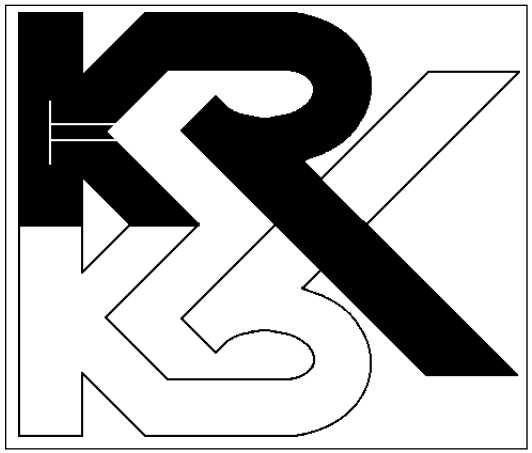

Fifth International Conference on Principles of Knowledge Representation and Reasoning (KR'96)

Registration Brochure

Royal Sonesta Hotel
Cambridge, Massachusetts
November 4-8, 1996

Sponsored by
Principles of Knowledge Representation and Reasoning, Inc.

For information, see
http://www.kr.org/kr

KR '96
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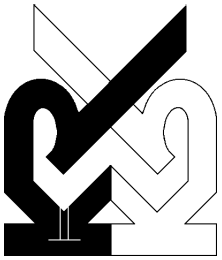

Preface

Explicit representations of knowledge manipulated by inference algorithms provide an important foundation for much work in artificial intelligence, from planning complex actions and robotics systems, to natural language dialogue systems and expert systems.

The KR conferences have established themselves as the leading forum for timely, in-depth presentation of progress in the theory and principles underlying the representation and computational manipulation of knowledge.

Expanding on that role, KR'96 will be a place for the exchange of news, issues, and results among the entire community of researchers in the principles and practices of knowledge representation and reasoning (KR&R) systems.

Registration Information

KR'96
c/o AAAI
445 Burgess Drive
Menlo Park, CA 94025
Telephone: 415 – 328-3123
Fax: 415 – 321-4457
Email: kr@aaai.org
World Wide Web: http://www.kr. org/kr/
Information Autoresponder: kr96-info@kr.org

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Wolfgang Wahlster *(DFKI, Germany)*

Invited Talks & Opening Reception

From Here to Human-Level AI

John McCarthy
Stanford University, USA

It is not surprising that reaching human-level AI has proved to be difficult and progress has been slow—though there has been definite progress. The slowness and the demand to exploit what has been discovered has led many to mistakenly redefine AI, sometimes in ways that preclude human-level AI—by relegating to humans parts of the task that human level computer programs should do. Taking such redefinitions seriously impedes progress, especially by students.

This talk tries to characterize the tasks that lie between us and human-level AI, emphasizing logical AI and especially emphasizing representation problems of information and of reasoning. Ideas for overcoming these problems, including nonmonotonic reasoning, approximate concepts, formalized contexts and introspection, will be proposed.

Complexity and Expressive Power of KR Formalisms

Georg Gottlob
Technische Universität Wien, Austria

The complexity of a large number of knowledge representation formalisms was studied during the last five years. Among others, the following logics or techniques were analyzed: default logic, autoepistemic logic, nonmonotonic modal logics, circumscription, logic programming (including disjunctive LP), abduction, planning, theory revision, and counterfactual reasoning. Complexity results for both the propositional case and the function-free first order case were derived and recursion-theoretic characterizations for the general case were obtained. In addition, relevant results on approximate reasoning and on the intertranslation between various formalisms were shown.

In this talk, a brief overview of these results will be given, and a few key results will be explained in detail. It will be argued that the complexity-analysis, in addition to expressing a quantitative measure of the worst-case behavior, leads to a deeply qualitative understanding of the algorithmic nature of KR reasoning problems. Moreover, by applying methods of descriptive complexity theory (a subfield of finite model theory), we are able to determine the precise expressive power of several KR logics. Latest results will be discussed, and directions for future research will be given.

Opening Reception

The KR opening receiption will be held Monday, November 4, in Grand Ballroom A&B, from 7:00 – 9:00 PM.

Grand Ballroom A

9:00 – 10:10 **Plenary Session: Invited Talk**

From Here to Human-Level AI
John McCarthy

10:10 – 10:30 Coffee Break

10:30 – 12:15 **Session 1: Planning**

Strategic Advice for Hierarchical Planners
Karen L. Myers

Representation Changes in Combinatorial Problems: Pigeonhole Principle Versus Integer Programming Relaxation
Yury V. Smirnov and Manuela M. Veloso

On the Role of Disjunctive Representations and Constraint Propagation in Refinement Planning
Subbarao Kambhampati and Xiuping Yang

12:15 – 1:45 Lunch Break

1:45 – 3:30 **Session 3: Situation Calculus**

Natural Actions, Concurrency and Continuous Time in the Situation Calculus
Ray Reiter

Only Knowing in the Situation Calculus
Gerhard Lakemeyer

Modeling Complex Systems in the Situation Calculus: A Case Study Using the Dagstuhl Steam Boiler Problem
T. G. Kelley

3:30 – 4:00 Coffee Break

4:00 – 5:45 **Panel on Ontologies**

Richard P. Fikes, Chair

Grand Ballroom B

9:00 – 10:10 **Plenary Session: Invited Talk**

From Here to Human-Level AI
John McCarthy

10:10 – 10:30 Coffee Break

10:30 – 12:15 **Session 2: Belief Revision**

A Practical Approach to Belief Revision: Reason-based Change
M. A. Williams

Belief Revision: A Critique
Nir Friedman and Joseph Y. Halpern

Modeling Belief Change Using Counterfactuals
Tom Costello

12:15 – 1:45 Lunch Break

1:45 – 3:30 **Session 4: Description Logics: Expressivity & Complexity**

TBox and ABox Reasoning in Expressive Description Logics
Giuseppe De Giacomo and Maurizio Lenzerini

Number Restrictions on Complex Roles in Description Logics: A Preliminary Report
Franz Baader and Ulrike Sattler

Asking Queries about Frames
Alexander Borgida and Deborah L. McGuinness

3:30 – 4:00 Coffee Break

4:00 – 5:45 **Reports on Related Conferences, Workshops, and Symposia**

Ronald P. Loui, Chair

Grand Ballroom A

9:00 – 10:10 **Session 5: Constraints**

Symmetry-Breaking Predicates for Search Problems
James Crawford, Matthew L. Ginsberg, Eugene Luck, and Amitabha Roy

Procedural Reasoning in Constraint Satisfaction
Ari K. Jonsson and Matthew L. Ginsberg

10:10 – 10:30 Coffee Break

10:30 – 12:15 **Session 7: Reports on Implementations**

Parallel Transitive Reasoning in Mixed Relational Hierarchies
Eunice (Yugyung) Lee and James Geller

DLMS: An Evaluation of KL-ONE in the Automobile Industry
Nestor Rychtyckyj

On Chronicles: Representation, On-line Recognition and Learning
Malik Ghallab

12:15 – 1:45 Lunch Break

1:45 – 3:30 **Session 9: Psychological and Philosophical Connections**

Psychological Constraints on Plausible Default Inheritance Reasoning
Carl Vogel and Judith Tonhauser

Do Computers Need Common Sense?
Matthew L. Ginsberg

Actual Possibilities
Aaron Sloman

6:00 – 10:00 **KR'96 Conference Banquet**

New England Aquarium

Grand Ballroom B

9:00 – 10:10 **Session 6: Description Logics: Reasoning Techniques**

Finite Model Reasoning in Description Logics
Diego Calvanese

A SAT-based Decision Procedure for ALC
Fausto Giunchiglia and Roberto Sebastiani

10:10 – 10:30 Coffee Break

10:30 – 12:15 **Session 8: Nonmonotonic Reasoning**

Value Minimization in Circumscription
Chitta Baral, Alfredo Gabaldon, and Alessandro Provetti

Biconsequence Relations for Nonmonotonic Reasoning
Alexander Bochman

Is There a Logic of Provability for Nonmonotonic Reasoning?
Gianni Amati and Fiora Pirri

12:15 – 1:45 Lunch Break

1:45 – 3:30 **Session 10: Ramification**

Determining Ramifications in the Situation Calculus
Enrico Giunchiglia

Embracing Occlusion in Specifying the Indirect Effects of Actions
Joakim Gustafsson and Patrick Doherty

Assessments of Ramification Methods that Use Static Domain Constraints
Erik Sandewall

6:00 – 10:00 **KR'96 Conference Banquet**

New England Aquarium

Grand Ballroom A

9:00 – 10:10 **Session 11: Deductive Systems**

Implementing Modal and Relevance Logics in a Logical Framework
David Basin, Sean Matthews, and Luca Viganò

"Statistical" First Order Conditionals
Ronen I. Brafman

10:10 – 10:30 Coffee Break

10:30 – 12:15 **Session 13: Spatial Representation & Reasoning**

Semantical Foundations of Spatial Logics
Oliver Lemon and Ian Pratt

A Pointless Theory of Space Based on Strong Connection and Congruence
Stefano Borgo, Nicola Guarino, and Claudio Masolo

Representing Spatial Vagueness: A Mereological Approach
Anthony G. Cohn and Nicholas Mark Gotts

12:15 – 1:45 Lunch Break

1:45 – 3:30 **Session 15: Decision Theory**

Using Notions of Utility Independence in Qualitative Decision Theory
Fahiem Bacchus and Adam J. Grove

On Stable Social Laws and Qualitative Equilibrium for Risk-Averse Agents
Moshe Tenneholtz

Multiple Perspective Reasoning
Tze-Yun Leong

3:30 – 4:00 Coffee Break

4:00 – 5:45 **Plenary Session: Panel**

Implementations and Research: Discussions at the Boundary
Robert MacGregor, Chair

Grand Ballroom B

9:00 – 10:10 **Session 12: Inheritance**

Inheriting Well-formed Formulae in a Formula-Augmented Semantic Network
Leora Morgenstern

Partial Orders of Sorts and Inheritances (or Placing Inheritance in Context)
Nirad Sharma

10:10 – 10:30 Coffee Break

10:30 – 12:15 **Session 14: Preference Logic**

Preferential Multi-agent Nonmonotonic Logics
Ana Maria Monteiro and Jacques Wainer

A Representation Theorem for Preferential Logics
Pierre Siegel and Lionel Forget

Representation Independence of Nonmonotonic Inference Relations
Manfred Jaeger

12:15 – 1:45 Lunch Break

1:45 – 3:30 **Session 16: Nonmonotonic Logics & Logic Programming**

An Argumentation-theoretic Approach to Reasoning with Specificity
Phan Minh Dung and Tran Cao Son

Default Reasoning System DeReS
Pawel Cholewinski, Victor W. Marek, and Miroslaw Truszczynski

Super Logic Programs
Stefan Brass, Jurgen Dix, and Teodor C. Przymusinski

3:30 – 4:00 Coffee Break

4:00 – 5:45 **Plenary Session: Panel**

Implementations and Research: Discussions at the Boundary
Robert MacGregor, Chair

Thursday, November 7

Grand Ballroom A

9:00 – 10:10 **Plenary Session: Invited Talk**

Complexity and Expressive Power of KR Formalisms
Georg Gottlob

10:10 – 10:30 Coffee Break

10:30 – 12:15 **Session 17: Robotics**

Representing Sensing Actions: The Middle Ground Revisited
Keith Golden and Daniel Weld

A New Algorithm for Generative Planning
Matthew L. Ginsberg

Moving a Robot: The KR&R Approach at Work
Giuseppe De Giacomo, Luca Iocchi, Daniele Nardi, and Riccardo Rosati

12:15 – 1:45 Lunch Break

1:45 – 3:30 **Session 19: Actions & Events**

The PMA Revisited
Andreas Herzig

Causality and the Qualification Problem
Michael Thielscher

Reasoning about Discontinuities in the Event Calculus
Rob Miller and Murray Shanahan

Grand Ballroom B

9:00 – 10:10 **Plenary Session: Invited Talk**

Complexity and Expressive Power of KR Formalisms
Georg Gottlob

10:10 – 10:30 Coffee Break

10:30 – 12:15 **Session 18: Complexity Measures**

Tractable Subclasses of the Point-Interval Algebra: A Complete Classification
Peter Jonsson, Thomas Drakengren, and Christer Bäckstrom

Comparing Space Efficiency of Propositional Knowledge Representation Formalisms
Marco Cadoli, Francesco M. Donini, Paolo Liberatore, and Marco Schaerf

Encoding Plans in Propositional Logic
Henry Kautz, David McAllester, and Bart Selman

12:15 – 1:45 Lunch Break

1:45 – 2:55 **Session 20: Recognition & Diagnosis**

Scaling up Goal Recognition
Neal Lesh and Oren Etzioni

Computing Approximate Diagnoses by Using Approximate Entailment
Annette ten Teije and Frank van Harmelen

Registration & General Information

Preregistration is recommended. The registration fee includes the cost of the conference proceedings and the opening reception on November 4, 1996.

Fee Schedule

(all fees are in US dollars):
Early *(Postmarked by September 30, 1996)*

Regular	$400
Student	$200
Banquet	$ 60

Late *(Postmarked after September 30, 1996)*

Regular	$450
Student	$240
Banquet	$ 60

Banquet

The KR'96 Banquet will be held from 6:00–10:00 on Wednesday evening, November 6 at the New England Aquarium. This event is optional and reservations should be made at the time of registration, accompanied by the additional fee. The aquarium is located on the historic Boston waterfront near Faneuil Hall's famous marketplace. Transportation from the Royal Sonesta to the aquarium is included in the fee. A cocktail reception will be followed by dinner. Attendees will then have an opportunity to view the exhibits in the Main Exhibition Hall of the aquarium, which will be closed to the public. A jazz quartet will provide the evening's entertainment.

Payment

Please fill out the registration form and mail it with your fee to:

KR–96, c/o AAAI
445 Burgess Drive
Menlo Park, CA 94025

Checks (drawn on US bank) or international money orders should be made out to AAAI. VISA, MasterCard and American Express are also accepted. *Please note:* All refund requests must be in writing and postmarked by October 15, 1996. No refunds will be granted after this date. Please pick up your complete registration packet in the foyer of The Grand Ballroom at the Royal Sonesta.

Registration Hours

Monday, Nov. 4:
6:30 – 8:00 PM
Tuesday & Thursday, Nov. 5 & 7:
8:00 AM – 6:00 PM
Wednesday & Friday, Nov. 6 & 8:
8:00 AM – 3:00 PM

Accommodations

For your convenience, KR'96 has reserved a block of rooms at the Royal Sonesta Hotel. The rate is $129.00 per night for a single or double room. KR'96 attendees must contact the Royal Sonesta Hotel directly. Please identify yourself as an KR'96 registrant to qualify for the reduced rate.

Royal Sonesta Hotel
5 Cambridge Parkway
Cambridge, MA 02142-1299
Phone: (617) 491-3600
Fax: (617) 661-5956

Air Transportation & Car Rental

Get there for less on United Airlines, the official carrier for KR'96. Save 5% on lowest applicable fares, some restrictions apply. Save 10% on lowest unrestricted coach class fares with 7 day advance purchase. Travel between November 2–14, 1996. Alamo Rent A Car is also offering special rates starting as low as $26/day or $115/week, with unlimited free mileage and bonus frequent flyer miles on United.

For lowest available fares on any airline, call Conventions in America, our official travel agency, at 1–800–929-4242 and ask for Group #428. You will also receive free flight insurance of $100,000 and become eligible to win free travel worldwide in their bimonthly drawings. Outside the US and Canada, call 619–678-3600 / fax 619–678-3699 / Internet FLYCIA@balboa.com. If you call United direct at 1–800–521-4041, ask for Tour Code #556NT. Alamo 1–800–732-3232, ID#409268 GR.

Ground Transportation

This information is the best available at time of printing. Fares and routes change frequently. Please check by telephoning the appropriate numbers below for the most up-to-date information.

Arrival by Air

Logan International Airport is approximately five miles from the Royal Sonesta. Taxi fare to the hotel is approximately $15.00, regardless of the number of passengers. Public transportation to Cambridge is available; although an inexpensive alternative, it is quite cumbersome with luggage and not recommended.

Arrival by Train

You will arrive in Boston at South Station. Taxi service and public transportation are available.

Arrival by Car

The Royal Sonesta is located at 5 Cambridge Parkway in Cambridge, three miles from Logan International Airport. Follow signs to Sumner Tunnel/Boston (Route 1A South) to Route 93 North; stay in center lane and follow signs for Cambridge/Somerville; bear right and follow Somerville/O'Brien Highway signs; and take left (Edwin Land Boulevard) at traffic lights after the Museum of Science. The hotel will be on your left, directly across from the CambridgeSide Galleria.

From the Massachusetts Turnpike (I–90) Eastbound: Take exit 18 following signs to Allston/Cambridge; stay in right lane following signs to Cambridge/Somerville; cross over River Street Bridge (Cambridge Street) and take a right at traffic light onto Memorial Drive (Route #3); and follow Memorial Drive East (Route #3 South) until you reach signs for Government Center/Kendall Square being sure to stay in extreme right lane along river since Memorial Drive then turns into Edwin Land Boulevard. The hotel will be on your right directly across from the Cambridge Side Galleria.

Adjoining Independent Workshops

Description Logic '96

November 2–4, 1996

Chair: Lin Padgham
Contact
Organizing Committee
dl96@dl.kr.org

Relevance in Knowledge Representation and Reasoning (RRR-96)

November 2–4, 1996

Organizers: Alon Levy and Russ Greiner
Contact
levy@research.att.com
greiner@scr.siemens.com

AAAI Fall Symposia Series

Massachusetts Institute of Technology
November 9–11, 1996

Contact
AAAI, 445 Burgess Drive
Menlo Park, CA 94025
Telephone: 415–328-3123
Fax: 415–321-4457
Email: fss@aaai.org
http://www.aaai.org

Disclaimer

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Please print or type. (This form is also available at http://www.kr.org/kr/kr96.html)

First name _____ Last name _____

Affiliation _____

Address _____ Home ☐ or Business ☐

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Zip or postal code _____ Country _____

Daytime telephone _____ Net address _____

Fee
(Please check appropriate amounts)

Early (Postmarked by September 30, 1996)

☐ Regular: $400 ☐ Student: $200 ☐ Banquet: $ 60

(Students must send legible proof of full-time student status.)

Late (Postmarked after September 30, 1996)

☐ Regular: $450 ☐ Student: $240 ☐ Banquet: $ 60

(Students must send legible proof of full-time student status.)

TOTAL FEE *(Please enter correct amount.)* _____

Method of Payment

(please circle one)

CHECK MASTERCARD VISA AMERICAN EXPRESS MONEY ORDER

Credit card number _____ Expiration date _____

Name (as it appears on card) _____

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Please mail completed form with your payment to

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Please Note: Requests for refunds must be received *in writing* by 15 October 1996.

No refunds will be granted after that date. A $25.00 processing fee will be levied on all refunds granted.

For Office Use Only

Check Number _____ Amount _____ Received _____