



The 2009 North American Conference on Computing and Philosophy

**NA-CAP@IU 2009: Networks and Their
Philosophical Implications**



June 14th-16th

Indiana University, Bloomington



The 2009 North American Conference on Computing and Philosophy

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The 2009 North American Conference on Computing and Philosophy

Welcome Letter from the IACAP President

Dear Participants and Organisers of NA-CAP 2009,

It is my pleasure and honour to welcome you to Indiana University for our annual NA-CAP meeting. It has now become traditional to say a few words about the activities of the Association, so let me take this opportunity to highlight a few facts and some good news.

As you might have read in the Newsletter, we are soon going to enjoy two other meetings, E-CAP09 (Barcelona) and AP-CAP09 (Tokyo). It was most unfortunate that we could not organise LA-CAP in Mexico City this year because of the swine flu, but I am glad to say that our colleagues were able to plan a local symposium, and that we are now working on the first LA-CAP, which will be held in Brasilia next year. I would like to congratulate all IACAP members who have made such a flourishing of successful conferences possible.

Among the other dates to put in your diary there is one that, although still rather distant, is nonetheless important. The Executive Committee has agreed that there will be no regional conference in 2012, but a single IACAP Congress, to be held in England, in order to celebrate our tenth anniversary. Of course IACAP is much older, but it was approximately in 2002 that we became officially an international organization. Moreover, 2012 will also be the Alan Turing Year (June 23, 2012 will be the Centenary of Alan Turing's birth in London). So we shall coordinate the organisation of the Congress with the other activities and events planned to celebrate Turing's life and scientific impact (<http://www.cs.swan.ac.uk/turing2012/>). We shall keep you informed as plans progress.

The organisation of the Congress is being followed by our new Executive Director, whom I would like to welcome, Anthony Beavers. Tony is very well known in our community and needs no further introduction. He will be responsible for administering the regular operations of the Association in close consultation with the President, and for ensuring that regional conferences are regularly planned and held according to the standards of the Association. He has just started but his tireless efforts have already been influential.

Further good news include the new agreement to transform the Society for Machines and Mentality (SFMM) into an IACAP Special Interest Group (SIG). The new SIG will bring a reinforced connection with the American Philosophical Association (SFMM used to organise regular meeting at APA conferences), with *Minds and Machines* (the journal officially associated

to SFMM is now an IACAP official journal), a larger membership and, above all, an increase in research and scholarship opportunities. Eric Steinhart is the new Director of the SIG-SFMM.

Among our future plans, we are considering ways of reinforcing the presence of graduates and postdocs within the Association, and I would welcome suggestions. We are also considering the best way of managing our Awards. During the meeting, we shall welcome this year's Covey Award and Goldberg Graduate Award. The 2009 Covey Award for Excellence in the Area of Research in Computing and Philosophy will be presented to Edward Zalta (Stanford University) for his work on the Stanford Encyclopedia of Philosophy. The Goldberg Graduate Award will be presented to Matteo Turilli (University of Oxford) for his paper, "Translating Ethical Requirements into Software Specifications." Both Zalta and Turilli will speak at the conference. Other conference highlights include keynote lectures from William Bechtel (University of California, San Diego) and Olaf Sporns (Indiana University), both of whom will speak about new research in biological networks. The conference will additionally feature panel sessions on Logic Pedagogy and Networks and Social Network Effects. I would like to remind everybody that applications for the Goldberg and the Covey Award are most welcome. We are planning to set up a specific Committee to facilitate the nomination and award process.

Financially, the Association is doing well, but we have simplified the membership system in order to ensure that there is only one date when all dues will be collected, and we have introduced the new life membership.

I wish everybody a fruitful and pleasant conference. I hope you will enjoy the talks and take full advantage of the many opportunities for new contacts and interactions offered by the meeting in the following days. The organisers and, in particular, Tony Beavers, are to be congratulated for the successful effort to put together a splendid program. I would like to extend to all the staff and the participants a very big thanks on behalf of the Association.

All my best wishes,

Luciano Floridi
IACAP President
www.ia-cap.org



The 2009 North American Conference on Computing and Philosophy

Acknowledgements

The IACAP wishes to acknowledge the help of the following people
and organizations who have worked to make this year's conference possible:

Conference Planners

Selmer Bringsjord
NACAP Regional Director

Tony Beavers
2009 Conference Chair

Colin Allen
2009 Conference Host

Special Session Program Chairs

Logic Pedagogy and Networks
Marvin Croy

Social Network Effects
Dylan Wittkower

Goldberg Award
Mara Harrell

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Matteo Turilli

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and Program in Cognitive Science

Goldberg Award Sponsor

The Department of Philosophy at Carnegie Mellon University



The 2009 North American Conference on Computing and Philosophy

The Conference at a Glance

Sunday, June 14th

- 4:30p–6:30p** **Registration (Conference Lounge)**
- 6:30p–7:30p** **IACAP Presidential Address (Oak Room)**
"A Distributed Model of Truth for Semantic Information"
Luciano Floridi, *University of Hertfordshire and University of Oxford*
- 7:30p–8:30p** **2009 Covey Award Presentation and Lecture (Oak Room)**
"Achieving Leibniz's Goal of a Computational Metaphysics"
Edward N. Zalta, *Stanford University*
- 9:00p** **Informal Gathering at the Crazy Horse Food and Drink Emporium**

Monday, June 15th

*A Poster Presentation of Places and Spaces: Mapping Science
by Katy Börner and Elisha Hardy will be on display in the Walnut Room
throughout the day. Please stop by to have a look.*

- 8:15a–9:00a** **Continental Breakfast (Conference Lounge)**
- 9:00a–10:00a** **The Herbert A. Simon Keynote Address (Oak Room)**
"Networks at Multiple Levels: Understanding Circadian Phenomena"
William Bechtel, *University of California, San Diego*
- 10:00a–11:00p** **The Douglas C. Engelbart Keynote Address (Oak Room)**
"Network Neuroscience – A New Perspective on Brain Function"
Olaf Sporns, *Indiana University*
- 11:00a–11:15a** **Break (Conference Lounge)**
- 11:15a–12:30p** **Indiana University Network Session (Oak Room)**
- 12:30p–2:15p** **Lunch on Your Own**
- 2:15p–4:15p** **Panel Session: Logic Pedagogy and Networks (Oak Room)**
- 4:15p–4:30p** **Break (Conference Lounge)**
- 4:30p – 6:30p** **Panel Session: Social Network Effects (Oak Room)**

6:35p – 7:15p Goldberg Graduate Award Presentation (Oak Room)

"Translating Ethical Requirements into Software Specification"
Matteo Turilli, *University of Oxford*

7:45p Banquet (State Room East)

Tuesday, June 16th

8:15a–9:00a Continental Breakfast (Conference Lounge)

9:00a – 10:45a Concurrent Sessions – Group 1

1A Biological and Artificial Neural Networks (Oak Room)

1B Group Cognition, eTrust and Network Neutrality (Walnut Room)

10:45a–11:00a Break (Conference Lounge)

11:00a–12:45p Concurrent Sessions – Group 2

2A Modeling, Epistemology and Cooperation (Oak Room)

2B Networks, Networked Computing and Robotics (Walnut Room)

12:45p–2:30p Lunch on Your Own

2:30p – 4:15p Concurrent Sessions – Group 3

3A Bayesian and Semantic Networks (Oak Room)

3B Computation and Representation (Walnut Room)

4:15p–4:30p Break (Conference Lounge)

4:30p–6:00p Closing Session: Logic Pedagogy and Networks (Walnut Room)

6:15p–6:30p Announcements from the IACAP Executive Director (Oak Room)

8:30p–11:30p Postconference Party (Allen Residence)



The 2009 North American Conference on Computing and Philosophy

Detailed Program

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Introduction by Tony Beavers, *The University of Evansville*
- "A Distributed Model of Truth for Semantic Information"
Luciano Floridi, *University of Hertfordshire and University of Oxford*
- 7:30p–8:30p 2009 Covey Award Presentation and Lecture (Oak Room)**
Introduction and Award Presentation by IACAP President Luciano Floridi
- "Achieving Leibniz's Goal of a Computational Metaphysics"
Edward N. Zalta, *Stanford University*
- 9:00p Informal Gathering at the Crazy Horse Food and Drink Emporium - See**
<http://www.crazyhorseindiana.com/> for details.

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Session Chair: Rob Goldstone, *Indiana University*
- "Science from Above"
Katy Börner, *Indiana University*

"How Does Awareness of Social Structures Affect N-player Collective Action Games?"

Armando Razo, *Indiana University*

12:30p–2:15p Lunch on Your Own

2:15p–4:15p Panel Session: Logic Pedagogy and Networks (Oak Room)

Session Chair: Marvin Croy, *University of North Carolina at Charlotte*

"Networked, Schmetworked: Regardless, When We Teach Logic We Baby Our Students -- To Their Detriment"

Selmer Bringsjord, *Rensselaer Polytechnic Institute*

"Do Students Allow Themselves To Be Babied? Evidence of Judicious Use of an Online Hint System."

Colin Allen, *Indiana University* and Chris Menzel, *Texas A&M University*

"Generation of Contextualized Help for Existing Computer Aided Instruction for Propositional Proof Construction"

John Stamper, Tiffany Barnes & Marvin Croy, *University of North Carolina at Charlotte*

4:15p–4:30p Break (Conference Lounge)

4:30p – 6:30p Panel Session: Social Network Effects (Oak Room)

Session Chair: Dylan Wittkower, *Coastal Carolina University*

"Why Can't We be Virtual Friends?"

Craig Condella, *Salve Regina University*

"Social Networks and the Glut of the Commons"

Dylan Wittkower, *Coastal Carolina University*

"Grooming, Gossip, and the Evolution of Facebook"

Margaret Cuonzo, *Long Island University—Brooklyn Campus*

"A Gatekeeper, Moderator, and Synthesizer: Controlling Access to the Self on Facebook"

Michael V. Butera, *Virginia Tech*

6:35p – 7:15p Goldberg Graduate Award Presentation (Oak Room)

Session Chair: Mara Harrell, *Carnegie Mellon University*

"Translating Ethical Requirements into Software Specification"

Matteo Turilli, *University of Oxford*

7:45p Banquet (State Room East)

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8:15a–9:00a Continental Breakfast (Conference Lounge)

9:00a – 10:45a Concurrent Sessions – Group 1

1A Biological and Artificial Neural Networks (Oak Room)

Session Chair: Stephen Crowley, *Boise State University*

"How I Learned to Stop Worrying about Mental Causation and Love the Hippocampus: A Neo-Dretskean Account of Reasons as Causes"

Cameron Buckner, *Indiana University*

Commentator: Don Berkich, *Texas A&M University, Corpus Christi*

"Putnamizing the Liquid State"

Kevin Kirby, *Northern Kentucky University*

"Points and Segments in the Human Imagination"

Francisco Lara-Dammer, *Center for Research on Concepts and Cognition, Indiana University*

1B Group Cognition, eTrust and Network Neutrality (Walnut Room)

Session Chair: Peter Boltuc, *University of Illinois at Springfield*

"How We Find Hidden Profiles, Undiscovered Public Knowledge, and Structural Holes: A Distributed Analysis of Group Cognition"

Georg Theiner, *University of Alberta*

"Analysing the Occurrences of E-Trust in a Network of Artificial Agents"

Mariarosaria Taddeo, *University of Hertfordshire*

Commentator: Matteo Turilli, *University of Oxford*

"Internet Neutrality: Ethical Answers to a Public Policy Issue"

Matteo Turilli, *University of Oxford* – Antonino Vaccaro, *Catholic University of Lisbon*

Commentator: Mariarosaria Taddeo, *University of Hertfordshire*

10:45a–11:00a Break (Conference Lounge)

11:00a–12:45p Concurrent Sessions – Group 2

2A Modeling, Epistemology and Cooperation (Oak Room)

Session Chair: Don Berkich, *Texas A&M University, Corpus Christi*

"Emergence in Networks: Cooperation and Scientific Research"

Patrick Grim, *SUNY Stony Brook*

Commentator: Stephen Crowley, *Boise State University*

"Modeling Scientific Evolution through a Network of Computerized Agents"

Nicolas Payette, *Université du Québec à Montréal*

Commentator: Mara Harrell, *Carnegie Mellon University*

"Characterizing Epistemic Communities through Network Analysis"

Ian O'Loughlin, *University of Idaho* – Christopher Williams, *University of Idaho* – Brian Crist, *University of Idaho* – Stephen Crowley, *Boise State University* – Shannon Donovan, *University of Idaho*

Commentator: Katy Börner, *Indiana University*

2B Networks, Networked Computing and Robotics (Walnut Room)

Session Chair: Edward N. Zalta, *Stanford University*

"A Formalism for Embodied Computation Oriented Toward Artificial Morphogenesis"

Bruce MacLennan, *University of Tennessee, Knoxville*

Commentator: Orlin Vakarelov, *University of Arizona*

"Improving Computer Theorem Proving: Transforming Graph-Structures to Gain Justification and Explanation"

Martin Frické, *University of Arizona*

"Prolegomena to any Future Metaphysics of Computer Networking"

Keith Douglas, *Statistics Canada*

12:45p–2:30p Lunch on Your Own

2:30p – 4:15p Concurrent Sessions – Group 3

3A Bayesian and Semantic Networks (Oak Room)

Session Chair: Colin Allen, *Indiana University*

"Causal Bayesian Networks: 20 Years of Philosophical Debate"

Christoph Schulz, *University of Hertfordshire*

"Early Semantic Networks of Nouns: New Inroads into Old Questions"

Josita Maouene, *Indiana University* – Thomas Hills, *University of Basel* –

Mounir Maouene, *University of Tangier* – Adam Sheya, *Indiana University* –

Linda Smith, *Indiana University*

"Culture as Mediator for what is Ready-to-hand: A Phenomenological Exploration of Semantic Networks"

David Saab, *Pennsylvania State University*

3B Computation and Representation (Walnut Room)

Session Chair: Orlin Vakarelov, *University of Arizona*

"Computational Functionalism and Constitutive Externalism"

Darren Abramson, *Dalhousie University*

"Analog and Digital, Continuous and Discrete"

Corey Maley, *Princeton University*

Commentator: Bruce MacLennan, *University of Tennessee, Knoxville*

"Informational Networks: A Meta-architecture for Situated Cognition"

Orlin Vakarelov, *University of Arizona*

Commentator: Stephen Crowley, *Boise State University*

4:15p–4:30p Break (Conference Lounge)

4:30p–6:00p Closing Session: Logic Pedagogy and Networks (Walnut Room)

Session Chair: Marvin Croy, *University of North Carolina at Charlotte*

"Pros and Cons of Teaching Informal Logic and Critical Thinking Online"

Mara Harrell, *Carnegie Mellon University*

Commentator: Peter Boltuc, *University of Illinois at Springfield*

"The AProS Project: A Case for On-line Logic Education?"

Wilfried Sieg, Tyler Gibson, Davin Lafon and Dawn McLaughlin, *Carnegie Mellon University*

Commentator: Martin Frické, *University of Arizona*

6:15p–6:30p **Closing Announcements from the IACAP Executive Director (Oak Room)**
Tony Beavers, *University of Evansville*

8:30p–11:30p **Postconference Party (Allen Residence)**
Loads of fun! Please plan to attend.



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An Even More Detailed Program with Author-Provided Abstracts

Sunday, June 14th

4:30p–6:30p Registration (Conference Lounge)

6:30p–7:30p IACAP Presidential Address (Oak Room)

Introduction by Tony Beavers, *The University of Evansville*

"A Distributed Model of Truth for Semantic Information"

Luciano Floridi, *University of Hertfordshire and University of Oxford*

This talk develops a correctness theory of truth (CTT) for semantic information. After the introduction, in section two, semantic information is shown to be translatable into propositional semantic information (i). In section three, i is shown to be polarisable into a query (Q) and a result (R), qualified by a specific context, a level of abstraction and a purpose. This polarization is normalised in section four, where $[Q + R]$ is transformed into a Boolean question and its relative yes/no answer $[Q + A]$. This completes the reduction of the truth of i to the correctness of A. In sections five and six, it is argued that (1) A is the correct answer to Q if and only if (2) A correctly saturates (in a Fregean sense) Q by verifying and validating it (in the computer science's sense of "verification" and "validation"); that (2) if and only if (3) $[Q + A]$ generates an adequate model (m) of the relevant system (s) identified by Q; that (3) if and only if (4) m is a proxy of s (in the computer science's sense of "proxy") and (5) proximal access to m commutes with the distal access to s (in the category theory's sense of "commutation"); and that (5) if and only if (6) reading/writing (accessing, in the computer science's technical sense of the term) m enables one to read/write (access) s. Section seven provides some further clarifications about CTT, also in the light of the semantic paradoxes. Section eight draws a general conclusion about the nature of CTT as a theory for system designers not just system users.

7:30p–8:30p 2009 Covey Award Presentation and Lecture (Oak Room)

Introduction and Award Presentation by IACAP President Luciano Floridi

"Achieving Leibniz's Goal of a Computational Metaphysics"

Edward N. Zalta, *Stanford University*

The International Association for Computing and Philosophy is pleased to announce that Edward N. Zalta is the winner of the IACAP 2009 Covey Award for Excellence in Research in the Area of Computing and Philosophy. Zalta is a Senior Research Scholar at the Center for the Study of Language and Information at Stanford University. He is perhaps best known for his role as the editor of the Stanford Encyclopedia of Philosophy, an initiative that uses computational procedures to create a dynamic reference work that is always up-to-date and yet peer-reviewed according to the highest standards of the profession. Currently, the SEP includes 1105 articles in over 40 subject areas carefully managed and reviewed under the auspices of 115 area editors. Its

prominence in the top of return sets from Google testifies to its widely-recognized quality and importance. Indeed, it is difficult to imagine that there are philosophy faculty and students the world over who have not at one time or another made use of this incredible resource. In this light, the IACAP applauds Zalta's commitment to keeping the Encyclopedia open and available to a world of people free-of-charge. It is the unanimous decision of the IACAP executive board that the gift of such an important and vital philosophical resource should not go unnoticed and that Zalta is aptly deserving of recognition for this achievement. The President of the IACAP, its officers and its membership congratulate Ed Zalta for his fine accomplishment and service to the profession of philosophy and humanity more generally.

Following a brief award ceremony, Zalta will speak on "computational metaphysics," a new area of philosophy that investigates the implementation and investigation of formal, axiomatic metaphysics (i.e., the study of metaphysics using formally represented axioms and premises to derive conclusions) in an automated reasoning environment.

Abstract: By representing formal metaphysical claims as axioms and premises in an automated reasoning environment, one can: (1) verify the validity of arguments for metaphysical conclusions, (2) find new and simpler versions of those arguments (i.e., find ways to derive the conclusion from fewer premises), (3) discover facts about the logical strength of the principles needed to establish metaphysical conclusions, (4) discover errors in reasoning, and (5) find countermodels that show arguments to be invalid. Branden Fitelson, Paul Oppenheimer, and I [Ed Zalta] have recently been using such automated reasoning tools (e.g., Prover9, Mace, the E-prover system, and Paradox) to study metaphysical arguments and to investigate and extend my axiomatic theory of abstract objects. In this talk, I describe some of our results: (a) a computationally-discovered proof of the Lewis Principle that for every way a world might be, there is a world which is that way, and (b) a computationally-discovered simplification of Anselm's ontological argument. These kinds of results achieve, to some extent, Leibniz's goal of a computational metaphysics.

9:00p **Informal Gathering at the Crazy Horse Food and Drink Emporium** - See <http://www.crazyhorseindiana.com/> for details.

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9:00a–10:00a **The Herbert A. Simon Keynote Address (Oak Room)**
Introduction by Cameron Buckner, *Indiana University*

"Networks at Multiple Levels: Understanding Circadian Phenomena"
William Bechtel, *University of California, San Diego*

Research on biological mechanisms, including brain mechanisms, often begins in a highly reductionistic fashion: identifying components at the lowest available level of analysis and establishing that they play a critical role in the phenomenon of interest. One such phenomenon, circadian oscillations in various behaviors and physiological processes in organisms that signal their coordination with the day-night cycle of our planet, was shown in the mid-20th century to be controlled endogenously. That is, from the results of such manipulations as keeping organisms in constant darkness, it could be inferred that they must possess internal clocks. Researchers hastened to determine

where various organisms' clocks were located (in mammals, the brain's suprachiasmatic nucleus or SCN) and even the responsible genes (in animals, *Per*). In 1990 a circadian clock mechanism was proposed involving a delayed feedback loop in which the protein synthesized from *Per*, *PER*, re-enters the nucleus and inhibits its own synthesis, resulting in a rise and fall in concentrations of *per* across a period of about 24 hours. Researchers soon found, however, that a host of other genes and proteins are essential components of the clock. Moreover, it was determined that the timing of the intracellular delayed feedback mechanism showed considerable variation across individual SCN cells, suggesting that the cells were organized into a complex, interactive network in which synchronization was crucial to accurate timekeeping. Thus, understanding circadian phenomena would require understanding how intercellular networks might function. Moreover, researchers increasingly recognized that the overall system comprised multiple networks organized and interacting hierarchically. They had long known that the SCN must receive input from photoreceptors in the eye in order to coordinate with day-night cycles, and that the SCN must send outputs to a number of physiological systems to affect those systems as well as behaviors of the whole organism. More recently it was discovered that these peripheral systems had their own oscillators, which received the SCN's outputs and dampened in their absence. Researchers initially regarded these as slave oscillators, but evidence accrued that peripheral oscillators can affect the operation of the SCN itself. Similarly, it now appears that in addition to photoreceptors sending output to the SCN, their own activity is modulated by the SCN. Thus, the SCN is a network of synchronized neurons that affects, and is affected by other neural components of the overall mechanism responsible for circadian phenomena. Understanding the complex dynamics in such a hierarchy of neural and molecular networks requires modeling at multiple levels.

10:00a–11:00p The Douglas C. Engelbart Keynote Address (Oak Room)

Introduction by Carlos Zednik, *Indiana University*

"Network Neuroscience – A New Perspective on Brain Function"

Olaf Sporns, *Indiana University*

Recent advances in network science have generated much progress in our understanding of the structure and function of many networked systems, ranging from transportation networks, to social networks, the internet, ecosystems, and biochemical and gene transcription pathways. Network approaches are also beginning to be applied to the brain, at several levels of scale from cells to entire brain systems. We now know that brain networks exhibit a number of characteristic topological features, including small-world attributes, modularity, and hubs. For the first time, we can relate these structural aspects of brain networks to the brain's global performance in cognition and behavior. The talk will review recent work on how complex brain networks are organized, and how their topology constrains and shapes their capacity to process and integrate information. Particular emphasis will be on the structure of the human brain and on what this structure can possibly tell us about human cognition.

11:00a–11:15a Break (Conference Lounge)

11:15a–12:30p Indiana University Network Session (Oak Room)

Session Chair: Rob Goldstone, *Indiana University*

"Science from Above"

Katy Börner, *Indiana University*

Cartographic maps of physical places have guided mankind's explorations for centuries. They enabled the discovery of new worlds while also marking

territories inhabited by unknown monsters. Domain maps of abstract semantic spaces, see scimaps.org, aim to serve today's explorers understanding and navigating the world of science. The maps are generated through scientific analysis of large-scale scholarly datasets in an effort to connect and make sense of the bits and pieces of knowledge they contain. They can be used to objectively identify major research areas, experts, institutions, collections, grants, papers, journals, and ideas in a domain of interest. Local maps provide overviews of a specific area: its homogeneity, import-export factors, and relative speed. They allow one to track the emergence, evolution, and disappearance of topics and help to identify the most promising areas of research. Global maps show the overall structure and evolution of our collective scholarly knowledge. This talk will present an overview of the techniques used to study science by scientific means together with sample science maps and their interpretations.

"How Does Awareness of Social Structures Affect N-player Collective Action Games?"

Armando Razo, *Indiana University*

This paper examines how social networks affect strategic behavior in the context of repeated n-player cooperation games. Typically, in such games, two players from a larger community are randomly matched at each round ignoring their respective social connections to the rest of the group. This paper develops a game-theoretic model that adds a relational component to those pairwise interactions in two ways: (1) explicit or manifest ties (assumed to be common knowledge among all participants) and implicit or latent ties (players may think that other players are connected without any direct evidence of an actual social structure). This model will be used to examine whether players behave differently in contexts with evident or presumed social networks. Computer simulations will be used to illustrate the implications of the formal model.

12:30p–2:15p Lunch on Your Own

2:15p–4:15p Panel Session: Logic Pedagogy and Networks (Oak Room)

Session Chair: Marvin Croy, *University of North Carolina at Charlotte*

"Networked, Schmetworked: Regardless, When We Teach Logic We Baby Our Students -- To Their Detriment"

Selmer Bringsjord, *Rensselaer Polytechnic Institute*

How did it come to pass that the problems given to students in Logic 101 classes across the United States are as easy as they are? For example, as far as I can tell, about the most difficult object-level proof in *Language, Proof, and Logic*, which I regard to be an absolutely first-rate book otherwise, is that of $\neg\text{Ex}(\text{Rx} \rightarrow \text{AyRy})$. Yet this is trivial, really. A great disservice is being done to youth across America: They are not learning to reason in bona fide context-independent fashion, because they aren't getting challenged with problems sufficiently hard to catalyze cognitive maturation to the Piagetian level of formal operations, and beyond. The role of networks in the teaching of introductory logic courses is just cementing this dreadful problem, the only solution to which is to dramatically ramp up the difficulty of the courses in question, so that solutions cannot be obtained in any way by the kind of "plugging and chugging" that, hitherto, hint-ready logic instructors and software blithely but benightedly dispense.

"Do Students Allow Themselves To Be Babied? Evidence of Judicious Use of an Online Hint System."

Colin Allen, *Indiana University* and Chris Menzel, *Texas A&M University*

"Generation of Contextualized Help for Existing Computer Aided Instruction for Propositional Proof Construction"
John Stamper, Tiffany Barnes & Marvin Croy, *University of North Carolina at Charlotte*

Intelligent tutors are a form of computer aided instruction that use artificial intelligence techniques to adapt to individual users. We have proposed an approach using past student data from existing computer aided instruction to generate intelligent tutoring capabilities. The Hint Factory is a novel application of our approach used to generate contextualized hints from past student data. We have applied the Hint Factory to an existing, non-adaptive, software program (Deep Thought) used to teach deductive logic in a general education logic course. In this talk will describe our approach and report the results of our classroom studies. In addition we will explore the pedagogical issues associated with giving students hints to solve proofs in general and specifically the pedagogical issues surrounding the automatically generated hints we have implemented.

4:15p–4:30p Break (Conference Lounge)

4:30p – 6:30p Panel Session: Social Network Effects (Oak Room)
Session Chair: Dylan Wittkower, *Coastal Carolina University*

"Why Can't We be Virtual Friends?"
Craig Condella, *Salve Regina University*

According to Aristotle, "it is well not to seek to have as many friends as possible, . . . for it would seem actually impossible to be a great friend to many people" (Nicomachean Ethics, 1171a8-10). In arguing that each of us can only have a few true friends, Aristotle seems to be at odds with our Facebook practices. So is Aristotle wrong to draw such strict numerical limits on our friendships or does something of ancient Greek wisdom still hold true in this regard today? Does the difference between Aristotelian theory and Facebook practice rest on a misunderstanding of what each mean by the term "friendship" and, if so, might we resolve this difference simply by clarifying the word? Or are matters more complex than a mere separation of virtual and real worlds and their respective terminology suggests since, as we well know, these two worlds cannot help but overlap with one another?

"Social Networks and the Glut of the Commons"
Dylan Wittkower, *Coastal Carolina University*

In the context of use of unlimited available resources, we are confronted by problems of overabundance and filtering rather than problems of scarcity and distribution. Through an investigation of the success of Facebook in allowing users to effectively maintain and develop friendships without becoming overburdened by extraneous information, we can see some general principles for the social use of networks that can help to deal effectively with the glut of the commons. I argue that the success of Facebook can be found in the low social commitment of establishing connections, the broadcast/general communication structure, and the scalability of interactions. Taken together, these allow users to share as much as they like without overburdening others with an excess of unwanted information; allow users to encounter and be drawn into unforeseen but desirable interactions; and allow users to minimize communications from disfavored sources, while maintaining connections with them.

"Grooming, Gossip, and the Evolution of Facebook"

Margaret Cuonzo, *Long Island University—Brooklyn Campus*

In Dunbar's Grooming, Gossip, and the Evolution of Language, it is argued that our evolutionary ancestors evolved the ability to use language in order to form social alliances. In the shift from being forest dwellers to living in savannahs, group sizes had to increase. But, the main form of "social networking" and alliance building at the time was grooming, a costly endeavor in terms of time, and something that could only be done with one individual at a time. So, the argument for the gossip hypothesis goes, our evolutionary ancestors evolved the ability to "verbally groom" each other. Language enabled individuals to form alliances with more than one individual at a time, and was thus much more efficient than physically grooming each other. Arguably, with globalization, "group sizes" tend to increase, or at the very least the members of the social group tend to be dispersed widely. The parallels between the applications on Facebook, and the goals mentioned by those who hold the gossip hypothesis are striking. For example, whereas earlier, it took time and money to give someone a flower, now it is free to give a thousand people virtual flowers and this can be done with little effort. In addition, the events in everyday life can be shared with a potentially infinite number of group members thanks to status updates. The implications of this are both fascinating and strange, and will be discussed in relation to the arguments for gossip hypothesis of the evolution of language.

"A Gatekeeper, Moderator, and Synthesizer: Controlling Access to the Self on Facebook"

Michael V. Butera, *Virginia Tech*

The difficulty of defining and controlling the self is a central preoccupation in Søren Kierkegaard's existentialist writings, specifically in the concept of access to one's own sense of intentionality. For Jean Baudrillard, social reality is a hyperreal construction that emerges through decentered forms of symbolic interaction. On Facebook and other online social-networking venues we find means to make explicit these measures of selfawareness and reality interpretation. Through an investigation of the boundaries, filters, and expressive displays evident in this medium, this paper outlines a possible continuity between Kierkegaard's own writings, both as philosophy and autobiography, and the activity of the Facebook user in constructing a private and public representation of the self. By controlling access to social encounters on and offline, the mediated self emerges as both actor and character in a process of intentional identity formation. Additionally, I investigate through Baudrillard's writings the ways in which intelligible structures of reality are manifested in symbolic practice. By using both existentialist and symbolic-structurist frameworks, Facebook is viewed not only as a medium for intentional interaction but also as a dynamic simulacrum of these social encounters.

6:35p – 7:15p Goldberg Graduate Award Presentation (Oak Room)

Session Chair: Mara Harrell, *Carnegie Mellon University*

"Translating Ethical Requirements into Software Specification"

Matteo Turilli, *University of Oxford*

This presentation addresses the problem of how ethical principles should be integrated into the practice of software design. Specifically, it focuses on how to translate ethical requirements into software specification. Initially, clarification is made of how the ethical consequences of software depend on its capability to perform operations in its deployment environment with a certain degree of autonomy. It is argued that software engineers have the responsibility to design software for automation so that its operations respect a relevant set of ethical

principles. In order to adhere to this responsibility, engineers need a way to represent a given set of ethical principles in formal terms. A well-formed definition of an ethical principle is offered clarifying the observables, the family of operations and the prescriptive constraint that it involves. A new formalism called "Control Closure" is proposed as a solution to the problem. The Control Closure is defined in order to translate the prescriptive constraint of ethical principles into preconditions for the design of software operations. Two examples are given showing how the Control Closure may be used to translate the ethical principle of Informational transparency into design terms and to analyse the ethical implications of informal designs.

7:45p Banquet (State Room East)

Tuesday, June 16th

8:15a–9:00a Continental Breakfast (Conference Lounge)

9:00a – 10:45a Concurrent Sessions – Group 1

1A Biological and Artificial Neural Networks (Oak Room)

Session Chair: Stephen Crowley, *Boise State University*

"How I Learned to Stop Worrying about Mental Causation and Love the Hippocampus: A Neo-Dretskean Account of Reasons as Causes"
Cameron Buckner, *Indiana University*

Commentator: Don Berkich, *Texas A&M University, Corpus Christi*

Fred Dretske's account of intentionality is rightly regarded by many contemporary philosophers as one of the most promising naturalized theories of mind currently on offer. However, the current draft of the theory relies on simple reinforcement conditioning. This reliance causes several problems which threaten the relevance of the position. In particular, it renders the theory unable to account for learning which occurs in the absence of reinforcement, it licenses intentional explanations of behaviors for which it is neither merited nor required, and it obscures the link that many thinkers have seen between intentionality and concepts. In this paper, I show that Dretske's theory can be applied almost without modification to the more advanced forms of learning which occur in the mammalian hippocampus, and that when directed towards this more sophisticated form of learning it can avoid these problems. In order to make this point, I will engage with Gluck & Myer's neural network model of the hippocampal function, arguing that the trajectory of representational revision in this network can be predicted and explained from the perspective of Dretske's theory. The marriage of Dretske's theory to the neuroscience is thus a mutually beneficial proposition.

"Putnamizing the Liquid State"
Kevin Kirby, *Northern Kentucky University*

Echo state networks, liquid state machines, context reverberation networks—these all perform what has come to be known as "reservoir computing." This approach to neural computation has been getting much attention lately. I wish to show that not only is it of scientific and technological interest, but of philosophical interest as well. It is not so much that reservoir computing raises new philosophical problems, but that it casts a quarter-century old debate about how physical systems implement computations (arising from arguments made by Putnam and Searle) in a vivid new context. I set the stage by doing a quick summary of reservoir computing. I then turn to Hilary Putnam's "Theorem" in an appendix to his *Representation and Reality*, and follow it as it is recast in subsequent papers of Chalmers, Scheutz and Joslin. I then consider the

dynamical systems used in reservoir computing as a kind of prototype for the dynamics referred to by these philosophers. This leads to the general notion of a dynamical system interpreting another dynamical system. In reservoir computing we see the high dimensional dynamics of physical systems (even literally buckets of water) harnessed to create context for inputs to a connectionist network. This construction proceeds in a way analogous to Putnam's construction in the proof of his theorem. Perhaps a rock cannot simulate any finite state automaton, but, in some sense, a "reservoir" can!

"Points and Segments in the Human Imagination"

Francisco Lara-Dammer, *Center for Research on Concepts and Cognition, Indiana University*

This paper proposes a plausible mental representation of points and segments when they are imagined by people (as opposed to being drawn on an external medium such as paper). The representation is simulated with a computer program whose purpose is to model geometric discovery. A consequence of the construction of mental figures is that it facilitates some tasks but can make others difficult. At the end of the paper there is an illustration of a difficulty in blindfold chess that is related to the ideas concerning imagined points and lines.

1B Group Cognition, eTrust and Network Neutrality (Walnut Room)

Session Chair: Peter Boltuc, *University of Illinois at Springfield*

"How We Find Hidden Profiles, Undiscovered Public Knowledge, and Structural Holes: A Distributed Analysis of Group Cognition"

Georg Theiner, *University of Alberta*

The group mind thesis—i.e. the idea that we can analyze the behavior of groups by much the same cognitivist expedients used to explain the behavior of individuals—was a fixture in the intellectual landscape of the late 19th and early 20th century. But traditional expressions of it were riddled with a number of serious problems that led to its demise. However, despite its historical ballast, the claim that groups can have cognitive properties of their own has recently gained new ascendancy in a wide range of disciplines concerned with collective behavior. In this paper, I present a framework in which group cognition is analyzed as an emergent form of socially distributed cognition. My goal is to revive some central insights of the group mind thesis, but without taking on its excessive metaphysical baggage. First, I clarify the relevant notions of cognition and distribution that I take to be at play in the contemporary debate. Then I use our framework to discuss how groups can reap a synergistic assembly bonus over individuals in three structurally similar cognitive domains—the discovery of hidden profiles, undiscovered public knowledge, and structural holes. I conclude by showing how our construal of group cognition escapes the theoretical impasse of its predecessors.

"Analysing the Occurrences of E-Trust in a Network of Artificial Agents"

Mariarosaria Taddeo, *University of Hertfordshire*

Commentator: Matteo Turilli, *University of Oxford*

This paper provides a new analysis for the occurrences of e-trust, trust occurring in digital contexts, among the artificial agents of a network. The analysis endorses a non-psychological approach and rests on a Kantian regulative ideal of a rational agent, able to choose the best option for itself, given a specific scenario and a goal to achieve. The paper first introduces e-trust describing its relevance for the contemporary society and then presents a new theoretical analysis of this phenomenon. The analysis first focuses on an agent's trustworthiness, this one is presented as the necessary requirement for e-trust to occur. Then, a new definition of e-trust as a second-order-property of

first order relations is presented. It is shown that the second-order-property of e-trust has the effect of minimising an agent's effort and commitment in the achievement of a given goal. On the basis of this effect of the occurrence of e-trust, a method is provided for the objective assessment of the levels of e-trust among the agents of a network.

"Internet Neutrality: Ethical Answers to a Public Policy Issue"

Matteo Turilli, *University of Oxford* – Antonino Vaccaro, *Catholic University of Lisbon*

Commentator: Mariarosaria Taddeo, *University of Hertfordshire*

The paper investigates the ethical nature of network neutrality in relation to its application to the Internet. Three main questions are addressed: 1. What is the ethical nature of Internet neutrality? 2. Should Internet neutrality be endorsed when considering its ethical implications? 3. What ethical framework should be endorsed for regulating Internet traffic? Specifically, we argue that network neutrality is not an ethical principle per se and that it does not directly enable or substantiate ethical principles. Consequently, network neutrality should not be considered dogmatically, as done in previous literature (e.g. Goldsmith and Wu, 2006; Wu, 2005), but rather should be evaluated pragmatically when applied to the Internet. An analysis of the parameters to evaluate the quality of Internet services from the user's perspective uncovers how, in many cases, implementing Internet neutrality may breach ethical principles. It is argued that a set of coordinated policies would be preferable in order to regulate Internet traffic, instead of a completely neutral approach. We propose an ecological ethical framework, that accord competing interests and considers the effects of stakeholders' actions on each other, in order to avoid the potential unethical consequences of Internet traffic regulation.

10:45a–11:00a Break (Conference Lounge)

11:00a–12:45p Concurrent Sessions – Group 2

2A Modeling, Epistemology and Cooperation (Oak Room)

Session Chair: Don Berkich, *Texas A&M University, Corpus Christi*

"Emergence in Networks: Cooperation and Scientific Research"

Patrick Grim, *SUNY Stony Brook*

Commentator: Stephen Crowley, *Boise State University*

Network structure turns out to have important implications for both social and political philosophy and for epistemology and philosophy of science. This paper expands on earlier work in spatialized game theory to show the dramatic ways in which different network structures between agents can either favor or discourage the emergence of cooperation. It also carries the question of network structure into epistemology and philosophy of science. Might a scientific community learn more when its individual investigators learn less? The answer appears to be 'yes': for some epistemic landscapes, given certain assumptions regarding hypothesis updating, epistemic desiderata including accuracy may be maximized when information networks are thinly distributed rather than total: when individual agents know less of others' research results rather than more.

"Modeling Scientific Evolution through a Network of Computerized Agents"

Nicolas Payette, *Université du Québec à Montréal*

Commentator: Mara Harrell, *Carnegie Mellon University*

Institutionalized science is a social process. It can be construed as a collective cognitive system distributing knowledge production and evaluation amongst a network of agents. This network can be seen as implementing a search algorithm trying to maximize empirical adequacy in some theoretical space. There is a family of views in the philosophy of science—falling under the label 'Evolutionary Epistemology' (Bradie, 1986; Campbell, 1974)—that would describe this algorithm as a 'genetic' one, where at least some of the constitutive objects of science (ideas, concepts, theories, paradigms, etc.) are produced, transmitted and selected in a Darwinian fashion. The most ambitious and complete proposal along these lines is arguably David Hull's *Science as a Process* (1988). While Hull's theory is much detailed, it remains a verbal proposal that could benefit from formalization. The project presented here aims to model Hull's theory of the scientific process as a multiagent system and work out its consequences using computer simulation. The model will allow exploration of the conditions under which, given Hull's theory, the collective cognition performed by the network of institutionalized science is most efficient.

"Characterizing Epistemic Communities through Network Analysis"

Ian O'Loughlin, University of Idaho – Christopher Williams, University of Idaho –
Brian Crist, University of Idaho – Stephen Crowley, Boise State University –
Shannon Donovan, University of Idaho

Commentator: Katy Börner, *Indiana University*

To enhance the effectiveness of cross-disciplinary integration, we must examine the contrasting epistemic commitments held by collaborating researchers. To construct successful theories of epistemic communities, we must examine the existing patterns of research integration. In pursuit of both of these aims, we are in the process of characterizing disciplinary and cross-disciplinary integration as it is represented by the ISI publication database. We are using bibliometric techniques to reveal integration patterns in the network of articles, and analyzing this data to characterize the dynamics of research integration.

2B Networks, Networked Computing and Robotics (Walnut Room)

Session Chair: Edward N. Zalta, Stanford University

"A Formalism for Embodied Computation Oriented Toward Artificial Morphogenesis"

Bruce MacLennan, *University of Tennessee, Knoxville*

Commentator: Orlin Vakarelov, *University of Arizona*

The theory of embodied computation, like the theory of embodied cognition, provides opportunities as well as challenges. On one hand, such computation is intimately connected with its physical realization, both because post-Moore's Law densities demand more direct exploitation of physical processes, but also because the purposes of embodied computing are often physical (e.g., selfassembly, microrobotics). These characteristics make embodied computing more difficult than conventional computing, because it is not so idealized (independent of its material realization). On the other hand, embodied computation can make productive use of its physical realization, for example, by using the physical states and processes of itself and its environment in place of computational representations. Thus it has implicit computational resources unavailable to conventional computing. In order to fulfill this promise, we will need both formal and informal models of embodied computing that directly address the interaction of formal and physical processes in embodied computational systems. These will be essential cognitive tools for conceptualizing, designing, and reasoning about embodied computational processes (both continuous and discrete). In this talk I will present a preliminary

design for one such model, which is of general applicability, but especially oriented toward artificial morphogenesis (self-assembly of complex hierarchical structures by processes analogous to embryological morphogenesis).

"Improving Computer Theorem Proving: Transforming Graph-Structures to Gain Justification and Explanation"

Martin Frické, *University of Arizona*

When computers answer our questions in mathematics and logic they need also to supply justification and explanatory insight. Typical theorem provers do not do this. The paper focuses on tableau theorem provers for First Order Predicate Calculus, a universal logic. The paper introduces a completely general construction and a technique for converting the graph theoretic, or network, data structures of these to human friendly linear proofs using any familiar rule set and 'laws of thought'. To produce insightful proofs, improvements need to be made. Dependency analysis and refinement, ie compilation of proofs, can produce benefits. To go further, the paper makes a perhaps surprising suggestion. The notion of best proof or insightful proof is an empirical matter. All possible theorems, or all possible proofs, distribute evenly, in some sense or other, among the possible uses of inference steps. However, with the proofs of interest to humans this even-ness of distribution does not hold. Humans favor certain inferences over others, which are structurally very similar. The author's research has taken thousands of sample questions and proofs from logic texts, scholastic tests, and similar sources, and analyzed the best proofs for them ('best' here usually meaning shortest). This empirical research gives rise to some suggestions on heuristic. The general point: humans are attuned to certain forms inference, empirical research can tell us what those are, and that empirical research can educate as to how tableau theorem provers, and their symbiotic linear counterparts, should run. In sum, tableau theorem provers, coupled with transformations to linear proofs and empirically sourced heuristic, can provide transparent and accessible theorem proving.

"Prolegomena to any Future Metaphysics of Computer Networking"

Keith Douglas, *Statistics Canada*

The hierarchical nature of both Mario Bunge's metaphysics and the OSI model of computer networks suggests a point of contact between these two areas of human endeavour. This paper examines Bunge's metaphysics in the light of how it applies to computer networking and three areas of apparent conflict are discussed.

12:45p–2:30p Lunch on Your Own

2:30p – 4:15p Concurrent Sessions – Group 3

3A Bayesian and Semantic Networks (Oak Room)

Session Chair: Colin Allen, *Indiana University*

"Causal Bayesian Networks: 20 Years of Philosophical Debate"

Christoph Schulz, *University of Hertfordshire*

In 1988, Judea Pearl published his "Probabilistic Reasoning in Intelligent Systems". In chapter 8, he analysed how causal relationships can be inferred from nontemporal statistical data. Since then, researchers have designed advanced algorithms for causal discovery. However, philosophers remain sceptical about the correct interpretation of the concepts of causality and probability inherent in the model, and about the validity of the underlying assumptions. Counterexamples have been devised that threaten the capacity of the model to represent correctly what appear to be, *prima facie*, genuine causal relations. It is unclear whether (a) the methods for generating the Bayesian nets

can be refined to the satisfaction of the sceptics, (b) their scope of application should be limited, (c) the causal interpretation should be replaced, and (d) the debate can be resolved by a new, unified or context-dependent conceptualisation of causation. A systematic and critical review of the whole recent philosophical debate is overdue but has not yet been provided. This paper fills this gap. In the following pages, I shall reconstruct the debate and analyse the most cogent arguments against the representation of causal relations in causal Bayesian networks. Problems discussed as part of the debate will be grounded upon underlying philosophical concerns. I will argue that this approach makes possible an advancement of a debate through a more finely grained approach and promises to be more fruitful for securing the appropriate context of application for causal Bayesian networks.

"Early Semantic Networks of Nouns: New Inroads into Old Questions"

Josita Maouene, *Indiana University* – Thomas Hills, *University of Basel* –

Mounir Maouene, *University of Tangier* – Adam Sheya, *Indiana University* –

Linda Smith, *Indiana University*

There has been increasing interest in the study of semantic structure in terms of graph theoretic properties. Are networks just a great tool or is the medium part of the message as well? The answer we offer is that networks certainly are a useful tool – enabling new measures of semantic structure such as clustering coefficients, density, shortest path length, and the clique percolation that provide new inroads into old questions. But network approaches may also do more than that by fundamentally changing how we think about knowledge. We present one study on young children's growing knowledge about nouns (c.f., Hills et al., 2008) and reflect on both the specific results and larger implications of the approach. The specific questions concern how superordinate categories may emerge from connections among basic level categories. The analyzed network was built from 130 nouns normatively learned prior to age 3 years and 1394 perceptual and functional features as given by adult judgments. The network exhibited a small world structure and a high degree of feature overlap in local clusters. Perceptual and functional features were found to play different roles in the categorization, with functional information being less redundant but more specific than perceptual information.

"Culture as Mediator for what is Ready-to-hand: A Phenomenological Exploration of Semantic Networks"

David Saab, *Pennsylvania State University*

Upon what philosophical foundation are semantic network graphs based? Does this foundation allow for the legitimization of other semantic networks and ontological diversity? Are semantic networks segmentations of larger semantic landscapes? How can we design our computational and informational systems to accommodate this ontological diversity and the variety of semantic networks? This paper explores semantic networks from a Heideggerian existentialist and phenomenological perspective. The analysis presented uses cultural schema theory to bridge the syntactic and lexical elements to the semantic and conceptual dimensions of semantic network graphs and offers reasons why the viability of such graphs as they are currently constructed are insufficient for creating semantic interoperability for our information technologies. Reconceptualizing semantic networks as cultural landscapes offers us insight as to where our understanding of semantic networks falters and what we might do to improve them.

3B Computation and Representation (Walnut Room)
Session Chair: Orlin Vakarelov, *University of Arizona*

"Computational Functionalism and Constitutive Externalism"
Darren Abramson, *Dalhousie University*

In this paper, I argue that constitutive externalism, the view that mental states can extend beyond the body, can be justified on grounds of human computational capacities. I distinguish this motivation from others that have been presented. I show that the view is independent of what some have thought to be crucial related issues of ease of deployment, reliability, and possessing intrinsic (non-derived) content. The argument I present relies merely on the widespread view that human persons are capable of computing functions that are Turing-computable.

"Analog and Digital, Continuous and Discrete"
Corey Maley, *Princeton University*

Commentator: Bruce MacLennan, *University of Tennessee, Knoxville*

Representation is central to contemporary theorizing about the mind/brain. But the nature of representation--both in the mind/brain and more generally--is a source of continuing controversy. One way of categorizing representational types is to distinguish between the analog and the digital: the received view is that analog representations vary smoothly, while digital representations vary in a step-wise manner. I argue that this characterization is inadequate to account for the ways in which representation is used in cognitive science; in its place, I suggest a more perspicuous taxonomy. I will defend and extend David Lewis's account of analog and digital representation, distinguishing analog from continuous representation, as well as digital from discrete representation. I will argue that the distinctions available in this four-fold account accord with representational features of theoretical interest in cognitive science more usefully than the received analog/digital dichotomy.

"Informational Networks: A Meta-architecture for Situated Cognition"
Orlin Vakarelov, *University of Arizona*

Commentator: Stephen Crowley, *Boise State University*

This paper attempts to provide a conceptual basis for allusions to information processing in discussions about cognition. It defines the notions of informational medium as a subsystem within a larger dynamical system, the notions of information processing and information management operations, and the notion of informational network --- a network of informational media. It suggests that situated cognitive systems can be modeled with the help of informational networks at a high level of abstraction. Finally, it examines various properties that informational media may need to possess to participate in an informational network. Understanding those properties helps understand

4:15p–4:30p Break (Conference Lounge)

4:30p–6:00p Closing Session: Logic Pedagogy and Networks (Walnut Room)
Session Chair: Marvin Croy, *University of North Carolina at Charlotte*

"Pros and Cons of Teaching Informal Logic and Critical Thinking Online"
Mara Harrell, *Carnegie Mellon University*

Commentator: Peter Boltuc, *University of Illinois at Springfield*

If one does not want to teach an online critical thinking course merely by putting a text book online, there are many considerations for how best to proceed. An interactive approach, with exercises for students to test their understanding with immediate feedback, is the best. But teaching critical thinking has special problems, since the improvement of skills is most often measured by written responses to contextual questions. This raises the question of how much of a course can be administered online, and in what forms. I should like to share my experiences, and encourage a dialogue with others encountering similar issues.

"The AProS Project: A Case for On-line Logic Education?"

Wilfried Sieg, Tyler Gibson, Davin Lafon and Dawn McLaughlin, *Carnegie Mellon University*

Commentator: Martin Frické, *University of Arizona*

The project's goal is to develop two web-based courses that introduce students to the core concepts of the "calculus of the 21st century"; namely, proof, function, and computation. The crucial features are:

- Carefully scaffolded and highly interactive presentation of the material;
- Dynamic and intelligent tutoring, in particular, for proof construction in logic and set theory;
- Empirical evaluation of the effectiveness of courses and of particular pedagogical strategies.

The first course, Logic & Proofs, has been offered since Fall 2003 in iteratively improved versions; it has been taken by almost 2,500 students at a broad variety of institutions. The second course, Function & Computation, will be fully implemented for Spring 2010. The AProS Project is supported by grant DUE-0618806 of the National Science Foundation.

6:15p–6:30p Closing Announcements from the IACAP Executive Director (Oak Room)
Tony Beavers, *University of Evansville*

8:30p–11:30p Postconference Party (Allen Residence)
Loads of fun! Please plan to attend.

GENERAL INFORMATION

Emergency Information

- For quick response 24 hrs a day, report any accident or emergency to the IMU hotel lobby front desk
- If you have access to a telephone, call **911**
- Emergency medical care is available at:
 - **Promptcare East.**
326 S. Woodcrest Dr
812.353.6888
8:00am – 8:00pm
Monday – Sunday
 - **Bloomington Hospital**
601 West 2nd Street
Emergency Room: 812.353.9515
Open 24 hours Monday – Sunday

Alcohol

All visitors are subject to Indiana University alcohol policies. Alcohol will be available for some catered functions, but may not be removed from the function rooms. Walking across campus with alcoholic beverages is prohibited.

Internet/Email Access

In order to access the Internet you must log in using a temporary visitor's username and password. If you are an IMU hotel guest, the front desk staff will issue a username and password. If you are staying in Willkie Residence Center, a username and password are included in the envelope you will receive at check in. Usernames and passwords are **case sensitive**. Please log in by duplicating exactly the access information provided.

Computer terminals are available in 2 locations on the Mezzanine level of the IMU:

- Outside of Poplar & Redbud Meeting Rooms
- Outside "the Commons" eating area

There are also computer terminals available in the lobby of the Willkie Residence Center North Tower.

Configuring your computer

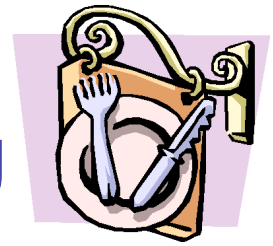
Before you use your Network Access account to access the Internet, you need the following:

- An 802.11b or 802.11g wireless network card. Some laptops may already have a wireless card built in. Others will have PC card slots in which you can insert a wireless **PC card**. These PC cards are available for purchase online and at most electronic retail stores, including IUB's **Computer Connection**.
- You'll need to log into the network. Launch a web browser; you will see a window labeled Web Site Certified by an Unknown Authority. You may safely accept the certificate by clicking **OK** in this window. Then you will be automatically taken to a web page where you can log in to access the network. In the "IU Guest Login" box, enter your Network Access account username and password. Follow the instructions on the page that appears. After you have signed on, you will have access to the network for eight hours. If you need continued access, you will need to log in again after the eight hours are up.

Note: Usernames and passwords are case sensitive, which means you must use the correct uppercase or lowercase characters. Also, be aware that users of Network Access accounts **do not** need to use VPN or register their MAC address.



Conference Guide to Casual & Fine Dining



IU Bloomington Campus and Downtown Area

WALKING DIRECTIONS FROM THE INDIANA MEMORIAL UNION

1. WHEN LEAVING CONFERENCE LOUNGE AREA, EXIT THE IMU BUILDING THROUGH THE DOORS LEADING INTO THE GARDEN AREA.
2. WALK UP THE STAIRS TO THE SIDEWALK, TURN RIGHT AND WALK ALONG THE SIDEWALK UNTIL YOU SEE THE LARGE LIMESTONE GATES (SAMPLE GATES).
3. WALK THROUGH THE SAMPLE GATES.
- 4A. **TO GET TO KIRKWOOD AVENUE (5TH STREET):** KIRKWOOD IS STRAIGHT IN FRONT OF YOU AS YOU WALK THROUGH SAMPLE GATES
- 4B. **TO GET TO INDIANA & FOURTH STREET:** TURN LEFT ON INDIANA AVE, THEN TURN RIGHT ON TO 4TH STREET.
- 4C. **TO GET TO THE DOWNTOWN AREA:** CROSS INDIANA AVENUE AND WALK STRAIGHT DOWN KIRKWOOD UNTIL YOU COME TO THE COURTHOUSE. RESTAURANTS ARE AVAILABLE ON ALL SIDES OF THE COURTHOUSE SQUARE, AND WITHIN A BLOCK OR TWO IN EACH DIRECTION.

In the IMU

THE MARKET, BURGER KING, PIZZA HUT, KIVA
856-0379 ☼☼\$
(FAST FOOD)

STARBUCKS ☼
(COFFEE)

SUGAR 'N SPICE
(COFFEE & BAKERY)

TUDOR ROOM
855-1620 \$\$
(BUFFET)

PUCCINI'S LA DOLCE VITA
420 E. 4TH ST.
333-5522 \$\$\$
(ITALIAN)

SIAM HOUSE
430 E. 4TH ST.
331-1233 ♥\$\$
(THAI)

SNOW LION
113 S. GRANT ST.
336-0835 ♥\$\$
(TIBETAN)

Indiana Avenue

BUFFA LOUIE'S
114 S. INDIANA
333-3032 ☼\$\$
(WINGS)

CHOW BAR
216 S. INDIANA AVE.
336-3888 \$\$
(ASIAN)

DAGWOOD'S SUBS
116 S. INDIANA ☼☼\$

PENN STATION
212 S. INDIANA AVE.
333-7366 \$
(SANDWICHES)

QDOBA
116 S. INDIANA AVE.
339-1122 ☼\$
(MEXICAN)

STARBUCKS ☼
110 S. INDIANA
(COFFEE)

Kirkwood Area

BLOOMINGTON BAGEL
113 N. DUNN ST. ☼☼\$

Café DJANGO
116 N. GRANT ST.
335-1297 ♥\$\$
(INTERNATIONAL)

Café PIZZARIA
405 E. KIRKWOOD
332-2111 ☼\$\$

CHIPOTLE GRILL
E. KIRKWOOD AVENUE
330-1435 ♥\$\$
(MEXICAN)

ESAN THAI
221 E. KIRKWOOD
333-8424 \$\$
(THAI)

FALAFEL'S
430 E. KIRKWOOD AVE.
335-3555 \$
(GREEK/ISRAELI)

FINCH'S BRASSERIE
514 E. KIRKWOOD
333-2700 ♥\$\$\$
(GOURMET AMERICAN)

JIMMY JOHN'S DELI
430 E. KIRKWOOD ☼\$

KILROY'S BAR & GRILL
502 E. KIRKWOOD
332-3700 ☼\$

LAUGHING PLANET 322 E.
KIRKWOOD
332-2233 ♥\$
(BURRITOS)

NICK'S ENGLISH HUT 423
E. KIRKWOOD ☼\$
(BAR & GRILL)

NOODLES & COMPANY
517 E. KIRKWOOD
323-1400 \$\$

THE POUR HOUSE CAFE
314 E KIRKWOOD \$
(COFFEE)

PITA PIT
530 E. KIRKWOOD ♥\$
335-3500
(SANDWICHES)

RUNCIBLE SPOON
412 E. 6TH ST.
334-3997 \$\$
(BREAKFAST, COFFEE,
SANDWICHES)

SHANTI
221 E. KIRKWOOD
333-0303 ♥\$\$
(INDIAN)

SOMA
322 E. KIRKWOOD
(COFFEE & JUICE BAR)

THE FARM
108 E. KIRKWOOD
323-0002 ♥\$\$\$
(INDIANA GOURMET)

UNCLE D'S PIZZA
430 E. KIRKWOOD
339-2260 ☼\$

VILLAGE DELI
409 E. KIRKWOOD
336-2303 ☼♥\$
(BREAKFASTS, SANDICHES)

Downtown Area

BLOOMINGTON BAGEL
238 N. MORTON ST. ☼☼\$

BLOOMINGTON SANDWICH
107 N. COLLEGE
330-9611 ☼\$

BOBBY'S PUB
100 COLLEGE AVE.
330-0955 \$

BUTCH'S
120 E. 7TH ST. \$
822-0210
(NEW JERSEY, ITALIAN &
JEWISH)

COACHES LOUNGE
245 N. COLLEGE AVE
339-3537 \$\$
(BAR & GRILL)

CRAZY HORSE
214 W. KIRKWOOD
336-8877 ☼\$\$\$
(BAR & GRILL)

GRAZIE!
106 W. 6TH ST. \$\$
323-0303
(ITALIAN)

IRISH LION
212 W. KIRKWOOD AVE.
336-9076 \$\$
(IRISH BAR & GRILL)

JANKO'S LITTLE ZAGREB
223 W. 6TH ST.
332-0694 \$\$\$
(STEAKHOUSE)

JAPONEE
320 N. WALNUT ST.
333-3122 \$\$
(ASIAN)

KILROY'S SPORTS BAR
319 N. WALNUT ST.
333-6006 ☼☼\$

MALIBU GRILL
106 N. WALNUT ST.
332-4334 ♥\$

MAX'S PLACE
109 W. 7TH ST.
336-5169 \$\$
(PIZZA & PUB)

MICHAEL'S UPTOWN CAFÉ
102 E. KIRKWOOD
339-0900 ☼♥\$\$\$
(AMERICAN & CAJUN)

OPIE TAYLOR'S
110 N. WALNUT ST.
333-7287 ☼\$
(BAR & GRILL)

LE PETITE CAFÉ
308 W. 6TH ST. \$\$
334-9747
(FRENCH)

RESTAURANT TALLENT
208 N. WALNUT ST.
330-9801 ♥\$\$\$

LEGEND

- \$ = Inexpensive
- \$\$ = Average
- \$\$\$ = Above Average
- ☼ = Delivery
- ♥ = Vegetarian friendly
- ☼ = IMU Room service
- ☼ = Wifi

ROOTS
124 N. WALNUT ST.
336-7668 ♥ \$\$
(VEGETARIAN FOOD &
JUICE BAR)

SAMIRA
100 W. 6TH ST.
331-3761 ♥ \$\$
(AFGHAN)

**SCHOLAR'S INN
BAKEHOUSE**
125 N. COLLEGE AVE.
3002 E. THIRD ST. ♫ \$
(BAKERY & SANDWICHES)

SCOTTY'S BREWHOUSE
302 N. WALNUT ST.
333-5151 \$\$
(BURGERS, ETC.)

STEFANO'S ICE CAFÉ
101 W. KIRKWOOD ♫ \$
(ICE CREAM, COFFEE)

TROJAN HORSE
100 E. KIRKWOOD ♥ \$\$
332-1101 (GREEK)

Other Spots Near Campus

[□ = NEAR WILKIE DORMS]

AMI □
1500 E. 3RD ST.
339-7868 \$\$
(JAPANESE)

BEAR'S PLACE □
1316 E. 3RD ST.
339-3460 \$\$
(BAR & GRILL)

BIG MOUTH SUBS □
1420 E. 3RD ST.
323-8987 ≡ \$\$

CITY BAKERY □
1318 E. THIRD ST.
333-9904 \$
(COFFEE)

COPPER CUP □
1400 E. THIRD ST.
415 N. COLLEGE AVE ♫
(COFFEE)

DRAGON EXPRESS □
1400 E. THIRD ST.
331-7030 \$\$
(ASIAN)

THE MAC GRILL □
1434 E. THIRD ST.
334-9100 \$\$
(INTERNATIONAL)

MOTHER BEAR'S PIZZA
1428 E. 3RD ST. □
332-4495 ≡ \$\$

TINA'S CUISINE
309 E. 3RD ST.
332-0464 ≡ ♥ \$\$
(GOURMET GROCERIES &
SANDWICHES)

TURKUAZ CAFE
301 E. THIRD ST.
333-7908 ♫ \$
(INTERNATIONAL)

YOGI'S BAR & GRILL
519 E. 10TH ST.
323-9644 \$\$
(BURGERS, ETC.)

Further Afield (BUT WORTH THE TRIP)

CHOCOLATE MOOSE
401 S. WALNUT ST. \$
(ICE CREAM)

LENNIE'S □
1795 E. 10TH ST.
323-2112 \$\$
(BAR & GRILL, PIZZA)

LIMESTONE GRILLE
2920 E. COVENANTER
335-8110 ♥ \$\$\$
(AMERICAN FINE DINING;
NOT EASILY WALK-ABLE)

RAGGAZZI ARTE CAFÉ
212 S. ROGERS ST.
323-9005 \$\$
(ITALIAN)

SOBON
1811 E 10TH ST.
333-1004 \$
(KOREAN)

SCHOLAR'S INN
717 N. COLLEGE AVE.
332-1892 \$\$\$
(AMERICAN FINE DINING)

TRUFFLE'S 56 DEGREES
1131 S. COLLEGE MALL
330-1111 \$\$\$
(AMERICAN FINE DINING;
NOT WALK-ABLE)

UPLAND BREWING CO.
254 N. WALNUT ST.
336-2337 \$\$
(BAR & GRILL)



CITY ORDINANCE:
Smoking is prohibited
in all public places
and work places.

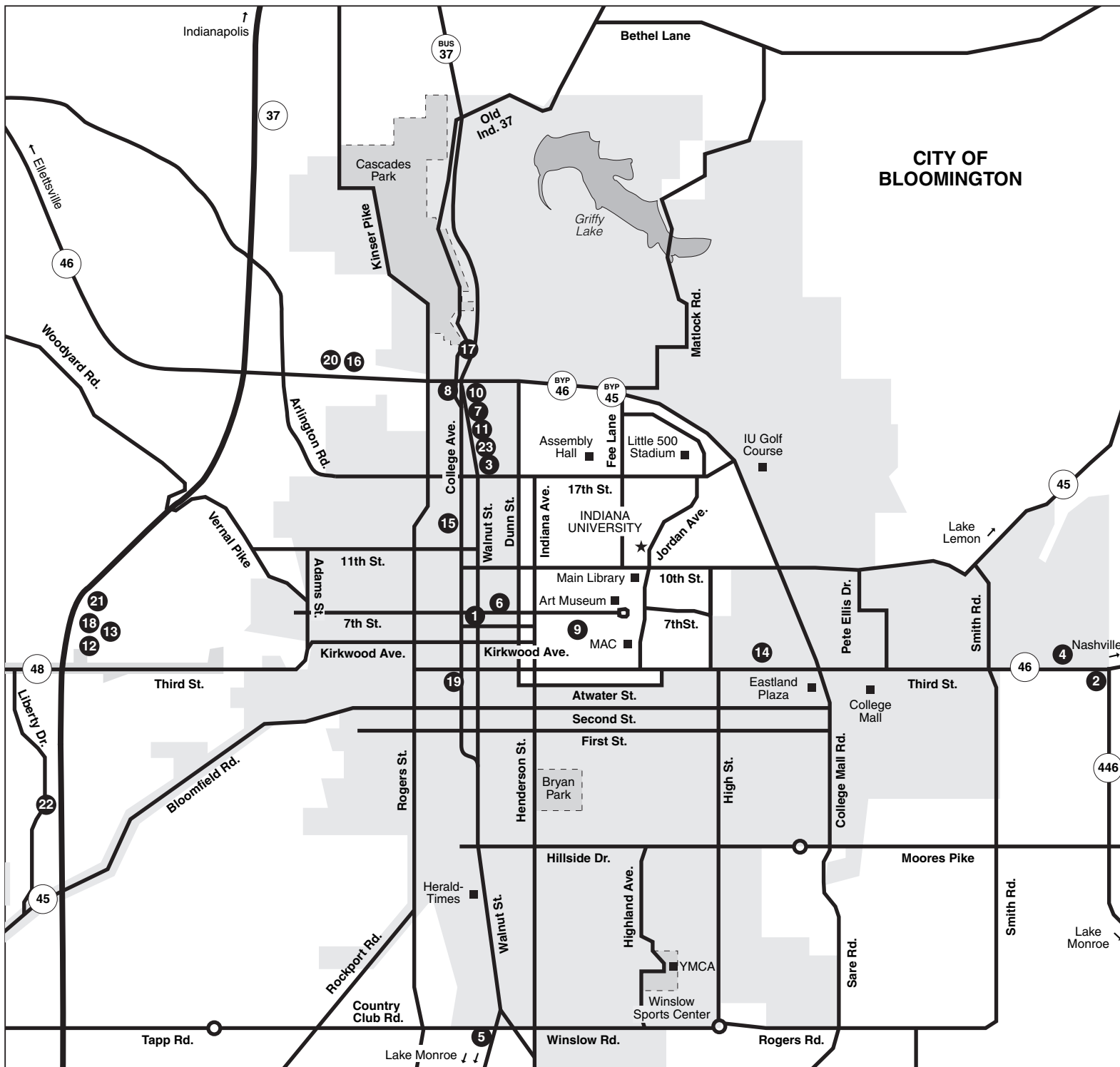


IU Conferences

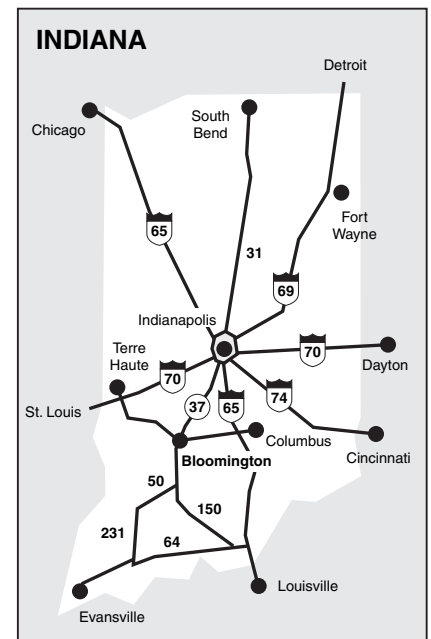
Restaurants that get Jonathan Weinberg's particular seal of approval

- * For fine dining: Farm and Tallent
- * Michael's Uptown (especially for biscuits and gravy, or the gumbo "Hoosier style")
- * Esan Thai
- * Upland Brewery or Lennie's for local beer (and awesome stromboli at Lennie's, too – although in the opposite direction from most Bloomington eateries, Lennie's is easily walkable from the conference location)
- * Lunch buffet at Chow Bar
- * Finch's Brasserie (often has some interesting beer on tap)
- * Mozzarella sticks at Opie Taylor's
- * Chocolate Moose for soft-serve ice cream, and if for no other reason than it appears in the video for John Cougar Mellencamp's "Jack & Diane" and in Bloomington's own brush with Hollywood: *Breaking Away*.
- * Good, cheap bets for vegetarians: Roots; Laughing Planet





- 1 Hilton Garden Inn
- 2 Century Suites
- 3 Comfort Inn
- 4 A Summerhouse Inn
- 5 Economy Inn
- 6 Grant Street B&B
- 7 Hampton Inn
- 8 Radisson
- 9 Indiana Memorial Union
- 10 Days Inn
- 11 Motel 6 - University
- 12 Scottish Inn
- 13 Holiday Inn Express & Suites
- 14 Travelodge
- 15 Scholars Inn B&B
- 16 Super 8
- 17 Econo Lodge
- 18 Fairfield Inn
- 19 Courtyard by Marriott
- 20 Quality Inn
- 21 TownePlace Suites by Marriott
- 22 Homewood Suites by Hilton
- 23 Country Hearth Inn and Suites
- ★ IU Conferences, 801 N. Jordan



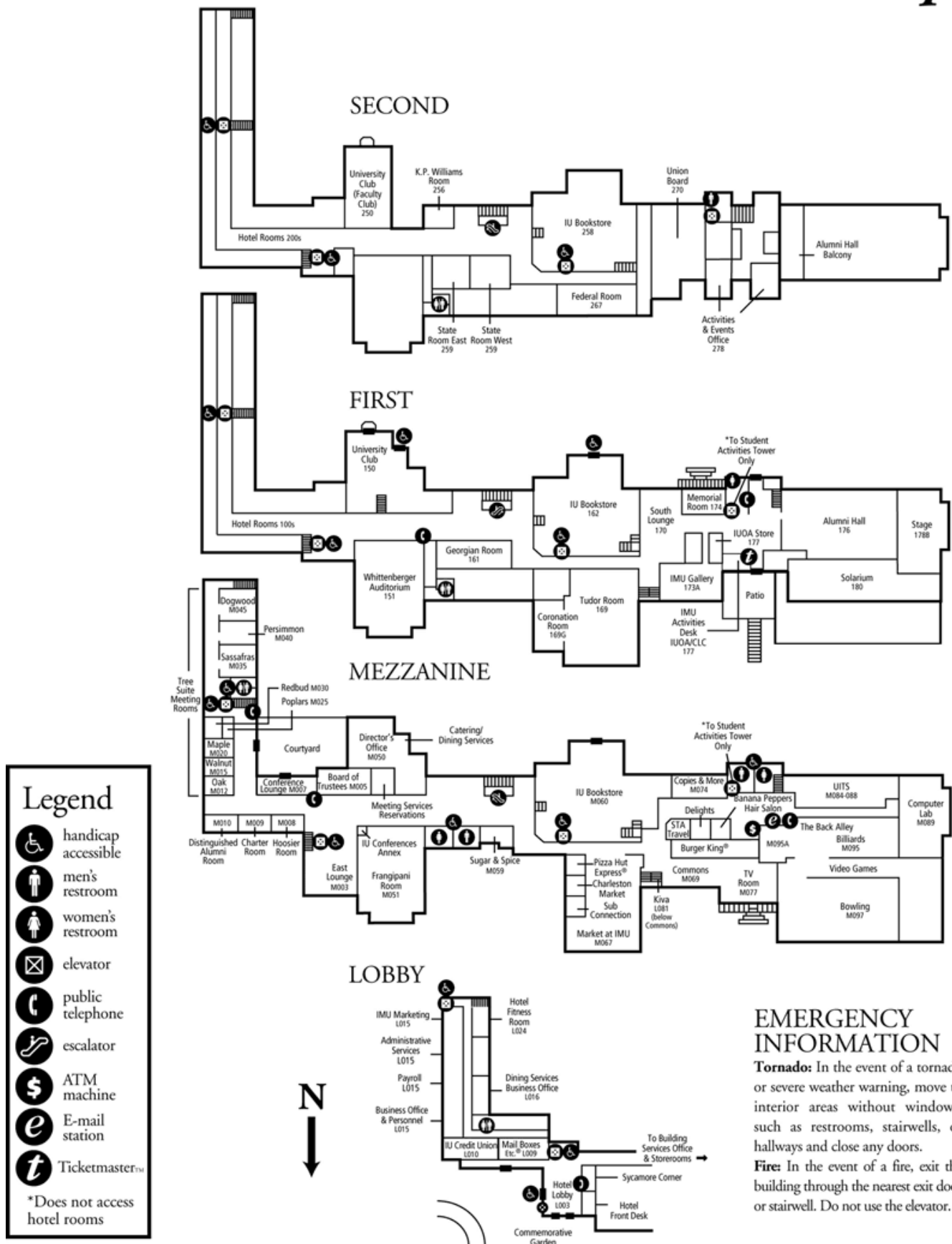
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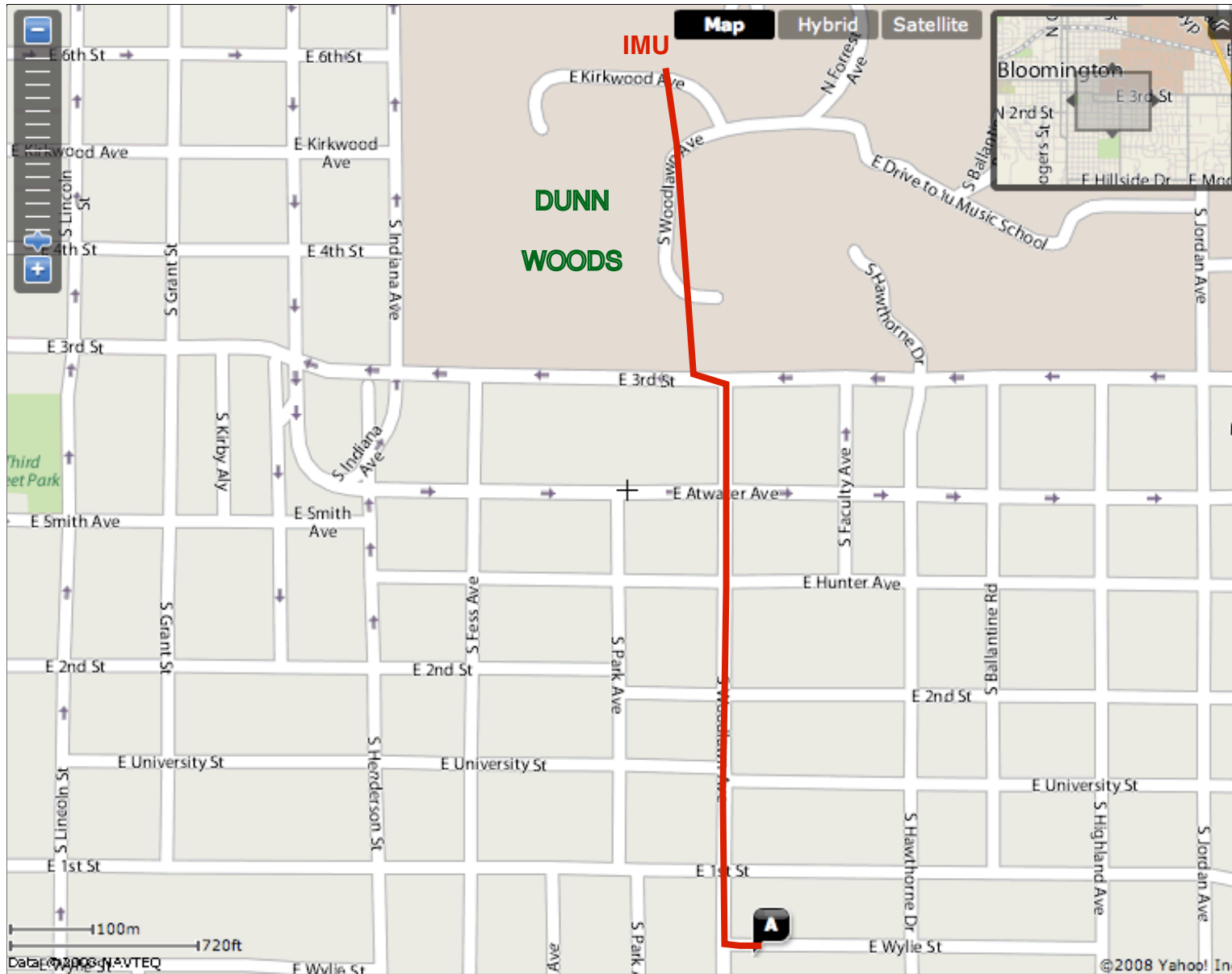
IU Golf Course
(see reverse side) →

Provided by Indiana University Conferences Updated 2/08

Indiana Memorial Union

Map





Map and walking directions to 1014 E Wylie St, Bloomington. from Indiana Memorial Union (dist. 1 km, approx. 12 mins): From the south side of the IMU head south and follow the line of buildings that runs down the east side of the Dunn Woods. On reaching 3rd St at the south edge of campus, look for the nearest traffic light, which should be Woodlawn avenue, to your left. Head south for six blocks, to Wylie St, which is one block after you cross 1st St. Turn left on Wylie (the only possible direction at that intersection). No. 1014 is on the right (south side of the street), the 3rd house from the corner (2-storey limestone house with large oak tree and funky sculpture thingy in front.)

**PARTY at Colin & Lynn Allen's Home
Lost? Call 812 339 2686**