

A. V. Ravishankar Sarma

Lecturer

Department of Humanities and Social Sciences
Faculty Bldg, Room. no: FB-671

Phone: Tel: +91 512 2596137 (office)

+91 512 2595638 (Residence)

Fax: +91 512 2597510

Indian Institute of Technology Kanpur
Kanpur
India, 208016

Email: avrs@iitk.ac.in

Web: <http://home.iitk.ac.in/~avrs/>

Mobile: 09452 960 320

Current Duties

I am currently working as a lecturer(Sr) in the Humanities and Social Science Department, IIT Kanpur. Current duties include, writing grant proposals for setting up an *applied logic lab*. From next semester (starting from January 1st week of 2008) would be teaching **Introduction to logic** and **Philosophy of science**.

Main Areas of Interest

Logic

Philosophy of Science

Other Areas of Specialization

Epistemic Logic, Belief Revision, Belief Revision in Games.

Philosophical Logic

Philosophy of Science, Causality in Physics and AI.

I also have long term interests in *Indian Logic*.

Ph. D Thesis

On causal and constructive modeling of Belief Revision, IIT Bombay, 2006.

My PhD thesis, entitled *On causal and Constructive Modeling of Belief revision* is in the area of Epistemic logic (Formal Epistemology) which attempts links causality with revision of beliefs.

Education

Ph.D. Philosophy(formal Logic), Indian Institute of Technology Bombay, 2006.

M.A. Philosophy(major in Logic), Hyderabad Central University, Hyderabad 1998

M. Sc. Physics(Solid state Physics), Kakatiya University, Warangal, 1996

B.Sc. Mathematics, Physics, and Chemistry, Nagarjuna University, Nagarjuna nagar, 1994.

Research Experience

Visiting Faculty

April 15th 2007-August 2007

IIIT Hyderabad

Gachibowli, Hyderabad

Work includes, writing grant proposals and participating in the existing research projects at IIIT in the area of Cognitive Science.

I Explored logical analysis of Metaphors and attempted to link it (for compatibility) with the Interactionist approach for cognition and Metaphors. ¹

Post doctoral Fellow February 1st 2007 to April 14th 2007
Dr. G. Nagarjuna Homi Babha centre for Science Education
Mainly worked on two problems. 1. Symbol grounding Problem 2. The role of logic education (learning) in schools.

Short term Post doctoral Visiting Fellow October 1st 2007 to December 31st 2007
Institute for logic, language and Amsterdam
Computation(ILLC), University of Amsterdam
Mainly worked in two on two problems. 1. Belief revision in games: the work includes finding an appropriate entrenchment ordering of beliefs of two players participating in the game and to know how their preferential ordering of beliefs change during the evolution of a game.

2. Relating belief revision with Abductive reasoning: Rationality postulates of belief revision have been studied in the framework of Abduction (inference to the best explanation).

Research Associate February 15th 2007 to September 30th 2007
Prof. S. Krishna IIM Bangalore

Worked in the area of strategic outsourcing while linking it with the principles of Game theory. Work includes providing the appropriate game theoretic analysis for strategic outsourcing between software firm and client.

We attempted to adequately incorporate reputation variables(such as expertise, effort, trust) with in the principal-agent model while analyzing the game in various steps.

Research Assistant 2000–2006
IIT Bombay Powai, Mumbai
Worked for my PhD thesis. Apart from my PhD work, I also worked as system administrator handling both Unix and Windows operating systems. I was also involved in developing web pages etc.

Academic Performance

Table 1: Academic Performance from School

S. No.	Year	Name of Degree	University	Subjects	% CPI
1	1989	SSC	SSC board-AP	Maths, science	63
2	1991	Inter	BIE, Hyderabad	MPC	53.6%
3	1991–1994	B. Sc	Nagarjuna University	MPC	74
4	1994-1996	M. Sc	Kakatiya University	Physics	64
5	1997-1999	M. A	Hyderabad University	Philosophy	64.5
5	2000-2006	PhD	IIT Bombay	Philosophy(Logic)	8.85

Research Work

My Doctoral research work is concerned with a study on role of causality in the belief revision process. The problem belief revision is about how to incorporate new evidential information when it is contradicting some of the existing beliefs. People from antiquity are worried about this problem

¹However, this project needs to be worked out in greater detail and future collaboration needs to be worked between IITK and IIIT Hyderabad.

as how one can radically change beliefs as against the authority. Contemporary physicists might wonder whether to retain Laws of conservation of mass, especially the case where it fails. The problem is open since there cannot be a single mechanism which capture all types of belief changes. AGM belief revision model is the starting point for the axiomatization of belief change in terms of rationality postulates. AGM paradigm successfully deals with simple belief revision with one step and belief revision situations involving single sources of information.

Most of the approaches based on AGM are non-causal and AGM model did not find attractive model based on causality. Motivated by the examples in history and philosophy of science we attempt to provide a causal approach belief revision where belief revision is dependent on the agents underlying causal structure. In order to make the AGM model more realistic we fall back on semantic notions such "structure, Intervention, causal properties and Causal Mechanism", especially in the ordering(abandoning the beliefs).

In order to achieve this end, we extend the AGM framework by re-framing the standard entrenchment ordering (SEE) with a new entrenchment ordering called **causal epistemic entrenchment ordering(CEE)**. CEE is different from EE n in that it is constrained by a causal relevance. One of the hypothesis is that our beliefs are structured in terms of layers, in which core(deep layer) constitutes tautologies and upper layer consists of contingent statements(facts). The presence or lack of the semantic features mentioned above will decide which beliefs to fall in the core and periphery. The main result of the thesis is that causality(causal relevance) not only generates effective ordering of beliefs but also preserves the conditional beliefs during the revision of propositional beliefs.

Current Research

Belief Revision: To elaborate an account of belief revision in games and modeling how preferences of players change as the game progresses.

Metaphors: Logical analysis of metaphors based on conceptual spaces(Gardenfors) and Mental models(Jhonson-Laird) and study its suitability when compared with the interactivist approach for metaphors.

Modelling Trust: Modelling trust based on the AGM models for belief revision in the distributive environment.

Publications

Some problems concerning semantics of causal counterfactuals, in the proceedings of Workshop on conditionals, information and Implication (WoCoi-2002), Hagen, Germany, pp 157–169, 2002

Belief revision and semantics of counterfactuals, in the proceedings of *Workshop on conditionals, information and Implication* (WoCoi-2002), Hagen, Germany, pp 170–182, 2002

Causality and the dynamics of Belief, in the proceedings of International conference on Cognitive science(ICCS04), 2004.

Conference Papers

Causal Relevance in Belief revision-1, First World Congress and school on Universal Logic, Montreux, Switzerland, 2005

On causal relevance in Belief change, student sessions at First Indian conference on Logic and its applications to other disciplines (FICS05), IIT Bombay, Mumbai, 2005.

Role of causal knowledge in Belief revision, Contributory talks on Third summer school on "causality, uncertainty and Ignorance, Konstanz, Germany, 2004.

On Causal Epistemic Ranking of beliefs, *Degrees of belief DOB-2004*, Uni-Konstanz, Germany, 2004.

Unpublished and Working Papers

- Descriptive and explanatory models for Belief revision(2005)
- Descriptive and explanatory Scientific theory change: A case study of Theory of gravitation in the history and philosophy of science.(2006)
- The role of causal structures in belief revision(2006)
- Causal explanation in Belief revision(2005)
- Reasons, causes, and belief revision.(2006)
- Some semantic considerations on the ordering of beliefs in belief revision(2006)
- On causal and epistemic ranking of beliefs.(2004)
- Belief revision based on Abduction(2007)
- Logical analysis of Metaphors based on conceptual spaces.(2007)
- Interactivist approach for Metaphors: A critique.(2007)
- Modeling preference change in a finite and repeated game.(2006)
- Mental models and semantics of conceptual Metaphors.(2007)
- The concept of similarity in similarity generating metaphors.(2007)
- Strategic IT outsourcing based on principal-agent model.(2006)
- the role of Reputation variables in the successful negotiation of outsourcing.(2006)
- On Dynamic belief revision systems.(2007)

Workshops and Summer Schools

1. Workshop on Games, action and Social Software, 30th October 2006 through 3 Nov 2006, University of Leiden, Netherlands. ²
2. First Winter school on Logic and its applications to other disciplines, IIT Bombay, India, January (3rd-18th) 2006. ³
3. Summer school on *Imprecise Probabilities*, SIPTA(July 27-31) ⁴
4. Workshop on Brownian Motion, ISI Bangalore, June(9-14).

Honors and Awards

Merit Scholarship during M. A Philosophy(1997-1999), University of Hyderabad.

Other Skills

I have reasonably good interpersonal skills, moderate to good presentation skills based on the difficulty of topic(If I am honest to myself).

I practice Vipassana meditation taught by S. N. Goenkaji morning and evening each for one hour.

I am an ardent lover of classical music. I enjoy lively discussion and collaboration with others and seek to manage my time effectively and can work 7 out of 10 times to meet strict deadlines.

²<http://www.lorentzcenter.nl/lc/web/2006/235/participants.php3?wsid=235>

³<http://www.cse.iitb.ac.in/~krishnas/logic.php>

⁴<http://www.idsia.ch/~zaffalon/events/school2004/school.htm>

IT skills

Good at Linux and Windows System Administration.
Minimal knowledge at web designing(HTML and PHP).
Reasonably good at LaTeX Typesetting.

Reference

Prof. Bipin Indurkhya[bipin@iiit.edu]
Prof. Bijoy Boruah[boruah@iitk.ac.in]
Prof. G. Sivakumar[siva@cse.itb.ac.in]
Prof. S. Krishna[skrishna@iimb.ernet.in]