduced and with the more precise understanding of the nature of the scientific enterprise obtained thereby, old philosophical problems are cast into a new light and shown to be susceptible to the same rigorous approach by which they may be completely solved. Numerous real examples from the sciences are given and discussed in detail, culminating in some startling results concerning the future development of science and that Holy Grail of physics, the possibility of a final, all-embracing Theory of Everything. Written in an eloquent and engaging style interspersed with occasional flashes of delicious humour, this book is destined to become a classic in the Philosophy of Science. It will doubtless be appreciated equally by philosophers and scientists alike as well as a wider, less specialised audience. Truly an important document and a major contribution to the literature; this is a work for the twenty-first century.

*Moore's Paradox: New Essays on Belief, Rationality, and the First Person* by Mitchell S. Green (Editor), John N. Williams (Editor); Oxford University Press, USA (February 2, 2007); \$65.00 (Hardcover) 280 pages; ISBN: 019928279X. G. E. Moore observed that to assert, 'I went to the pictures last Tuesday but I don't believe that I did' would be 'absurd'. Over half a century later, such sayings continue to perplex philosophers. In the definitive treatment of the famous paradox, Green and Williams explain its history and relevance and present new essays by leading thinkers in the area.

*Truth and Realism* by Patrick Greenough (Editor), Michael P. Lynch (Editor); Oxford University Press, USA (August 24, 2006); \$35.00 (Paperback) 264 pages; ISBN: 0199288887. Is truth objective or relative? What exists independently of our minds? This book is about these two questions. The essays in its pages variously defend and critique answers to each, grapple over the proper methodology for addressing them, and wonder whether either question is worth pursuing. In so doing, they carry on a long and esteemed tradition - for our two questions are among the oldest of philosophical issues, and have vexed almost every major philosopher, from Plato, to Kant to

Wittgenstein. Fifteen eminent contributors bring fresh perspectives, renewed energy and original answers to debates which have been the focus of a tremendous amount of interest in the last three decades both within philosophy and the culture at large.

*Empiricism and Experience* by Anil Gupta (Author); Oxford University Press, USA (August 31, 2006); \$45.00 (Hardcover) 288 pages; ISBN: 0195189582. This book offers a novel account of the relationship of experience to knowledge. The account builds on the intuitive idea that our ordinary perceptual judgments are not autonomous, that an interdependence obtains between our view of the world and our perceptual judgments. Anil Gupta shows in this important study that this interdependence is the key to a satisfactory account of experience. He uses tools from logic and the philosophy of language to argue that his account of experience makes available an attractive and feasible empiricism.

*A Critical Introduction to the Philosophy of Gottlob Frege* by Guillermo E. Rosado Haddock (Author); Ashgate Publishing (September 2006); \$99.95 (Hardcover) 157 pages; ISBN: 0754654710.

*Rationality and Logic (Bradford Books)* by Robert Hanna (Author); The MIT Press (September 1, 2006); \$35.00 (Hardcover) 344 pages; ISBN: 0262083493. In *Rationality and Logic*, Robert Hanna argues that logic is intrinsically psychological and that human psychology is intrinsically logical. He claims that logic is cognitively constructed by rational animals (including humans) and that rational animals are essentially logical animals. In order to do so, he defends the broadly Kantian thesis that all (and only) rational animals possess an innate cognitive “logic faculty.” Hanna’s claims challenge the conventional philosophical wisdom that sees logic as a fully formal or “topic-neutral” science irreconcilably separate from the species- or individual-specific focus of empirical psychology.

Logic and psychology went their separate ways after attacks by Frege and Husserl on logical psychologism—the explanatory reduction of logic to empirical psychology. Hanna argues, however, that—despite the fact that logical psychologism is false—there is an essential link between logic and psychology. Rational human animals constitute the basic class of cognizers or thinkers studied by cognitive psychology; given the connection between rationality and logic that Hanna claims, it follows that the nature of logic is significantly revealed to us by cognitive psychology. Hanna’s proposed “logical cognitivism” has two important consequences: the recognition by logically oriented philosophers that psychologists are their colleagues in the metadiscipline of cognitive science; and radical changes in cognitive science itself. Cognitive science, Hanna argues, is not at bottom a natural science; it is both an objective or truth-oriented science and a normative human science, as is logic itself.

*Lectures On Metaphysics And Logic V2: Logic* by William Hamilton (Author), Henry

L. Mansel (Editor), John Veitch (Editor); Kessinger Publishing, LLC (July 25, 2006); \$51.95 (Paperback) 732 pages; ISBN: 142865870X.

*Logic and Philosophy: A Modern Introduction* by Alan Hausman (Author), Howard Kahane (Author), Paul Tidman (Author); Wadsworth Publishing; 10 edition (June 5, 2006); \$83.95 (Paperback) 544 pages; ISBN: 0495128449. This text is designed for those instructors who desire a comprehensive introduction to formal logic that is both rigorous and accessible to students encountering the subject for the first time. Numerous, carefully crafted exercise sets accompanied by clear, crisp exposition give students a firm grasp of basic concepts and take the student from sentential logic through first-order predicate logic, the theory of descriptions, and identity. As the title suggests, this is a book devoted not merely to logic; students will encounter an extraordinary amount of philosophy as well. Upon completing the first two parts of the text, a student will be well prepared for advanced courses in analytic philosophy. The last part deals with supplemental matters: informal fallacies, modal logic, and inductive logic, among others.

*Mainstream and Formal Epistemology* by Vincent F. Hendricks (Author); Cambridge University Press (December 19, 2005), \$70.00, 200 pages; ISBN: 0521857899; Mainstream and Formal Epistemology provides the first easily accessible yet erudite and original analysis of the meeting point between mainstream and formal theories of knowledge. These two strands of thinking have traditionally proceeded in isolation from one another but in this book Vincent F. Hendricks brings them together for a systematic comparative treatment. He demonstrates how mainstream and formal epistemology may significantly benefit from one another, paving the way for a new unifying program of ‘plethoric’ epistemology. His book will both define and further the debate between philosophers from two very different sides of the epistemological spectrum. Winner of CHOICE OUTSTANDING ACADEMIC TITLE 2006.

*An Outline of Set Theory* by James M. Henle (Author); Dover Publications (December 10, 2007); \$11.95 (Paperback) 160 pages; ISBN: 0486453375. An innovative problem-oriented introduction to set theory, this volume is intended for undergraduate courses in which students work in groups on projects and present their solutions to the class. The three-part treatment consists of problems, hints for their solutions, and complete answers. 1986 edition.

*Axiom of Choice (Lecture Notes in Mathematics)* by Horst Herrlich (Author); Springer; 1 edition (June 2006); \$59.95 (Paperback) 194 pages; ISBN: 3540309896. AC, the axiom of choice, because of its non-constructive character, is the most controversial mathematical axiom, shunned by some, used indiscriminately by others. This treatise shows paradigmatically that: \*Disasters happen without AC: Many fundamental

mathematical results fail (being equivalent in ZF to AC or to some weak form of AC); \*Disasters happen with AC: Many undesirable mathematical monsters are being created (e.g., non measurable sets and undeterminate games); \*Some beautiful mathematical theorems hold only if AC is replaced by some alternative axiom, contradicting AC (e.g., by AD, the axiom of determinateness). Illuminating examples are drawn from diverse areas of mathematics, particularly from general topology, but also from algebra, order theory, elementary analysis, measure theory, game theory, and graph theory.

*John Dewey's Essays in Experimental Logic* by D. Micah Hester (Editor), Robert B. Talisse (Editor), Tom Burke (Introduction); Southern Illinois University; 1.00 edition (January 2, 2007); \$55.00 (Hardcover) 344 pages; ISBN: 0809326973.

*Agent Technology from a Formal Perspective (NASA Monographs in Systems and Software Engineering)* by Michael Hinchey (Editor), Christopher A. Rouff (Editor), James Rash (Editor), Walter Truszkowski (Editor), Diana Gordon-Spears (Editor); Springer; 1 edition (September 7, 2005); \$99.00 (Hardcover) 360 pages; ISBN: 1852339470. The field of agent & multi-agent systems is experiencing tremendous growth whilst that of formal methods has also blossomed. The FAABS (Formal Approaches to Agent-Based Systems) workshops, merging the concerns of the two fields, were thus timely. This book has arisen from the overwhelming response to FAABS '00, '02 & '04 and all chapters are updated or represent new research, & are designed to provide a more in-depth treatment of the topic. Examples of how others have applied formal methods to agent-based systems are included, plus formal method tools & techniques that readers can apply to their own systems. *Agent Technology from a Formal Perspective* provides an in-depth view of the key issues related to agent technology from a formal perspective. As this is a relatively new interdisciplinary field, there is enormous room for further growth and this book not only creates an initial foundation, but points to the gaps; indicating open problems to be addressed by future researchers, students & practitioners.

*Arguing on the Toulmin Model: New Essays in Argument Analysis and Evaluation (Argumentation Library)* by David Hitchcock (Editor), Bart Verheij (Editor); Springer; 1 edition (January, 2007); \$149.00 (Hardcover) 448 pages; ISBN: 1402049374.

*Uncertainty, Rationality, and Agency* by Wiebe van der Hoek (Editor); Springer; 1 edition (June 2006); \$49.95 (Paperback) 350 pages; ISBN: 1402046308. This book is about Rational Agents, which can be humans, players in a game, software programs or institutions. Typically, such agents are uncertain about the state of affairs or the state of other agents, and under this partial information they have to decide on which action to take next. This book collects chapters that give formal accounts not



only of Uncertainty, Rationality and Agency, but also of their interaction: what are rational criteria to accept certain beliefs, or to modify them; how can degrees of beliefs guide an agent in making decisions; why distinguish between practical and epistemic rationality when agents try to coordinate; what must be common beliefs between agents about each other's rationality in order to act rationally themselves; can an agent assign probabilities to planned actions; how to formalise assumptions about a rational speaker in a conversation obeying Gricean maxims; how should a rational agent best represent the states, consequences, and acts that constitute the agent's rational decision problem? This volume should appeal to researchers addressing issues in artificial systems that have to gather information in order to obtain Knowledge, reason about it and then make a Rational decision about which Action to take next.

*Introduction to Automata Theory, Languages, and Computation (3rd Edition)* by John E. Hopcroft (Author), Rajeev Motwani (Author), Jeffrey D. Ullman (Author); Addison Wesley; 3 edition (July 5, 2006); \$111.20 (Hardcover) 535 pages; ISBN: 0321462254. This classic book on formal languages, automata theory, and computational complexity has been updated to present theoretical concepts in a concise and straightforward manner with the increase of hands-on, practical applications. This new edition comes with Gradiance, an online assessment tool developed for computer science.

Gradiance is the most advanced online assessment tool developed for the computer science discipline. With its innovative underlying technology, Gradiance turns basic homework assignments and programming labs into an interactive learning experience for students. By using a series of "root questions" and hints, it not only tests a student's capability, but actually simulates a one-on-one teacher-student tutorial that allows for the student to more easily learn the material. Through the programming labs, instructors are capable of testing, tracking, and honing their students' skills, both in terms of syntax and semantics, with an unprecedented level of assessment never before offered.

*Frege on Definitions: A Case Study of Semantic Content (Lines of Thought)* by John Horty (Author); Oxford University Press, USA (March 1, 2008); \$39.95 (Hardcover) 160 pages; ISBN: 0195314417.

*Philosophy of Logic (Handbook of the Philosophy of Science)* by Dale Jacquette (Editor), Dov M. Gabbay (Series Editor), Paul Thagard (Series Editor), John Woods (Series Editor); North Holland; 1st edition (November 29, 2006); \$219.00 (Hardcover) 1218 pages; ISBN: 0444515410. The papers presented in this volume examine topics of central interest in contemporary philosophy of logic. They include reflections on the nature of logic and its relevance for philosophy today, and explore in depth developments in informal logic and the relation of informal to symbolic logic,

mathematical metatheory and the limiting metatheorems, modal logic, many-valued logic, relevance and paraconsistent logic, free logics, extensional v. intensional logics, the logic of fiction, epistemic logic, formal logical and semantic paradoxes, the concept of truth, the formal theory of entailment, objectual and substitutional interpretation of the quantifiers, infinity and domain constraints, the Löwenheim-Skolem theorem and Skolem paradox, vagueness, modal realism v. actualism, counterfactuals and the logic of causation, applications of logic and mathematics to the physical sciences, logically possible worlds and counterpart semantics, and the legacy of Hilbert's program and logicism. The handbook is meant to be both a compendium of new work in symbolic logic and an authoritative resource for students and researchers, a book to be consulted for specific information about recent developments in logic and to be read with pleasure for its technical acumen and philosophical insights. \*Written by leading logicians and philosophers; \*Comprehensive authoritative coverage of all major areas of contemporary research in symbolic logic; \*Clear, in-depth expositions of technical detail; \*Progressive organization from general considerations to informal to symbolic logic to nonclassical logics; \*Presents current work in symbolic logic within a unified framework; \*Accessible to students, engaging for experts and professionals; \*Insightful philosophical discussions of all aspects of logic; \*Useful bibliographies in every chapter.

*Logic and Critical Thinking: A Text for Community College Students* by Rod Jenks (Author); University Press of America (November 28, 2006); \$19.95 (Paperback) 96 pages; ISBN: 0761835679.

*Proof and Consequence: An Introduction to Classical Logic with SIMON and SIMON SAYS* by Ray Jennings (Author), Nicole A. Friedrich (Author); Broadview Press; 2nd Pkg edition (June 30, 2006); \$56.95 (Paperback) 328 pages; ISBN: 1551115476. Proof and Consequence, SIMON, and SIMON SAYS form an integrated logic teaching package, including textbook, student exercise software, and grading program. Proof and Consequence is a friendly introduction to a difficult but rewarding subject. The text, intended for intermediate-level logic learners, briefly reviews the basics and quickly moves on to propositional and quantificational logic, and the connectives of natural language. Accompanying the text is the software package, SIMON, which allows students to work on the 800 exercises printed in the text, detecting errors in their work as they go. For extra help, an extensive study guide and additional chatroom software will also be available. While the text and exercise software are a great aid to students, SIMON SAYS, an innovative remote grading program, is available for instructors. It marks students' work according to an instructor-created template, keeps all course records, and allows the instructor to create and schedule assignments, as well as to add more exercises if desired. Students are able to register their SIMON documents, submit their assignments, and view their own course records

with SIMON SAYS. A complete set of PowerPoint slides is also available for lecture material or as a study resource.

*Interpreting Quantum Mechanics: A Realistic View in Schrodinger's Vein* by Lars-Goran Johansson (Author); Ashgate Pub Co (April 30, 2007); \$99.95 (Hardcover) 200 pages; ISBN: 0754657388.

*Theories of Vagueness (Cambridge Studies in Philosophy)* by Rosanna Keefe (Author); Cambridge University Press; New Ed edition (December 29, 2006); \$43.00 (Paperback) 248 pages; ISBN: 0521033896. Vague expressions, such as “heap,” “red” and “child,” proliferate throughout natural languages, and an increasing amount of philosophical attention is being directed at theories of the logic and semantics associated with them. In this book Rosanna Keefe explores the questions of what we should want from theories of vagueness and how we should compare them. Her powerful and original study will be of interest to readers in philosophy of language and of mind, philosophical logic, epistemology and metaphysics.

*Perspectives on Mathematical Practices: Bringing Together Philosophy of Mathematics, Sociology of Mathematics, and Mathematics Education (Logic, Epistemology, and the Unity of Science)* by Bart van Kerkhove (Editor), Jean Paul van Bendegem (Editor); Springer; 1 edition (December 2006); \$129.00 (Hardcover) 241 pages; ISBN: 140205033X.

*A Treatise on Probability* by John Maynard Keynes (Author); Cosimo Classics (August 29, 2006); \$27.95 (Paperback) 484 pages; ISBN: 1596055308. There is, first of all, the distinction between that part of our belief which is rational and that part which is not. If a man believes something for a reason which is preposterous or for no reason at all, and what he believes turns out to be true for some reason not known to him, he cannot be said to believe it rationally, although he believes it and it is in fact true. On the other hand, a man may rationally believe a proposition to be probable, when it is in fact false. -from Chapter II: Probability in Relation to the Theory of Knowledge” His fame as an economist aside, John Maynard Keynes may be best remembered for saying, “In the long run, we are all dead.” That phrase may well be the most succinct expression of the theory of probability every uttered. For a longer explanation of the premise that underlies much of modern mathematics and science, Keynes’s *A Treatise on Probability* is essential reading. First published in 1920, this is the foundational work of probability theory, which helped establish the author’s enormous influence on modern economic and even political theories. Exploring aspects of randomness and chance, inductive reasoning and logical statistics, this is a work that belongs in the library of any interested in numbers and their application in the real world. AUTHOR BIO: British economist JOHN MAYNARD KEYNES (1883-1946) also wrote

The Economic Consequences of the Peace (1919), The End of Laissez-Faire (1926), The Means to Prosperity (1933), and General Theory of Employment, Interest and Money (1936).

*The Structure of Models of Peano Arithmetic (Oxford Logic Guides)* by Roman Koszak (Author), Jim Schmerl (Author); Oxford University Press, USA (September 14, 2006); \$98.50 (Hardcover) 328 pages; ISBN: 0198568274. Aimed at research logicians and mathematicians, this much-awaited monograph covers over forty years of work on relative classification theory for non-standard models of arithmetic. With graded exercises at the end of each chapter, the book covers basic isomorphism invariants: families of types realized in a model, lattices of elementary substructures and automorphism groups. Many results involve applications of the powerful technique of minimal types due to Haim , and some of the results are classical but have never been published in a book form before.

*Understanding Symbolic Logic (5th Edition)* by Virginia Klenk (Author); Prentice Hall; 5 edition (April 23, 2007); \$100.00 (Paperback) 480 pages; ISBN: 0132051524. Designed for those who have no prior background in logic, philosophy, or mathematics, this comprehensive introduction covers all the standard topics of symbolic logic through relational predicate logic with identity. *Understanding Symbolic Logic, Fifth Edition*, is completely reader-friendly. All concepts and theories are presented in small “bites,” helping you to master the concepts of symbolic logic with confidence. *Understanding Symbolic Logic, Fifth Edition*, features: \*Explanations keyed to the difficulty of the topics covered; \*Numerous worked-out examples; many detailed, step-by-step symbolizations; over 50 fully worked-out proofs; additional exercises; \*“Extra credit” units offer a glimpse into alternative methods of logic and more advanced topics. New for the Fifth Edition: Along with revisions for clarity, more examples have been added throughout, especially in sections on translation and relational predicate logic; symbolization has been improved; additional background has been added on the nature of identity relation.

*Problems and Theorems in Classical Set Theory (Problem Books in Mathematics)* by Peter Komjath (Author), Vilmos Totik (Author); Springer; 1 edition (May 2, 2006); \$59.95 (Hardcover) 516 pages; ISBN: 038730293X. This volume contains a variety of problems from classical set theory. Many of these problems are also related to other fields of mathematics, including algebra, combinatorics, topology and real analysis. The problems vary in difficulty, and are organized in such a way that earlier problems help in the solution of later ones. For many of the problems, the authors also trace the history of the problems and then provide proper reference at the end of the solution.

*Naming and Necessity* by Saul A. Kripke (Author); Harvard University Press (July 26, 2006); \$20.50 (Paperback) 184 pages; ISBN: 0674598466. If there is such a thing as

essential reading in metaphysics or in philosophy of language, this is it. Ever since the publication of its original version, *Naming and Necessity* has had great and increasing influence. It redirected philosophical attention to neglected questions of natural and metaphysical necessity and to the connections between these and theories of reference, in particular of naming, and of identity. From a critique of the dominant tendency to assimilate names to descriptions and more generally to treat their reference as a function of their Fregean sense, surprisingly deep and widespread consequences may be drawn. The largely discredited distinction between accidental and essential properties, both of individual things (including people) and of kinds of things, is revived. So is a consequent view of science as what seeks out the essences of natural kinds. Traditional objections to such views are dealt with by sharpening distinctions between epistemic and metaphysical necessity; in particular by the startling admission of necessary a posteriori truths. From these, in particular from identity statements using rigid designators whether of things or of kinds, further remarkable consequences are drawn for the natures of things, of people, and of kinds; strong objections follow, for example to identity versions of materialism as a theory of the mind. This seminal work, to which today's thriving essentialist metaphysics largely owes its impetus, is here published with a substantial new Preface by the author.

*Causal System Analysis* by Peter B. Ladkin (Author); (Hardcover) 500 pages; Springer; 1 edition (May 2010); ISBN: 1852336536.

*Transactional Memory (Synthesis Lectures on Computer Architecture)* by James Larus (Author), Ravi Rajwar (Author); Morgan & Claypool Publishers (January 12, 2007); \$45.00 (Paperback) 221 pages; ISBN: 1598291246.

*Words without Objects: Semantics, Ontology, and Logic for Non-Singularity* by Henry Laycock (Author); Oxford University Press, USA (June 1, 2006); \$65.00 (Hardcover) 224 pages; ISBN: 0199281718. A picture of the world as chiefly one of discrete objects, distributed in space and time, has sometimes seemed compelling. It is however one of two main targets of Henry Laycock's book; for it is seriously incomplete. The picture, he argues, leaves no space for stuff like air and water. With discrete objects, we may always ask 'how many?', but with stuff the question has to be 'how much?' Within philosophy, stuff of certain basic kinds is central to the ancient pre-Socratic world-view; but it also constitutes the field of modern chemistry and is a major factor in ecology. Philosophers these days, in general, are unlikely to deny that stuff exists. But they are very likely to deny that it is ('ultimately') to be contrasted with things, and it is on this account that logic and semantics figure largely in the framework of the book. Elementary logic is a logic which takes values for its variables; and these values are precisely distinct individuals or things. Existence is then symbolized in just such terms; and this, it is proposed, creates a pressure for 'reducing' stuff to things.

Non-singular expressions, which include words for stuff, ‘mass’ nouns, and also plural nouns, are ‘explicated’ as semantically singular. Here then is the second target of the book. The posit that both mass and plural nouns name special categories of objects (set-theoretical ‘collections’ of objects in the one case, mereological ‘parcels’ or ‘portions’ of stuff in the other) represents, so Laycock urges, the imposition of an alien logic upon both the many and the much.

*Conceptual Mathematics: A First Introduction to Categories* (Paperback); by F. William Lawvere (Author); Cambridge University Press (January 24, 2007); \$37.50 (Paperback) 376 pages; ISBN: 0521478170. The idea of a “category”—a sort of mathematical universe—has brought about a remarkable unification and simplification of mathematics. Written by two of the best-known names in categorical logic, *Conceptual Mathematics* is the first book to apply categories to the most elementary mathematics. It thus serves two purposes: first, to provide a key to mathematics for the general reader or beginning student; and second, to furnish an easy introduction to categories for computer scientists, logicians, physicists, and linguists who want to gain some familiarity with the categorical method without initially committing themselves to extended study.

*The Oxford Handbook of Philosophy of Language* (*Oxford Handbooks in Philosophy*) by Ernest Lepore (Editor), Barry C. Smith (Editor); Oxford University Press, USA (November 23, 2006); \$160.00 (Hardcover) 1100 pages; ISBN: 0199259410. The *Oxford Handbooks* series is a major new initiative in academic publishing. Each volume offers an authoritative and up-to-date survey of original research in a particular subject area. Specially commissioned essays from leading figures in the discipline give critical examinations of the progress and direction of debates. *Oxford Handbooks* provide scholars and graduate students with compelling new perspectives upon a wide range of subjects in the humanities and social sciences. Ernie Lepore and Barry Smith present the definitive reference work for this diverse and fertile field of philosophy. A superb international team contribute more than forty brand-new essays covering topics from the nature of language to meaning, truth, and reference, and the interfaces of philosophy of language with linguistics, psychology, logic, epistemology, and metaphysics. It will be an essential resource for anyone working in the central areas of philosophy, for linguists interested in syntax, semantics, and pragmatics, and for psychologists and cognitive scientists working on language.

*Dynamic Fuzzy Logic and Its Applications* by Fanzhang Li (Editor); Nova Science Pub Inc (September 6, 2006); \$89.00 (Hardcover); ISBN: 1600214282.

*Architectural Design of Multi-Agent Systems: Technologies and Techniques* (Hardcover) by Hong Lin (Editor); IGI Global (May 31, 2007); \$165.00 (Hardcover) 350

pages; ISBN: 1599041081. Agent-oriented design has become one of the most active areas in the field of software engineering. Although great advances have been made in the study of the architectural design of agent systems, the complexity and multidisciplinary approaches of this constantly growing field are currently of a premature nature compared to where they should be. *Architectural Design of Multi-Agent Systems: Technologies and Techniques* provides a compilation of advanced research results focusing on architecture and modeling issues of multi-agent systems. This study serves as a reference for further research on system models, architectural design languages, formal methods and reasoning, module interface design, and design issues. *Architectural Design of Multi-Agent Systems: Technologies and Techniques* presents high-level issues such as: modeling agent systems in cognitive sciences, knowledge management, in-depth exposure of agent theory, and state-of-the-art research on design quality of agent systems.

*Decisions and Revisions* by Isaac Levi (Author); Cambridge University Press; 1st edition (July 25, 2006); \$48.00 (Paperback) 312 pages; ISBN: 0521027624. This is a collection of Isaac Levi's philosophical papers. Over the period represented by the work here, Professor Levi has developed an interrelated set of views, in the tradition of Peirce and Dewey, on epistemology and the philosophy of science and social science. This focus has been on the problem of induction and the growth of knowledge, the foundations of probability and the theory of rational decision-making. His most important essays in these areas are assembled here, with an introduction setting out their main themes and connections. As a whole the volume presents a coherent, elaborated position which will be of great interest to a range of philosophers, decision theorists, welfare and social choice theorists and cognitive scientists.

*Algebra, Logic, Set Theory (Studies in Logic)* by B. Loewe (Editor); College Publications (January 1, 2007); \$49.50 (Hardcover) 324 pages; ISBN: 1904987281. This volume is both a tribute to Ulrich Felgner's research in algebra, logic, and set theory and a strong research contribution to these areas. Felgner's former students, friends and collaborators have contributed sixteen papers to this volume that highlight the unity of these three fields in the spirit of Ulrich Felgner's own research. The interested reader will find excellent original research surveys and papers that span the field from set theory without the axiom of choice via model-theoretic algebra to the mathematics of intonation.

*Foundations of the Formal Sciences. the History of the Concept of the Formal Sciences (Studies in Logic)* by B. Loewe (Editor), V. Peckhaus (Editor), T. Rasch (Editor); College Publications (May 12, 2006); \$30.00 (Paperback) 300 pages; ISBN: 190498729X. This volume takes a reflective position with respect to the conference series "Foundations of the Formal Sciences" (FotFS) and asks: \*What are the Formal

Sciences? \*Can we develop a theoretical classification of the sciences that juxtaposes the formal sciences to the natural sciences, social sciences, and humanities? Can we do this solely by identifying common methodological features? \*Can we identify changes of the notion of formal sciences over time? How were the areas that we now conceived as the “Foundations of the Formal Sciences” classified throughout history? Investigating the “History of the Concept of the Formal Sciences” to find answers to an array of questions with this wide scope, you need an enthusiastic group of researchers interested in going beyond the traditional boundaries of their subjects covering at once the philosophical, historical and logical issues at hand, like the authors of this volume. The papers in this volume stand witness to our success in touching the mentioned questions. It will be of interest to philosophers, sociologists, historians, and logicians, and covers many aspects of the history of the formal sciences from the Bronze Age to the early XXIst century.

*Wittgenstein, Austrian Economics, and the Logic of Action: Praxeological Investigations (Routledge Studies in Twentieth-Century Philosophy)* by Roderick Long (Author); Routledge; 1 edition (May 30, 2007); \$120.00 (Hardcover) 224 pages; ISBN: 0415329485. This book shows how the methodology of Austrian economics can be justified and strengthened by grounding it in the philosophy of Wittgenstein. Frege and Wittgenstein argued that whatever counts as thought must embody logical principles. Their arguments also support the conclusion that whatever counts as action must embody economic principles. The author shows that this confirms the claims of Austrian economists such as Mises and Hayek that the laws of economics are a priori rather than empirical.

*Identity and Modality (Mind Association Occasional Series)* by Fraser MacBride (Editor); Oxford University Press, USA (September 21, 2006); \$65.00 (Hardcover) 278 pages; ISBN: 0199285748. The eleven new papers in this volume address fundamental and interrelated philosophical issues concerning modality and identity, issues that were pivotal to the development of analytic philosophy in the twentieth century, and remain a key focus of debate in the twenty-first. Identity and Modality brings together leading researchers in metaphysics, the philosophy of mind, the philosophy of science, and the philosophy of mathematics.

*Model Based Reasoning in Science and Engineering (Logic)* by L. Magnani (Editor); College Publications (August 1, 2006); \$30.00 (Paperback) 440 pages; ISBN: 1904987230. The study of creative, diagnostic, visual, spatial, analogical, and temporal reasoning has demonstrated that there are many ways of performing intelligent and creative reasoning that cannot be described with the help only of traditional notions of reasoning such as classical logic. Understanding the contribution of modeling practices to discovery and conceptual change in science requires expanding scientific



reasoning to include complex forms of creative reasoning that are not always successful and can lead to incorrect solutions. The study of these heuristic ways of reasoning is situated at the crossroads of philosophy, artificial intelligence, cognitive psychology, and logic; that is, at the heart of cognitive science. There are several key ingredients common to the various forms of model-based reasoning. The term “model” comprises both internal and external representations. The models are intended as interpretations of target physical systems, processes, phenomena, or situations. The models are retrieved or constructed on the basis of potentially satisfying salient constraints of the target domain. Moreover, in the modeling process, various forms of abstraction are used. Evaluation and adaptation take place in light of structural, causal, and/or functional constraints. Model simulation can be used to produce new states and enable evaluation of behaviors and other factors. Several of the papers in this volume aim at increasing epistemological knowledge about the role of model-based reasoning in various scientific tasks, other papers address fundamental cognitive issues related to model-based reasoning and illustrate novel analyses of cognitive “logical” models of model-based reasoning and of the interplay abduction/model-based reasoning/creative inferences. The volume is based on the papers that were presented at the International Conference Model-Based Reasoning in Science and Engineering: Abduction, Visualization, Simulation (MBR’04), held at the Collegio Ghislieri, University of Pavia, Pavia, Italy, in December 2004.

*Relevant Logic: A Philosophical Interpretation* by Edwin D. Mares (Author); Cambridge University Press (January 24, 2007); \$65.00 (Hardcover) 240 pages; ISBN: 0521829232. The defining feature of relevant logic is that it forces the premises of an argument to be really used and thus become “relevant” in deriving its conclusion. This book introduces the reader to relevant logic and provides it with a philosophical interpretation. The logic is analyzed in the context of possible world semantics and situation semantics, which are then applied to provide an understanding of the various logical particles (especially implication and negation) and natural language conditionals. The book concludes by examining various applications of relevant logic.

*Spinoza: Logic, Knowledge and Religion* by Richard Mason (Author); Ashgate Publishing (March 2007); \$99.95 (Hardcover) 256 pages; ISBN: 0754657345.

*Truth and Paradox: Solving the Riddles* by Tim Maudlin (Author); Oxford University Press, USA; New edition (September 28, 2006); \$29.95 (Paperback) 224 pages; ISBN: 0199203911. Consider the sentence ‘This sentence is not true’. It seems that the sentence can be neither true nor not true, on pain of contradiction. Tim Maudlin sets out a novel account of logic and semantics which allows him to deal with certain notorious paradoxes which have bedevilled philosophical theories of truth. All philosophers interested in logic and language will find Truth and Paradox a stimulating read.

*Euclid in the Rainforest: Discovering Universal Truth in Logic and Math* by Joseph Mazur (Author); Plume (July, 2006); \$11.25 (Paperback) 352 pages; ISBN: 0452287839. Like Douglas Hofstadter's Gödel, Escher, Bach, and David Berlinski's A Tour of the Calculus, Euclid in the Rainforest combines the literary with the mathematical to explore logic—the one indispensable tool in man's quest to understand the world. Underpinning both math and science, it is the foundation of every major advancement in knowledge since the time of the ancient Greeks. Through adventure stories and historical narratives populated with a rich and quirky cast of characters, Mazur artfully reveals the less-than-airtight nature of logic and the muddled relationship between math and the real world. Ultimately, Mazur argues, logical reasoning is not purely robotic. At its most basic level, it is a creative process guided by our intuitions and beliefs about the world.

*Comprehensive Mathematics for Computer Scientists 1: Sets and Numbers, Graphs and Algebra, Logic and Machines, Linear Geometry (Universitext)* by Guerino Mazzola (Author), Gérard Milmeister (Author), Jody Weissmann (Author); Springer; 2 edition (November 13, 2006); \$39.95 (Paperback) 388 pages; ISBN: 3540368736. The two-volume textbook Comprehensive Mathematics for Computer Scientists, of which this is the first volume, is a self-contained comprehensive presentation of mathematics including sets, numbers, graphs, algebra, logic, grammars, machines, linear geometry, calculus, ODEs, and special themes such as neural networks, Fourier theory, wavelets, numerical issues, statistics, categories, and manifolds. The concept framework is streamlined but defining and proving virtually everything. The style implicitly follows the spirit of recent topos-oriented theoretical computer science. Despite the theoretical soundness, the material stresses a large number of core computer science subjects, such as, for example, a discussion of floating point arithmetic, Backus-Naur normal forms, L-systems, Chomsky hierarchies, algorithms for data encoding, e.g., the Reed-Solomon code. The numerous course examples are motivated by computer science and bear a generic scientific meaning.

For the second edition the entire text has been carefully reread, and many examples have been added, as well as illustrations and explications to statements and proofs which were exposed in a too shorthand style. This makes the book more comfortable to handle for instructors as well as for students.

*Plural Predication* by Thomas McKay (Author); Oxford University Press, USA (August 17, 2006); \$65.00 (Hardcover) 272 pages; ISBN: 0199278148. Plural predication is a pervasive part of ordinary language. We can say that some people are fifty in number, are surrounding a building, come from many countries, and are classmates. These predicates can be true of some people without being true of any one of them; they are non-distributive predications. Yet the apparatus of predication and quantification in standard modern logic does not allow a place for such non-distributive

predicates. Thomas McKay's book explores the enrichment of modern logic with plural predication and quantification. We can have genuinely non-distributive predication without relying on singularizing procedures from set theory and mereology. The fundamental 'among' relation can be understood in a way that does not generate any hierarchy of plurals analogous to a hierarchy of types or a hierarchy of higher-order logics. Singular quantification can be understood as a special case, with the general type being quantifiers that allow both singular and plural quantification. The 'among' relation is formally similar to a 'part of' relation, but the relations are distinct, so that mass quantification and plural quantification cannot be united in the same way that plural and singular are united. Analysis of singular and plural definite descriptions follows, with a defense of a fundamentally Russellian analysis, but coupled with some new ideas about how to be sensitive to the role of context. This facilitates an analysis of some central features of the use of pronouns, both singular and plural.

*Elucidating the Tractatus: Wittgenstein's Early Philosophy of Language and Logic* by Marie McGinn (Author); Oxford University Press, USA (January 18, 2007); \$74.00 (Hardcover) 336 pages; ISBN: 0199244448. Marie McGinn provides a clear, comprehensive, and original interpretation of Wittgenstein's Tractatus and of its relation to Wittgenstein's later work. The Tractatus is one of the most famous works of early analytic philosophy, the interpretation of which has always been a matter for controversy and is currently the focus for an important philosophical debate.

*On Clear and Confused Ideas (Cambridge Studies in Philosophy)* by Ruth Garrett Millikan (Author); Cambridge University Press (May 27, 2006); \$29.99 (Paperback) 276 pages; ISBN: 052162553X. Written by one of today's most creative and innovative philosophers, Ruth Garrett Millikan, this book examines basic empirical concepts; how they are acquired, how they function, and how they have been misrepresented in the traditional philosophical literature. In a radical departure from current philosophical and psychological theories of concepts, this book provides the first in-depth discussion on the psychological act of reidentification. It will be of interest to a broad range of students of philosophy, especially those interested in the application of evolutionary theory to analytic philosophy.

*Philosophy of Mathematics and Deductive Structure in Euclid's Elements* by Ian Mueller (Author); Dover Publications (November 17, 2006); \$24.95 (Paperback) 400 pages; ISBN: 0486453006. A survey of Euclid's Elements, this text provides an understanding of the classical Greek conception of mathematics and its similarities to modern views as well as its differences. It focuses on philosophical, foundational, and logical questions – rather than focusing strictly on historical and mathematical issues – and features several helpful appendixes.

*Semantics with Applications: An Appetizer (Undergraduate Topics in Computer Science)* by Hanne Riis Nielson (Author), Flemming Nielson (Author); Springer; 1 edition (May 2007); \$39.95 (Paperback) 278 pages; ISBN: 1846286913.

*On Truth And Meaning: Language, Logic And the Grounds of Belief (Athlone Contemporary European Thinkers S.)* by Christopher Norris (Author); Continuum International Publishing Group (August 15, 2006); \$31.95 (Paperback) 205 pages; ISBN: 0826491286.

*Bayesian Rationality: The Probabilistic Approach to Human Reasoning (Oxford Cognitive Science)* by Mike Oaksford (Author), Nick Chater (Author); Oxford University Press, USA (March 15, 2007); \$57.50 (Paperback) 290 pages; ISBN: 0198524498. Are people rational? This question was central to Greek thought; and has been at the heart of psychology, philosophy, rational choice in social sciences, and probabilistic approaches to artificial intelligence. This book provides a radical re-appraisal of conventional wisdom in the psychology of reasoning.

For almost two and a half thousand years, the Western conception of what it is to be a human being has been dominated by the idea that the mind is the seat of reason - humans are, almost by definition, the rational animal. From Aristotle to the present day, rationality has been explained by comparison to systems of logic, which distinguish valid (i.e., rationally justified) from invalid arguments. Within psychology and cognitive science, such a logicist conception of the mind was adopted wholeheartedly from Piaget onwards. Simultaneous with the construction of the logicist program in cognition, other researchers found that people appeared surprisingly and systematically illogical in some experiments. Proposals within the logicist paradigm suggested that these were mere performance errors, although in some reasoning tasks only as few as 5% of people's reasoning was logically correct.

In this book a more radical suggestion for explaining these puzzling aspects of human reasoning is put forward: the Western conception of the mind as a logical system is flawed at the very outset. The human mind is primarily concerned with practical action in the face of a profoundly complex and uncertain world. Oaksford and Chater argue that cognition should be understood in terms of probability theory, the calculus of uncertain reasoning, rather than in terms of logic, the calculus of certain reasoning. Thus, the logical mind should be replaced by the probabilistic mind—people may possess not logical rationality, but Bayesian rationality.

*The Uncertain Reasoner's Companion (Cambridge Tracts in Theoretical Computer Science)* by J.B. Paris (Author); Cambridge University Press; New Ed edition (October 19, 2006); \$34.99 (Paperback) 224 pages; ISBN: 0521032725. Reasoning under uncertainty, that is, making judgments with only partial knowledge, is a major theme in artificial intelligence. Professor Paris provides here an introduction to the mathematical foundations of the subject. The author presents the key results on the subject,

and formalizes within a unified framework the main contemporary approaches and assumptions. He concentrates on giving clear mathematical formulations, analyses, justifications, and consequences of the main theories about uncertain reasoning.

*Transactions on Rough Sets V (Lecture Notes in Computer Science)* by James F. Peters (Editor), Andrzej Skowron (Editor); Springer; 1 edition (October 31, 2006); \$89.95 (Paperback) 507 pages; ISBN: 354039382X.

*Quantifiers in Language and Logic* by Stanley Peters (Author), Dag Westerstahl (Author); Oxford University Press, USA (July 6, 2006); \$99.00 (Hardcover) 548 pages; ISBN: 019929125X. Quantification is a topic which brings together linguistics, logic, and philosophy. Quantifiers are the essential tools with which, in language or logic, we refer to quantity of things or amount of stuff. In English they include such expressions as no, some, all, both, and many. Peters and Westerstahl present the definitive interdisciplinary exploration of how they work - their syntax, semantics, and inferential role. *Quantifiers in Language and Logic* is intended for everyone with a scholarly interest in the exact treatment of meaning. It presents a broad view of the semantics and logic of quantifier expressions in natural languages and, to a slightly lesser extent, in logical languages. The authors progress carefully from a fairly elementary level to considerable depth over the course of sixteen chapters; their book will be invaluable to a broad spectrum of readers, from those with a basic knowledge of linguistic semantics and of first-order logic to those with advanced knowledge of semantics, logic, philosophy of language, and knowledge representation in artificial intelligence.

*Game Theory and Applications* by Leon Petrosjan (Editor); Nova Science Pub Inc (October 29, 2006); \$89.00 Hardcover; ISBN: 1600214681.

*Signs of Logic: Peircean Themes on the Philosophy of Language, Games, and Communication (Synthese Library)* by Ahti-Veikko Pietarinen (Author); Springer; 1 edition (May 23, 2006); \$229.00 (Hardcover) 496 pages; ISBN: 1402037287. Charles Sanders Peirce (1839-1914), the principal subject of this book, was one of the most profound and prolific thinkers and scientists to have come out of the United States. His pragmatic logic and scientific methodology largely represent the application of interactive and intercommunicative triadic processes, best viewed as strategic and dialogic conceptualisations of logical aspects of thought, reasoning and action. These viewpoints also involve pragmatic issues in communicating linguistic signs, and are unified in his diagrammatic logic of existential graphs. The various game-theoretic approaches to the semantics and pragmatics of signs and language, to the theory of communication, and to the evolutionary emergence of signs, provide a contemporary toolkit, the relevance of which Peirce envisioned to a wondrous extent. This work sheds considerable new light on these and other aspects of Peirce's philosophy and his pragmatic theory of meaning. Many of his most significant writings in this context reflect his later

thinking, covering roughly the last 15-20 years of his life, and they are still unpublished. Drawing comprehensively from his unpublished manuscripts, the book offers a fresh and rich picture of this remarkable man's original involvement with logical aspects of thought in action.

*Distribution Models Theory* by Rafael Herrerias Pleguezuelo (Editor), Jose Callejon Cespedes (Editor), Jose Manual Herrerias Velasco (Editor); World Scientific Publishing Company (November 30, 2006); \$78.00 (Hardcover) 296 pages; ISBN: 9812569006.

*How to Win Every Argument: The Use and Abuse of Logic* by Madsen Pirie (Author); Continuum International Publishing Group; Rev Ed edition (June 2, 2006); \$16.47 (Hardcover) 182 pages; ISBN: 0826490069. In this witty and infectious book Madsen Pirie provides a complete guide to using—and indeed abusing—logic in order to win arguments. He identifies with devastating examples all the most common fallacies popularly used in argument. We all like to think of ourselves as clear-headed and logical—but all readers will find in this book fallacies of which they themselves are guilty. The author shows you how to simultaneously strengthen your own thinking and identify the weaknesses in other people arguments. And, more mischievously, Pirie also shows how to be deliberately illogical - and get away with it. This book will make you maddeningly smart: your family, friends and opponents will all wish that you had never read it.

*Thinking about Acting: Logical Foundations for Rational Decision Making* by John L. Pollock (Author); Oxford University Press, USA (July 27, 2006); \$45.00 (Hardcover) 280 pages; ISBN: 0195304810. John Pollock aims to construct a theory of rational decision making for real agents—not ideal agents. Real agents have limited cognitive powers, but traditional theories of rationality have applied only to idealized agents that lack such constraints. Pollock argues that theories of ideal rationality are largely irrelevant to the decision making of real agents. Thinking about Acting aims to provide a theory of “real rationality.”

*The Law of Non-Contradiction* by Graham Priest (Editor), J. C. Beall (Editor), Bradley Armour-Garb (Editor); Oxford University Press, USA; New Ed edition (February 8, 2007); \$35.00 (Paperback) 456 pages; ISBN: 0199204195. The Law of Non-Contradiction – that no contradiction can be true – has been a seemingly unassailable dogma since the work of Aristotle, in Book G of the *Metaphysics*. It is an assumption challenged from a variety of angles in this collection of original papers. Twenty-three of the world's leading experts investigate the "law," considering arguments for and against it and discussing methodological issues that arise whenever we question the legitimacy of logical principles. The result is a balanced inquiry into a venerable principle of logic, one that raises questions at the very center of logic itself. The aim of this volume is to present a comprehensive debate about the Law of

Non-Contradiction, from discussions as to how the law is to be understood, to reasons for accepting or re-thinking the law, and to issues that raise challenges to the law, such as the Liar Paradox, and a “dialethic” resolution of that paradox. The editors contribute an introduction which surveys the issues and serves to frame the debate, and a useful bibliography offering a guide to further reading. This volume will be of interest to anyone working on philosophical logic, and to anyone who has ever wondered about the status of logical laws and about how one might proceed to mount arguments for or against them.

*Information and Knowledge: A Constructive Type-theoretical Approach (Logic, Epistemology, and the Unity of Science)* by Giuseppe Primiero (Author); Springer; 1 edition (August 2007); \$121.00 (Hardcover) 270 pages; ISBN: 1402061692.

*Methods of Logic: Fourth Edition* by W. V. Quine (Author); Harvard University Press; Fourth edition (July 12, 2006); \$23.95 (Paperback) 344 pages; ISBN: 0674571762. This widely used textbook of modern formal logic now offers a number of new features. Incorporating updated notations, selective answers to exercises, expanded treatment of natural deduction, and new discussions of predicate- functor logic and the affinities between higher set theory and the elementary logic of terms, Quine’s new edition will serve admirably both for classroom and for independent use.

*From a Logical Point of View: Nine Logico-Philosophical Essays, Second Revised Edition* by W. V. Quine (Author); Harvard University Press; 2nd edition (October 26, 2006); \$18.50 (Paperback) 200 pages; ISBN: 0674323513.

*Absolute Generality* by Agustin Rayo (Editor), Gabriel Uzquiano (Editor); Oxford University Press, USA (January 18, 2007); \$45.00 (Paperback) 360 pages; ISBN: 0199276439. The problem of absolute generality has attracted much attention in recent philosophy. Agustin Rayo and Gabriel Uzquiano have assembled a distinguished team of contributors to write new essays on the topic. They investigate the question of whether it is possible to attain absolute generality in thought and language and the ramifications of this question in the philosophy of logic and mathematics.

*Programmable Logic Controllers* by James A. Rehg (Author), Glenn J. Sartori (Author); Prentice Hall; 1ST edition (July 28, 2006); \$103.00 (Hardcover) 624 pages; ISBN: 0134328817. Emphasizes the Allen Bradley SLC 500 PLC, covers all three Allen Bradley PLCs (PLC 5, SLC 500, and ControlLogix); as a result, it is the most comprehensive PLC book on the market. Numerous Allen Bradley manuals are included on the enclosed CD to support PLC experiments and problems that demonstrate the use of industrial reference material. The primary focus of this book is ladder logic programming, but chapters on switches, sensors, output actuators, process control, industrial networks, and three other PLC languages (Function Block Diagrams,

Structure Text, and Sequential Function Charts) are also included. Operation and programming for two generations of Allen Bradley PLC software rack/slot-based addressing in the PLC 5 and SLC 500 and tag-based addressing in ControlLogix system. Standard ladder logic building blocks are developed for PLC instructions in Chapters 4 through 11, 13, 15 and 16. Troubleshooting is integrated into each chapter. Descriptions of the five IEC 61131 programming languages with example problems for the four supported in Allen Bradley PLCs. This book describes the technology so that readers can learn PLCs with no previous experience in PLCs or discrete and analog system control.

*The Concept of Probability in the Mathematical Representation of Reality* by Hans Reichenbach (Author), Frederick Eberhardt (Author), Clark Glymour (Author); Open Court (June 28, 2007); \$49.95 (Paperback) 384 pages; ISBN: 0812696093. The first English translation of Hans Reichenbach's lucid doctoral thesis sheds new light on how Kant's Critique of Pure Reason was understood in some quarters at the time. The source of several themes in his still influential *The Direction of Time*, the thesis shows Reichenbach's early focus on the interdependence of physics, probability, and epistemology.

*Logic: an Introduction (Fundamentals of Philosophy)* by Greg Restall (Author); Routledge (June 30, 2006); (Hardcover) 240 pages; ISBN: 0415400678.

*Decision Theory and Multi-Agent Planning (CISM International Centre for Mechanical Sciences)* by Giacomo Della Riccia (Editor), Didier Dubois (Editor), Rudolf Kruse (Editor), Hans-Joachim Lenz (Editor); Springer; 1 edition (June 28, 2006); \$74.95 (Paperback) 198 pages; ISBN: 3211317872.

*Automata Theory and Applications* by Elaine A. Rich (Author); \$111.60 (Hardcover) 864 pages; Prentice Hall; 1 edition (August 6, 2007); ISBN: 0132288060. Combining classic theory with unique applications and examples, this reader-friendly guide offers a practical, broad-based introduction to automata theory. Application-oriented approach demonstrates why the study of theory will make readers better system designers and builders. Features topics such as use of the closure theorems for regular and context-free languages, ambiguity in context-free grammars, parsing, functions on languages, and decision procedures for regular and context-free languages. Includes discussion of unique applications such as computational biology. Uses consistent, easily understandable formats to indicate definitions and name variables and objects. For those interested in learning more about automata theory.

*Mathematical Logic: A First Course (Dover Books on Mathematics)* by Joel W. Robbin (Author); Dover Publications (July 7, 2006); \$13.95 (Paperback) 224 pages; ISBN:



048645018X. Suitable for advanced undergraduates and graduate students, this self-contained text will appeal to readers from diverse fields and varying backgrounds — including mathematics, philosophy, linguistics, computer science, and engineering. Topics include first-order recursive arithmetic, first- and second-order logic, and the arithmetization of syntax. Numerous exercises; some solutions. 1969 edition.

*Symmetry and the Monster: The Story of One of the Greatest Quests of Mathematics* by Mark Ronan (Author); Oxford University Press; New Ed edition (July 1, 2006); \$27.00 (Hardcover) 272 pages; ISBN: 0192807226. Mathematics is being driven forward by the quest to solve a small number of major problems—generating excitement in the mathematical world and beyond. Four famous challenges have been Fermat’s Last Theorem, the Reimann Hypothesis, Poincare’s Conjecture, and, now, the quest for the ‘Monster’ of Symmetry. It is this latter that forms the topic of this book. Although its roots go back much further, the quest to understand symmetry really begins with the tragic young genius Evariste Galois, who died at the age of 20 in a duel. He used symmetry to understand algebraic equations, and he discovered that there were building blocks or ‘atoms of symmetry’. Most fit into a table, rather like the periodic table of elements, but there are 26 exceptions. The biggest of these was dubbed ‘the Monster’ - a giant snowflake in 196,884 dimensions. At first the Monster was only dimly seen. Did it really exist, or was it a mirage? Many mathematicians became involved. The Monster became clearer, and it was no longer monstrous but a beautiful form that pointed out deep connections between symmetry, string theory, and the very fabric and form of the universe. The story of the discovery involves some extraordinary characters, and Mark Ronan brings these people to life, and recreates in accessible language the growing excitement of what became the biggest joint project ever in the field of mathematics - the hunt for the Monster.

*Discrete Mathematics and Its Applications* by Kenneth H. Rosen (Author); McGraw-Hill Science/Engineering/Math; 6 edition (July 26, 2006); \$136.88 (Hardcover) 843 pages; ISBN: 0073229725. Discrete Mathematics and its Applications, Sixth Edition, is intended for one- or two-term introductory discrete mathematics courses taken by students from a wide variety of majors, including computer science, mathematics, and engineering. This renowned best-selling text, which has been used at over 500 institutions around the world, gives a focused introduction to the primary themes in a discrete mathematics course and demonstrates the relevance and practicality of discrete mathematics to a wide a wide variety of real-world applications from computer science to data networking, to psychology, to chemistry, to engineering, to linguistics, to biology, to business, and to many other important fields.

*Theorems, Corollaries, Lemmas, and Methods of Proof (Pure and Applied Mathematics: A Wiley-Interscience Series of Texts, Monographs and Tracts)* by Richard

J. Rossi (Author); Wiley-Interscience (July 18, 2006); \$89.95 (Hardcover) 318 pages; ISBN: 0470042958. A hands-on introduction to the tools needed for rigorous and theoretical mathematical reasoning. Successfully addressing the frustration many students experience as they make the transition from computational mathematics to advanced calculus and algebraic structures, Theorems, Corollaries, Lemmas, and Methods of Proof equips students with the tools needed to succeed while providing a firm foundation in the axiomatic structure of modern mathematics. This essential book: \*Clearly explains the relationship between definitions, conjectures, theorems, corollaries, lemmas, and proofs; \*Reinforces the foundations of calculus and algebra; \*Explores how to use both a direct and indirect proof to prove a theorem; \*Presents the basic properties of real numbers; \*Discusses how to use mathematical induction to prove a theorem; \*Identifies the different types of theorems; \*Explains how to write a clear and understandable proof; \* Covers the basic structure of modern mathematics and the key components of modern mathematics. A complete chapter is dedicated to the different methods of proof such as forward direct proofs, proof by contrapositive, proof by contradiction, mathematical induction, and existence proofs. In addition, the author has supplied many clear and detailed algorithms that outline these proofs. Theorems, Corollaries, Lemmas, and Methods of Proof uniquely introduces scratch work as an indispensable part of the proof process, encouraging students to use scratch work and creative thinking as the first steps in their attempt to prove a theorem. Once their scratch work successfully demonstrates the truth of the theorem, the proof can be written in a clear and concise fashion. The basic structure of modern mathematics is discussed, and each of the key components of modern mathematics is defined. Numerous exercises are included in each chapter, covering a wide range of topics with varied levels of difficulty. Intended as a main text for mathematics courses such as Methods of Proof, Transitions to Advanced Mathematics, and Foundations of Mathematics, the book may also be used as a supplementary textbook in junior- and senior-level courses on advanced calculus, real analysis, and modern algebra.

*Journey into Mathematics: An Introduction to Proofs (Dover Books on Mathematics)* by Joseph J. Rotman (Author); Dover Publications (December 27, 2006); \$13.95 (Paperback) 256 pages; ISBN: 0486453065. This 3-part treatment begins with the mechanics of writing proofs, proceeds to considerations of the area and circumference of circles, and concludes with examinations of complex numbers and their application, via De Moivre's theorem, to real numbers. 1998 edition.

*Introduction to Reasoning and Proof: Grades 3-5 (The Math Process Standards Series)* by Karren Schultz-Ferrell (Author), Brenda Hammond (Author), Josepha Robles (Author); Heinemann (February 19, 2007); \$25.00 (Paperback) 160 pages; ISBN: 0325010331.

*Computational Logic and Set Theory (Texts in Computer Science)* by Jacob Schwartz (Author), Eugenio Omodeo (Author), Domenico Cantone (Author); Springer; 1 edition (February 2020); \$69.95 (Hardcover) 368 pages; ISBN: 0387407626. An advanced, graduate-level text, surveying computational logic and set theory and its application to proof verification techniques. Book develops all needed theory and provides a CD-ROM with a proof-verifier program to demonstrate concepts. Advanced CS students and researches will find the book an essential presentation of the theoretical concepts of proof verification (i.e., proof checker) systems for large-scale software systems. Topics and features: \*Describes in-depth how a specific first-order theory can be exploited to model and carry out reasoning in branches of computer science and mathematics; \*Provides a verifier aimed at tackling large-scale proof scenarios; \*Integrates important proof-engineering issues, reflecting the goals of large-scale verifiers.

*Reference Without Referents* by R.M. Sainsbury (Author); Clarendon Press; New Ed edition (July 1, 2007); (Paperback) 288 pages; ISBN: 0199230404. Reference is a central topic in philosophy of language, and has been the main focus of discussion about how language relates to the world. R. M. Sainsbury sets out a new approach to the concept, which promises to bring to an end some long-standing debates in semantic theory. There is a single category of referring expressions, all of which deserve essentially the same kind of semantic treatment. Included in this category are both singular and plural referring expressions ('Aristotle', 'The Pleiades'), complex and non-complex referring expressions ('The President of the USA in 1970', 'Nixon'), and empty and non-empty referring expressions ('Vulcan', 'Neptune'). Referring expressions are to be described semantically by a reference condition, rather than by being associated with a referent. In arguing for these theses, Sainsbury's book promises to end the fruitless oscillation between Millian and descriptivist views. Millian views insist that every name has a referent, and find it hard to give a good account of names which appear not to have referents, or at least are not known to do so, like ones introduced through error ('Vulcan'), ones where it is disputed whether they have a bearer ('Patanjali') and ones used in fiction. Descriptivist theories require that each name be associated with some body of information. These theories fly in the face of the fact names are useful precisely because there is often no overlap of information among speakers and hearers. The alternative position for which the book argues is firmly non-descriptivist, though it also does not require a referent. A much broader view can be taken of which expressions are referring expressions: not just names and pronouns used demonstratively, but also some complex expressions and some anaphoric uses of pronouns. Sainsbury's approach brings reference into line with truth: no one would think that a semantic theory should associate a sentence with a truth value, but it is commonly held that a semantic theory should associate a sentence with a truth condition, a condition which an arbitrary state of the world would have to satisfy in order to make the sentence true. The right analogy is that a semantic theory

should associate a referring expression with a reference condition, a condition which an arbitrary object would have to satisfy in order to be the expression's referent. Lucid and accessible, and written with a minimum of technicality, Sainsbury's book also includes a useful historical survey. It will be of interest to those working in logic, mind, and metaphysics as well as essential reading for philosophers of language.

*Presupposition and Implicature in Compositional Semantics (Palgrave Studies in Pragmatics, Languages and Cognition)* by Uli Sauerland (Editor), Penka Stateva (Editor); Palgrave Macmillan (July 10, 2007); \$85.00 (Hardcover) 288 pages; ISBN: 0230005330. All humans can interpret sentences of their native language quickly and without effort. Working from the perspective of generative grammar, the contributors investigate three mental mechanisms, widely assumed to underlie this ability: compositional semantics, implicature computation and presupposition computation. This volume brings together experts from semantics and pragmatics to bring forward the study of interconnections between these three mechanisms. The contributions develop new insights into important empirical phenomena; for example, approximation, free choice, accommodation, and exhaustivity effects.

*How to Think Logically* by Gary Seay (Author), Susana Nuccetelli (Author); Longman; 1 edition (July 15, 2007); \$26.67 (Paperback) 320 pages; ISBN: 0321337778.

*Algorithmic Information Theory: Mathematics of Digital Information Processing (Signals and Communication Technology)* by Peter Seibt (Author); Springer; 1 edition (October 5, 2006); \$129.00 (Hardcover) 444 pages; ISBN: 3540332189.

*Embodying Technoscience*, Evan Selinger, August 2008, Paperback, ISBN 8792130038.

*Introduction to Fuzzy Logic using MATLAB* by S.N. Sivanandam (Author), S. Sumathi (Author), S. N. Deepa (Author); Springer; 1 edition (November 16, 2006); \$89.95 (Hardcover) 430 pages; ISBN: 3540357807.

*The Oxford Handbook of Philosophy of Mathematics and Logic (Oxford Handbooks)* by Stewart Shapiro (Editor); Oxford University Press, USA (March 6, 2007); \$35.00 (Paperback) 832 pages; ISBN: 0195325923. Mathematics and logic have been central topics of concern since the dawn of philosophy. Since logic is the study of correct reasoning, it is a fundamental branch of epistemology and a priority in any philosophical system. Philosophers have focused on mathematics as a case study for general philosophical issues and for its role in overall knowledge-gathering. Today, philosophy of mathematics and logic remain central disciplines in contemporary philosophy, as evidenced by the regular appearance of articles on these topics in the best mainstream philosophical journals; in fact, the last decade has seen an explosion of scholarly work

in these areas. This volume covers these disciplines in a comprehensive and accessible manner, giving the reader an overview of the major problems, positions, and battle lines. The 26 contributed chapters are by established experts in the field, and their articles contain both exposition and criticism as well as substantial development of their own positions. The essays, which are substantially self-contained, serve both to introduce the reader to the subject and to engage in it at its frontiers. Certain major positions are represented by two chapters—one supportive and one critical. The Oxford Handbook of Philosophy of Math and Logic is a ground-breaking reference like no other in its field. It is a central resource to those wishing to learn about the philosophy of mathematics and the philosophy of logic, or some aspect thereof, and to those who actively engage in the discipline, from advanced undergraduates to professional philosophers, mathematicians, and historians.

*Logical Status of Diagrams, The* by Sun-Joo Shin (Author); Cambridge University Press (August 31, 2006); \$70.00 (Hardcover) 212 pages; ISBN: 052146157X. Diagrams are widely used in reasoning about problems in physics, mathematics, and logic, but have traditionally been considered to be only heuristic tools and not valid elements of mathematical proof. This book challenges the prejudice against visualization in the history of logic and mathematics and provides a formal foundation for work on natural reasoning in a visual mode. The author presents Venn diagrams as a formal system of representation and specifies rules of transformation that make this system sound and complete. The soundness of the diagrammatic system refutes the contention that graphical representation is misleading in reasoning. The book concludes with a discussion of some fundamental differences between graphical systems and linguistic systems.

*Models and Ultraproducts: An Introduction* by A. B. Slomson (Author), J. L. Bell (Author); Dover Publications (May 26, 2006); \$18.95 (Paperback) 336 pages; ISBN: 0486449793. Geared toward first-year graduate students, this text assumes only an acquaintance with the rudiments of set theory to explore homogeneous universal models, saturated structure, extensions of classical first-order logic in terms of generalized quantifiers and infinitary languages, and other topics. 1974 edition.

*Logical Number Theory II (Universitext)* by Craig Smorynski (Author); Publisher: Springer; 1 edition (October 2006); (Paperback) 450 pages; ISBN: 3540522352.

*An Introduction to Gödel's Theorems (Cambridge Introductions to Philosophy)* by Peter Smith (Author); Cambridge University Press; 1 edition (July 31, 2007); \$29.99 (Paperback) 368 pages; ISBN: 0521674530. In 1931, the young Kurt Gödel published his First Incompleteness Theorem, which tells us that, for any sufficiently rich theory of arithmetic, there are some arithmetical truths the theory cannot prove. This

remarkable result is among the most intriguing (and most misunderstood) in logic. Gödel also outlined an equally significant Second Incompleteness Theorem. How are these Theorems established, and why do they matter? Peter Smith answers these questions by presenting an unusual variety of proofs for the First Theorem, showing how to prove the Second Theorem, and exploring a family of related results (including some not easily available elsewhere). The formal explanations are interwoven with discussions of the wider significance of the two Theorems. This book will be accessible to philosophy students with a limited formal background. It is equally suitable for mathematics students taking a first course in mathematical logic.

*How to Read and Do Proofs* by Daniel Solow (Author); John Wiley & Sons, 4th edition (January 18, 2007); \$40.98 (Paperback) 288 pages; ISBN: 0471680583. An easy-to-use guide that shows how to read, understand, and do proofs. \*Shows how any proof can be understood as a sequence of techniques; \*Covers the full range of techniques used in proofs, such as the contrapositive, induction, and proof by contradiction; \*Explains how to identify which techniques are used and how they are applied in the specific problem; \*Illustrates how to read written proofs with many step-by-step examples; \*Includes new, expanded appendices related to discrete mathematics, linear algebra, modern algebra and real analysis.

*Wittgenstein, New Edition (Oneworld Thinkers)* by Avrum Stroll (Author); Oneworld Publications; New Ed edition (January 25, 2007); \$14.95 (Paperback) 176 pages; ISBN: 1851684867. Combining careful organization with a highly readable style, eminent scholar Avrum Stroll outlines the unconventional backdrop to Wittgenstein's great philosophical achievements: his dramatic change of professions, his eccentric lifestyle, and his privileged background. Lively and hopeful analogies punctuate this crisp and straightforward analysis of the philosopher's three great ideas, revealing the dramatic reversals of opinion that characterized Wittgenstein's career, and provide a penetrating insight into the way in which language shapes our world.

*Lectures on the Curry-Howard Isomorphism, Volume 149 (Studies in Logic and the Foundations of Mathematics)* by Morten Heine Sørensen (Author), Pawel Urzyczyn (Author); Elsevier Science (September 14, 2006); \$121.00 (Hardcover) 456 pages; ISBN: 0444520775. The Curry-Howard isomorphism states an amazing correspondence between systems of formal logic as encountered in proof theory and computational calculi as found in type theory. For instance, minimal propositional logic corresponds to simply typed lambda-calculus, first-order logic corresponds to dependent types, second-order logic corresponds to polymorphic types, sequent calculus is related to explicit substitution, etc. The isomorphism has many aspects, even at the syntactic level: formulas correspond to types, proofs correspond to terms, provability corresponds to inhabitation, proof normalization corresponds to term reduction, etc. But there is more to the isomorphism than this. For instance, it is an

old idea—due to Brouwer, Kolmogorov, and Heyting—that a constructive proof of an implication is a procedure that transforms proofs of the antecedent into proofs of the succedent; the Curry-Howard isomorphism gives syntactic representations of such procedures. The Curry-Howard isomorphism also provides theoretical foundations for many modern proof-assistant systems (e.g. Coq). This book give an introduction to parts of proof theory and related aspects of type theory relevant for the Curry-Howard isomorphism. It can serve as an introduction to any or both of typed lambda-calculus and intuitionistic logic. Key features: \*The Curry-Howard Isomorphism treated as common theme; \*Reader-friendly introduction to two complementary subjects: Lambda-calculus and constructive logics; \*Thorough study of the connection between calculi and logics; \*Elaborate study of classical logics and control operators; \*Account of dialogue games for classical and intuitionistic logic; \*Theoretical foundations of computer-assisted reasoning; \*The Curry-Howard Isomorphism treated as the common theme; \*Reader-friendly introduction to two complementary subjects: lambda-calculus and constructive logics; \*Thorough study of the connection between calculi and logics; \*Elaborate study of classical logics and control operators; \*Account of dialogue games for classical and intuitionistic logic; \*Theoretical foundations of computer-assisted reasoning.

*Content and Modality: Themes from the Philosophy of Robert Stalnaker* by Judith Thomson (Editor), Alex Byrne (Editor); Oxford University Press, USA (December 7, 2006); \$74.00 (Hardcover) 272 pages; ISBN: 0199282803. Eleven distinguished philosophers have contributed specially written essays on a set of topics much debated in recent years, including physicalism, qualia, semantic competence, conditionals, presuppositions, two-dimensional semantics, and the relation between logic and metaphysics. All these topics are prominent in the work of Robert Stalnaker, a major presence in contemporary philosophy, in honour of whom the volume is published. It also contains a substantial new essay in which Stalnaker replies to his critics, and sets out his current views on the topics discussed. Contributors: Richard Heck, Frank Jackson, William Lycan, Vann McGee, John Perry, Paul Pietroski, Sydney Shoemaker, Scott Soames, Daniel Stoljar, Timothy Williamson, and Stephen Yablo.

*Fallacies and Argument Appraisal (Critical Reasoning and Argumentation)* by Christopher W. Tindale (Author); Cambridge University Press; 1 edition (January 29, 2007); \$75.00 (Hardcover) 240 pages; ISBN: 0521842085. Fallacies and Argument Appraisal presents an introduction to the nature, identification, and causes of fallacious reasoning, along with key questions for evaluation. Drawing from the latest work on fallacies as well as some of the standard ideas that have remained relevant since Aristotle, Christopher Tindale investigates central cases of major fallacies in order to understand what has gone wrong and how this has occurred. Dispensing with the approach that simply assigns labels and brief descriptions of fallacies, Tindale provides fuller treatments that recognize the dialectical and rhetorical contexts in which

fallacies arise. This volume analyzes major fallacies through accessible, everyday examples. Critical questions are developed for each fallacy to help the student identify them and provide considered evaluations.

*Applications of Soft Computing: Recent Trends (Advances in Soft Computing)* by Ashutosh Tiwari (Editor), Joshua Knowles (Editor), Erel Avineri (Editor), Keshav Dahal (Editor), Rajkumar Roy (Editor); Springer; 1 edition (July 26, 2006); \$229.00 (Paperback) 420 pages; ISBN: 3540291237. Soft Computing is a complex of methodologies that embraces approximate reasoning, imprecision, uncertainty and partial truth in order to mimic the remarkable human capability of making decisions in real-life, ambiguous environments. Soft Computing has therefore become popular in developing systems that encapsulate human expertise. *Applications of Soft Computing: Recent Trends* contains a collection of papers that were presented at the 10th Online World Conference on Soft Computing in Industrial Applications, held in September 2005. This carefully edited book provides a comprehensive overview of the recent advances in the industrial applications of soft computing and covers a wide range of application areas, including optimisation, data analysis and data mining, computer graphics and vision, prediction and diagnosis, design, intelligent control, and traffic and transportation systems. The book is aimed at researchers and professional engineers who are engaged in developing and applying intelligent systems. It is also suitable as wider reading for science and engineering postgraduate students.

*Aiming at Truth* by Nicholas Unwin (Author); Palgrave Macmillan (January 9, 2007); \$85.00 (Hardcover) 288 pages; ISBN: 0230506836. The author argues that is not obvious what it means for our beliefs and assertions to be “truth-directed”, and that we need to weaken our ordinary notion of a belief if we are to deal with radical scepticism without surrendering to idealism. Topics examined also include whether there could be alien conceptual schemes and what might happen to us if we abandoned genuine belief in place of mere pragmatic acceptance. A radically new “ecological” model of knowledge is defended.

*The Logic of Chance (Dover Books on Mathematics)* by John Venn (Author); Dover Publications (July 21, 2006); \$28.95 (Paperback) 544 pages; ISBN: 0486450554. No mathematical background is necessary to appreciate this classic of probability theory. Written by the logician who popularized the famous Venn Diagrams, it remains unsurpassed in its clarity, readability, and charm. The treatment commences with an overview of physical foundations, examines logical superstructure, and explores various applications. 1888 edition.

*Dependence Logic: A New Approach to Independence Friendly Logic (London Mathematical Society Student Texts)* by Jouko Väänänen (Author); Cambridge University



Press (May 31, 2007); \$45.00 (Paperback) 234 pages; ISBN: 0521700159. Dependence is a common phenomenon, wherever one looks: ecological systems, astronomy, human history, stock markets - but what is the logic of dependence? This book is the first to carry out a systematic logical study of this important concept, giving on the way a precise mathematical treatment of Hintikka's independence friendly logic. Dependence logic adds the concept of dependence to first order logic. Here the syntax and semantics of dependence logic are studied, dependence logic is given an alternative game theoretic semantics, and results about its complexity are proven. This is a graduate textbook suitable for a special course in logic in mathematics, philosophy and computer science departments, and contains over 200 exercises, many of which have a full solution at the end of the book. It is also accessible to readers, with a basic knowledge of logic, interested in new phenomena in logic.

*Susan Haack: A Lady of Distinctions the Philosopher Responds to Her Critics* by Cornelis De Waal (Editor); Prometheus Books (December 30, 2006); \$35.00 (Hardcover): 362 pages; ISBN: 1591024226. In this critical appraisal of the work of philosopher Susan Haack, editor Cornelis de Waal has assembled fifteen original essays from outstanding international contributors together with responses from Haack on the points raised. The contributors address most of Haack's key publications, from her early writings on metaphysics to her most recent work in the philosophy of science and the philosophy of law. Topics include: the revisability of logic, the role of emotion in reasoning, scientific integrity, postmodernism and the law, the relation of science to religion, preferential hiring, multiple aspects of Haack's "foundherentism," and her crossword analogy. The volume also includes an extensive interview with Haack, which traces the development of her thought, and a complete bibliography of her work.

*The Pea and the Sun: A Mathematical Paradox* by Leonard M. Wapner (Author); A K Peters; New Ed edition (January 20, 2007); \$18.00 (Paperback) 232 pages; ISBN: 1568813279. Axiom of Choice, Banach-Tarski Theorem, Continuum Hypothesis, Alfred Tarski, Kurt Gödel, Georg Cantor, Stefan Banach, Hausdorff Paradox, Paul Cohen, Schroder-Bernstein Theorem, United States, Circle Limit, Bertrand Russell, David Hilbert, Martin Gardner, Sam Loyd, Congruent Congruent, Simpson's Paradox, University of Berlin, University of California, Albert Einstein, Burali-Forti Paradox, Russell's Paradox, The Venn, University of Warsaw.

*Fuzzy Logic: A Spectrum of Theoretical & Practical Issues (Studies in Fuzziness and Soft Computing)* by Paul P. Wang (Editor), Da Ruan (Editor), Etienne E. Kerre (Editor); Springer; 1 edition (May 2007); (Hardcover) 480 pages; ISBN: 3540712577.

*Rigid Flexibility: The Logic of Intelligence (Applied Logic Series)* by Pei Wang (Author); Springer; 1 edition (October 5, 2006); \$189.00 (Hardcover) 414 pages; ISBN:

1402050445.

*An Introduction to Logic* by Wayne A. Davis (Author); Kunos Press (August 22, 2006); \$44.95 (Paperback) 616 pages; ISBN: 097854451X. This is a reprint of the first edition of Wayne A. Davis's "An Introduction to Logic."

*Creativity for Critical Thinkers* by Anthony Weston (Author); Oxford University Press, USA (June 27, 2006); \$15.95 (Paperback) 96 pages; ISBN: 019530621X. This unique book is a concise introduction to creativity—the art of expanding possibility. Covering such practical methods as multiplying options, brainstorming, lateral thinking, reframing problems, and many others, it offers provocative and effective methods for constructive and expansive kinds of thinking. These methods are illustrated and reinforced through exercises and applications that range from science and technology to the arts; from the small aggravations of everyday life to the largest difficulties in politics, the family, and the future; and from "creative good citizenship" to "creativity to change the world." *Creativity for Critical Thinkers* is an ideal supplement for any general course in thinking skills, and in particular for courses in critical thinking, as it frees them from a preoccupation with "critical thinking" as merely criticism. It can be used in creative writing and design courses as well, and provides a quick and engaging introduction to creative thinking for workshop participants and general readers. It shows readers who have been trained to think "in the box" how to think "out of the box"—freely and imaginatively. By looking at the world or some part of the world as it could be, creativity offers an entirely new view of the world as it is.

*Logic For Dummies (For Dummies (Math & Science))* by Mark T. Zegarelli (Author); For Dummies (November 29, 2006); 19.99\$ (Paperback) 384 pages; ISBN: 0471799416. Features real-world examples and worked-out proofs. Clarify your thinking and apply logic to everyday life. Looking to learn logic, but feel lost? Relax! This friendly guide explains logic concepts in plain English, from proofs, predicate logic, and paradox to symbolic logic, semantic structures, and syllogisms. Step-by-step examples show you how to build and prove logical arguments and put equivalence rules to work. You even get tips on passing logic exams! Discover how to: \*Gain a logical perspective; \*Evaluate statements with truth tables; \*Construct proofs and refutations; \*Prove arguments with quantifier logic; \*Make logical conclusions; \*Grasp quantum and fuzzy logic.

*Fuzzy Modeling and Fuzzy Control (Control Engineering)* by Huaguang Zhang (Author), Derong Liu (Author); Birkhäuser Boston; 1 edition (September 26, 2006); \$89.95 (Hardcover) 416 pages; ISBN: 0817644911.

## AiML – ADVANCES IN MODAL LOGIC



Modal Logic, originally conceived as the logic of necessity and possibility, has developed into a powerful mathematical discipline that deals with (restricted) description languages for talking about various kinds of relational structures.

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*Advances in Modal Logic, vol. 6*

Edited by

G. Governatori,

I. Hodkinson and

Y. Venema

### **Book Description**

Advances in Modal Logic is a unique international forum for presenting the latest results and new directions of research in modal logic broadly conceived. The topics dealt with are of interdisciplinary interest and range from mathematical, computational, and philosophical problems to applications in knowledge representation and formal linguistics. This volume contains invited and contributed papers from the sixth conference in the series, held for the first time outside Europe, in Noosa, Queensland, Australia, in September 2006. It reports on considerable progress, both in the foundations of modal logic and in a number of application areas. It includes papers on the

theory of modal logic itself, on process theory, multi-agent systems and spatial reasoning, and work on quantified modal logic, modal reasoning methods, and philosophical issues.

*Advances in Modal Logic*, vol. 6, by G. Governatori (Editor), I. Hodkinson (Editor), Y. Venema (Editor); College Publications (August 1, 2006); 30.00\$ (Paperback) 532 pages; ISBN: 1904987206.

# ASL – ASSOCIATION FOR SYMBOLIC LOGIC



*2007 ASL Annual Meeting*, March 10–13, 2007, Gainesville, Florida. The invited speakers include: A. Blass, M. Benedikt, N. Dobrinen, N. Greenberg, D.R. Hirschfeldt, S. Kuhlmann, H. Leitgeb, W.J. Mitchell, T. Wilke, and R. Zach. The Eighteenth Annual Gödel Lecture will be given by E. Hrushovski. Special sessions (with organizers in parentheses) are planned in computability theory (N. Greenberg), algebraic model theory (M. Aschenbrenner), logic research for undergraduates (W. White), and connections of set theory with boolean algebras and topology (M. Dzamonja and J. Larson). The Program Committee members are: M. Aschenbrenner, M. Dzamonja (Chair), N. Immerman, J. Larson, J. Miller, and J. Tappenden. The members of the Local Organizing Committee include: D. Cenzer, G. Emch, W. Mitchell, G. Ray, M. Sitharam, and J. Zapletal (Chair). A program and pre-registration form for this meeting are enclosed in the Newsletter mailing to ASL members. For further information, visit the website below.

<http://www.math.ufl.edu/~jal/logicyear/asl/>

*2007 ASL Spring Meeting (with APA)*, April 18–21, 2007, Chicago, Illinois. This meeting will be held jointly with the Annual Meeting of the Central Division of the American Philosophical Association. There will be three invited sessions. For the first, "Categorical Logic," the speakers are S. Awodey and J.-P. Marquis, and the commentator is C. McLarty. In the second session, "Directions in Logic," Y. Moschovakis, R. Parikh, and R. Thomason will speak. The speakers for the third invited session are J. Baldwin and S. Lempp. The members of the Program Committee are D. Leivant, L. Moss, and W. Tait (Chair).

*2007 ASL European Summer Meeting (Logic Colloquium '07)*, July 14–19, 2007, Wrocław, Poland. This conference will be co-located with the 2007 International Colloquium on Automata, Languages and Programming. (ICALP 2007; see ASL OTHER MEETINGS webpages and <http://www.eatcs.org/>) and the Twenty-second Annual IEEE Symposium on Logic In Computer Science (LICS 2007; see ASL OTHER MEETINGS or visit <http://www2.informatik.hu-berlin.de/lics/lics07/>). Invited joint ASL-LICS hour lectures will be given by M. Hyland, C. Stirling, and invited joint ASL-LICS thirty-minute lectures will be offered by C. Calcagn, M. Escardó, R. Iemhoff, and A. Simpson. Tutorials will be offered by S. Jackson on Cardinal arithmetic of

L(R) and related models and B. Khoussainov on Automatic structures. Additional program information will be available soon. The Program Committee includes: A. Andretta, F. Delon, U. Kohlenbach, S. Lempp (Chair), P. Maddy, J. Marcinkowski, L. Newelski, A. Pitts, P. Pudlak, S. Solecki, F. Stephan, and G. Sundholm. The Local Organizing Committee includes: T. Jurdzinski, E. Kieronski, P. Kowalski, J. Marcinkowski (Chair), and B. Rusiecka. Abstracts of contributed talks submitted by ASL members will be published in *The Bulletin of Symbolic Logic* if they satisfy the Rules for Abstracts (see above). Abstracts—hard copy or email—should be received before the deadline of May 15, 2007 at the official meeting address: Piotr Kowalski, Instytut Matematyczny, Uniwersytetu Wrocławskiego, pl. Grunwaldzki 2/4, 50-384 Wrocław, Poland ; email: lc2007@ii.uni.wroc.pl. For further information visit the website below.

<http://www.math.uni.wroc.pl/~pkowa/lc2007.html>

*2008 ASL Annual Meeting*, March 27–30, 2008, Irvine, California. The members of the Program Committee are: M.C. Laskowski (Chair), J. Miller, T. Pitassi, E. Reck, and M. Zeeman. The members of the Local Organizing Committee include: A. Antonelli (Chair), P. Eklof, M. Foreman, P. Maddy, K. Wehmeier, and M. Zeman.

## Sponsored Meetings

*Computability in Europe 2007 (CiE 2007)*, June 18–23, 2007, Siena, Italy. This meeting is being organized within the network "Computability in Europe" (CiE). The particular focus of the event is on aspects of logical approaches to computational barriers. There will be tutorials on "Logic, Computability And Complexity In The Real World" (P. Adriaans) and Biological Computing (K. Benenson). Invited speakers include: A. Condon, S. Cook, Y. Ershov, W. Maas, S. Laplante, A. Nerode, M. Rathjen, D. Scott, R. Soare, and P. Welch. Special sessions also are planned on Approaches to Computable Mathematics, Complexity of Algorithms and Proofs, Computational Learning, Doing without Turing Machines: Constructivism and Formal Topology, Logic and New Paradigms of Computability, and Real Computation. The Co-chairs of the Program Committee are B. Cooper and A. Sorbi. The local organizers include: M. Affatato, G. Barmpalias, B. Cooper, T. Flaminio, G. Gherardi, T. Kent, A. Lewis, B. Löwe, F. Montagna, A. Sorbi, and L. Spada. For further information, visit the website below.

<http://www.amsta.leeds.ac.uk/~pmt6sbc/cie07.html>

*Workshop on Logic, Language, Information and Computation (WoLLIC'2007)*, July 2–5, 2007, Rio de Janeiro, Brazil. This is the fourteenth in a series of workshops intended to foster interdisciplinary research in pure and applied logic. The Chair of

the Program Committee is D. Leivant. The Co-chairs of the Organizing Committee are: R. de Queiroz and P. Viana. For further information, visit the website below.

<http://www.cin.ufpe.br/~wollic/wollic2007>

*Twenty-second Annual IEEE Symposium on Logic in Computer Science (LICS 2007)*, July 10–14, 2007, Wrocław, Poland. LICS is an annual international forum on theoretical and practical topics in computer science that relate to logic in a broad sense. LICS 2007 will be co-located with the 2007 ASL European Summer Meeting (Logic Colloquium 2007; see the 'ASL meetings' webpage and with the 2007 International Colloquium on Automata, Languages and Programming (ICALP 2007; see the ASL 'other meetings' webpage and also <http://www.eatcs.org/>). The Program Chair is L. Ong; the Conference Chair is J. Marcinkowski; and the LICS General Chair is M. Abadi. For more information, visit the website below.

<http://users.comlab.ox.ac.uk/luke.ong/LICS07/>

# FoLLI – FOUNDATION OF LOGIC, LANGUAGE AND INFORMATION



FoLLI—The Foundation of Logic, Language and Information, was founded in 1991 to advance the practicing of research and education on the interfaces between Logic, Linguistics, Computer Science and Cognitive Science and related disciplines.

Each year FoLLI organizes the European Summer School on Logic, Language and Information (ESSLLI). FoLLI has its own journal, the Journal of Logic, Language and Information (JoLLI).

[www.folli.org](http://www.folli.org)

## Upcoming Events Endorsed by FoLLI

*ESSLLI 2007: 19th European Summer School in Logic, Language and Information*, 6-17 August, 2007, Trinity College, Dublin, Ireland. The 19th European Summer School in Logic, Language and Information, organized by Trinity College, takes place in Dublin, Ireland, August 6-17, 2007. The ESSLLI Summer Schools are organized under the auspices of FoLLI, the European Association for Logic, Language and Information.

The main focus of ESSLLI is the interface between linguistics, logic and computation. The school has developed into an important meeting place and forum for discussion for students, researchers and IT professionals interested in the interdisciplinary study of these three fields.

The 19th edition of ESSLLI offers

- 42 courses
- 6 workshops



- a student session
- evening lectures

The courses will be given by leading scholars and are organized into three interdisciplinary areas

- Language & Computation
- Language & Logic
- Logic & Computation

The courses generally consist of 5 one-a-day, 90 minute sessions, and are offered at 3 levels: foundational, introductory, and advanced. Foundational courses cover elementary subjects of a foundational nature. They presuppose no background knowledge, and should be accessible to people from other disciplines. Introductory courses are intended to equip students and young researchers with a good understanding of a field's basic methods and techniques, and to allow experienced researchers from other fields to acquire the key competences of neighbouring disciplines, thus encouraging the development of a truly interdisciplinary research community. Advanced courses enable participants to acquire more specialized knowledge about topics they are already familiar with. The 6 Workshops are intended to encourage collaboration and the cross-fertilization of ideas by stimulating in-depth discussion of issues which are at the forefront of current research in the field. The workshops generally will have a format whereby speakers present accepted papers. The Student Session has the aim of providing Masters and PhD students with an opportunity to present their own work to a professional audience, thereby getting informed feedback on their own results. Unlike workshops, the student session is not tied to any specific theme. The Evening lectures will be given by renowned figures in the field. While the above-mentioned formal academic events are important, not to be neglected is the opportunity to meet and talk to many people from the field, over a two week period, whether it be in Trinity College's rather beautiful green spaces, or jeek by jowl in any of the pubs, cafes and restaurants with which its environs teem !

Previous ESSLLI summer schools have been highly successful, attracting around 500 participants from Europe and elsewhere.

[www.cs.tcd.ie/esslli2007](http://www.cs.tcd.ie/esslli2007)

*WoLLIC'2007*, 14th Workshop on Logic, Language, Information and Computation, July 2-5, 2007, Rio de Janeiro, Brazil. Organizing Committee: Marcelo da Silva Corrêa (U Fed Fluminense); Renata Pereira de Freitas (U Fed Fluminense); Ana Teresa Martins (U Fed Ceará); Anjolina G. de Oliveira (U Fed Pernambuco); Ruy

de Queiroz (U Fed Pernambuco, Brazil) (Co-Chair); Jorge Petrúcio Viana (U Fed Fluminense) (Co-Chair).

For more info, see:

<http://www.cin.ufpe.br/~wollic/wollic2007/>

# TARK— Theoretical Aspects of Rationality and Knowledge



## TARK XI

June 25-27th 2007 – Brussels, Belgium

### Key Dates

- Submission of Abstracts: February 14th, 2007
- Notification of Authors: March 28th, 2007
- Camera ready copy of accepted papers: April 30th, 2007
- Conference: June 25-27th, 2007

**About the Conference:** The mission of the TARK conferences is to bring together researchers from a wide variety of fields, including Artificial Intelligence, Cryptography, Distributed Computing, Economics and Game Theory, Linguistics, Philosophy, and Psychology, in order to further our understanding of interdisciplinary issues involving reasoning about rationality and knowledge. Topics of interest include, but are not limited to, semantic models for knowledge, belief, and uncertainty, bounded rationality and resource-bounded reasoning, commonsense epistemic reasoning, epistemic logic, knowledge and action, applications of reasoning about knowledge and other mental states, belief revision, and foundations of multi-agent systems.

**Contents:** Please consider submitting to TARK-XI. Strong preference will be given to papers whose topic is of interest to an interdisciplinary audience, and papers should be accessible to such an audience. Papers will be held to the usual high standards of research publications. In particular, they should 1) contain enough information

to enable the program committee to identify the main contribution of the work; 2) explain the significance of the work – its novelty and its practical or theoretical implications; and 3) include comparisons with and references to relevant literature.

**Format:** Abstracts should be no longer than ten double-spaced pages (4,000 words). Optional technical details such as proofs may be included in an appendix. An email address of the contact author should be included. Papers arriving late or departing significantly from these guidelines risk immediate rejection. One author of each accepted paper will be expected to present the paper at the conference. Please submit your paper in PDF using the submission site.

**Journal publication:** Economists should be aware that special arrangements have been made with certain economics journals (in particular, with International Journal of Game Theory, Games and Economic Behavior, Journal of Economic Theory, Econometrica, Theory and Decision, and Mathematical Social Sciences) so that publication of an extended abstract in TARK will not prejudice publication of a full journal version.

### Invited Speakers

- Frank Arntzenius, Professor at the Department of Philosophy of Rutgers University
- Yishay Mansour, Professor at the School of Computer Science of Tel Aviv University
- Bernhard von Stengel, Professor at the Department of Mathematics of the London School of Economics

For more information, please visit:

<http://www.info.fundp.ac.be/~pys/TARK07/index.php>

## The Free Newsletter for Philosophical Logic and Its Applications

$\Phi$ NEWS is the freely distributed newsletter associated with  $\Phi$ LOG and has much the same aims:

- To consolidate philosophical logic as an interdisciplinary activity
- To report on, and hopefully aid the coordination of, the research activities, conference activities and publications in philosophical logic, its applications and neighboring disciplines
- To shape and sharpen the general interest in philosophical logic and communicate important results and break-throughs in the field to a less specialized audience

$\Phi$ NEWS is edited by Vincent F. Hendricks, Pelle Guldborg Hansen, Stig Andur Pedersen and Dov M. Gabbay. The managing editor is Rasmus Rendsvig. The newsletter is published by  $\Phi$ LOG and Springer.

## Submissions

$\Phi$ NEWS publishes contributions in terms of

- Extensive expositional papers
- Announcements
- New initiatives

### Extensive Expositional Papers

$\Phi$ NEWS invites authors to submit extensive expositional papers (30–50 pages) on philosophical logic (including inductive logic, alethic logic, temporal logic, epistemic logic, deontic logic, conditional logic ... with a special focus on multi-modal logics) and its relations to notably epistemology, methodology, philosophy of science, philosophy of language, philosophy of mind ... and its applications in computer science, information theory, cognitive science, mathematics, linguistics, economics and game

theory ... These lists are not exhaustive. The papers should be expositional in nature rather than detailed technical accounts or analyses. Observe that ΦNEWS only publishes a limited number of papers a volume.

### Announcements

ΦNEWS publishes announcements of

- upcoming workshops, seminars and conferences
- forthcoming publications

Be sure to provide as detailed information as possible including the title of the event, time and place, contact information, website address and an abstract/description of the event or publication.

### New Initiatives

ΦNEWS attempts to keep track of new initiatives pertinent to philosophical logic and its applications such as new networks, societies, foundations, bulletin boards, journals etc. To place an add for a new initiative in the newsletter contact the ΦNEWS editors.

ΦNEWS, *volume 11 is scheduled for October 2007. Deadline for submissions is September 1, 2007.*

## Format

ΦNEWS encourages contributors to format their submissions according to the following guidelines: Contributors are asked to state their name, affiliation and contact information on a cover sheet together with information on the nature of the contribution. Contributions should preferably be written in  $\text{T}_{\text{E}}\text{X}$ ,  $\text{L}^{\text{A}}\text{T}_{\text{E}}\text{X}$  or  $\text{L}^{\text{A}}\text{T}_{\text{E}}\text{X}2_{\varepsilon}$  but other word processing packages are accepted provided that the contributions are saved in rich text format (RTF) with a minimum of formatting (remember to state your system platform). If either  $\text{T}_{\text{E}}\text{X}$ ,  $\text{L}^{\text{A}}\text{T}_{\text{E}}\text{X}$  or  $\text{L}^{\text{A}}\text{T}_{\text{E}}\text{X}2_{\varepsilon}$  is used contributors are instructed to include all special packages and macros used to generate the document. In addition to hard-copy printouts of figures, contributors are requested to supply the electronic versions of figures in either Encapsulated PostScript (EPS), TIFF format, GIF format or JPG format.

- References to books should follow the citation format: Glymour, C. (1992). *Thinking Things Through*. Cambridge, MA: The MIT Press
- References to articles should follow the citation format: Lewis, D. (1996). Elusive Knowledge, *The Australasian Journal of Philosophy*, **74**(1996): 549-67

- References to articles in conference proceedings should follow the citation format: Halpern, J.Y. and Vardi, M. Y. (1988). The Complexity of Reasoning about Knowledge and Time, in *Proc. 20th ACM Symp. on Theory of Computing*: 53-65

Submissions should be sent to the  $\Phi$ NEWS editors either electronically or by regular mail to the address stated on the inner sleeve of this newsletter. The contribution should be accompanied with a cover letter stating full address for correspondence, including telephone and fax number and e-mail address. Proofs will be sent to the corresponding contributor electronically in PS or PDF format. The corresponding contributor is kindly requested to return one corrected hard-copy of the manuscript inside 2 weeks of receipt. Deadline for submissions for  $\Phi$ NEWS volume 11 is September 1, 2007.

## Free Subscription

Subscription to  $\Phi$ NEWS is free. Please write the editors to obtain your free subscription to the newsletter. Be sure to include the following information:

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- A short description of your interest in philosophical logic

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