The Bulletin of Symbolic Logic
Volume 15, Number 4, Dec. 2009

NOTICES

- In Memoriam: Per Lindström. Per (Pelle) Lindström, the Swedish logician, died in Gothenburg, Sweden, on August 21, 2009, after a short period of illness. He was born on April 9, 1936, and spent most of his academic life at the Department of Philosophy, University of Gothenburg, where he was employed first as a lecturer ('docent') and, from 1991 until his retirement in 2001, as a Professor of Logic.

Lindström is most famous for his work in model theory. In 1964 he made his first major contribution, the so-called Lindström's test for model completeness (c.f., Chang & Keisler, *Model Theory*, 3rd ed., Thm. 3.5.9: if a countable set of first-order sentences has only infinite models, is categorical in some infinite power, and is such that the set of its models is closed under unions of chains, then it is model complete). In 1966 he proved the undefinability of well-order in $L_{\omega_1\omega}$ (obtained independently and in more generality by Lopez-Escobar), an early example of the use of recursion theory to obtain model-theoretic results. The same year he also introduced the concept of a Lindström quantifier, which has now become standard in model theory, theoretical computer science, and formal semantics. The paper also contains a characterization of elementary logic among logics with generalized quantifiers, generalizing a result by Mostowski. The proof uses Lindström's version of what is now known as Ehrenfeucht-Fraissé (EF) games, a concept he came up with independently. Another paper from 1966 ('On relations between structures') gives a powerful and extremely general formulation of a preservation/interpolation theorem, again based on EF games. These results were published in the Swedish philosophical journal *Theoria* and written in an extremely terse style, which had the effect that they escaped the notice of most of the logic community for a while.

It was his 1969 paper 'On extensions of elementary logic' (also in *Theoria*), where he presented his famous characterizations of first-order logic—Lindström's Theorem—in terms of properties such as compactness, completeness, and Löwenheim-Skolem properties, that was first recognized as a major contribution to logic. It laid the foundation of what has become known as abstract model theory (c.f., Barwise & Feferman (eds.), *Model-Theoretic Logics*, 1975). The proof was based on EF games and on a new proof of interpolation, following the line of argument in the papers on relations between structures and Lindström quantifiers. Several other characterizations of first-order logic followed in later papers.

Beginning at the end of the 1970's, Lindström turned his attention to the study of formal arithmetic and interpretability. He started a truly systematic investigation of this topic, which had been somewhat dormant since Feferman's pioneering contributions in the late 1950's. In doing so he invented novel technically advanced tools, for example, the so-called Lindström fixed point construction, a far-reaching application of Gödel's diagonalization lemma to define arithmetical formulas with specific properties. His approach to interpretability was based on the study of related lattices, such as the lattice of interpretability types over a fixed extension of Peano Arithmetic (PA), or the lattices of Σ_n- and Π_n -sentences over PA, for some fixed n, and he established many interesting structural properties of these. Other memorable results include the Lindström-Solovay theorem that the interpretability relation between sentences over PA is Π^0_2-complete and the characterization of faithful interpretability over PA as a combination of Π_1- and Σ_1-conservativity. In the 1990's, he also contributed to the area of provability logic: he gave a simplified proof of the de Jongh-Sambin fixed point theorem and characterized the bimodal logic of PA and PA augmented by the reflection rule: infer a sentence φ from 'φ is provable'.

Pelle Lindström had an exceptionally clear and concise style in writing mathematical logic. His 1997 book, *Aspects of Incompleteness*, remains a perfect example: it provides a systematic introduction to his work in arithmetic and interpretability. The book is short but rich in material; it also contains some results one cannot find in journal publications, for example, his solution to one of the 102 problems formulated by Harvey Friedman.

Throughout his life, Pelle Lindström also took an active interest in philosophy. He participated in the debate following Roger Penrose's new version of the argument that Gödel's Incompleteness Theorems show that the human mind is not mechanical. He presented his own philosophy of mathematics, which he called 'quasi-realism', in a paper in *The Monist* in 2000. It is based on the idea that the 'visualizable' parts of mathematics are beyond doubt (and that classical logic holds for them). He counted as visualizable not only the ω-sequence of natural numbers but also arbitrary sets of numbers, the latter visualizable as branches in the infinite binary tree, whereas nothing similar can be said for sets of sets of numbers, for example. Moreover, he made numerous contributions over the years to the Swedish popular philosophy journal *Filosofisk Tidskrift*—one of these will be published posthumously—on subjects as diverse as the freedom of will, the mind-body problem, utilitarianism, and counterfactuals.

Pelle Lindström will be remembered by the logic community as a great logician, and by his family, friends and colleagues as a remarkable human being.

- The 2009 ASL Election. At the end of this year the ASL will elect a President and Vice President, two members of the Executive Committee of the Council, and two members of the Council. All terms are for three years beginning January 1, 2010. The ballot was sent to all ASL members in mid-November. The 2009 Nominating Committee has nominated Alex J. Wilkie (Manchester) as President, Alasdair Urquhart (Toronto) as Vice President, Phokion Kolaitis (Santa Cruz) and Greg Restall (Melbourne) for the Executive Committee positions, and Moti Gitik (Tel Aviv) and Alf Onshuus (Los Andes) for the Council positions. The Nominating Committee consisted of Jeremy Avigad, Rod Downey, Erich Grädel, Alexander Kechris (Chair), Donald A. Martin, Charles Parsons, Richard Shore, and Carol Wood.
- Call for Proposals: 2011 AMS-ASL Joint Special Session. The ASL Committee on Logic in North America requests proposals for an AMS-ASL Joint Special Session to be held at the Joint Mathematics Meetings in New Orleans, January 5–8, 2011. Proposals or requests for further information should be sent to the Committee Chair, Jeremy Avigad (email: `avigad@cmu.edu`). The deadline for receipt of proposals is January 15, 2010.
- Book and Journal Discounts for ASL Members. Several publishers now offer discounts on books and journals to ASL members. For a detailed description of these discounts, visit `http://www.aslonline.org/members-discounts.html` on the ASL website, or write to the ASL Business Office.
- Student Travel Awards: The 2010 ASL North American Annual Meeting, 2010 ASL European Summer Meeting, and other ASL or ASL-Sponsored Meetings. The ASL will make available modest travel awards to graduate students in logic and (for the European Summer Meeting only) to recent Ph.D.'s so that they may attend the 2010 ASL North American Annual Meeting in Washington, D.C., or the 2010 ASL European Summer Meeting in Paris, France; see below for information about these meetings. Student members of the ASL also may apply for travel grants to other ASL or ASL-sponsored meetings. To be considered for a Travel Award, please (1) send a letter of application, and (2) ask your thesis supervisor to send a brief recommendation letter. The application letter should be brief (preferably one page) and should include: (1) your name; (2) your home institution; (3) your thesis supervisor's name; (4) a one-paragraph description of your studies and work in logic, *and, in the case of an ASL student member application to attend an ASL or ASL-sponsored meeting other than*

the North American Annual Meeting or European Summer Meeting, a paragraph indicating why it is important to attend the meeting; (5) your estimate of the travel expenses you will incur; (6) (for citizens or residents of the USA) citizenship or visa status; and (7) (voluntary) indication of your gender and minority status. Women and members of minority groups are strongly encouraged to apply. In addition to funds provided by the ASL, the program of travel grants is supported by a grant from the US National Science Foundation; NSF funds may be awarded only to students at USA universities and to citizens and permanent residents of the USA. Air travel paid for using NSF funds must be on a US flag carrier. Application by email is encouraged; put "ASL travel application" in the subject line of your message.

For the 2010 ASL North American Annual Meeting, applications and recommendations should be received before the deadline of December 21, 2009, by the Program Chair: Reed Solomon, Department of Mathematics, University of Notre Dame, 255 Hurley Hall, Notre Dame, IN 46556-4618, USA; Fax: 1-574-631-6579; email: `solomon@math.uconn.edu`. Applications by email are preferred.

For the 2010 ASL European Summer Meeting, applications and recommendations should be received before the deadline of March 29, 2010 by the Organizing Committee. Applications and recommendations should be submitted online at `www.logic2010.org`.

For ASL student member travel grants to other ASL or ASL-sponsored meetings, applications and recommendations should be received at least three months prior to the meeting at the ASL Business Office: ASL, Box 742, Vassar College, 124 Raymond Avenue, Poughkeepsie, New York 12604, USA; Fax: 1-845-437-7830; email: `asl@vassar.edu`. Decisions will be communicated at least two months prior to the meeting.

- 2009-10 ASL Winter Meeting (with Joint Mathematics Meetings). *January* 15–16, 2010, *San Francisco, California*. This meeting will take place in conjunction with the Joint Mathematics Meetings, which will be held January 13–16, 2010. Invited speakers include: F. Ferreira, J. Harrison, F. Loeser, C. Miller, J. Miller, S. Solecki, and S. Todorcevic. In addition to the ASL program, there will be a joint AMS-ASL-MAA Panel discussion on *Hilbert's Tenth Problem*, with M. Davis, B. Poonen, K. Rubin, and A. Shlapentokh as panelists. A joint AMS-ASL Special Session on *Surreal Numbers*, organized by L. van den Dries and P. Ehrlich also is planned. The members of the Program Committee are M. Beeson, B. Kjos-Hanssen, and J. Steel (Chair).
- 2010 ASL Winter Meeting (with APA). *February* 17–20, 2010, *Chicago, Illinois*. This meeting will be held jointly with the Annual Meeting of the Central Division of the American Philosophical Association. There are three invited sessions. The first, *Continuity and Infinitesimals*, includes the speakers K. Easwaran, P. Ehrlich, and D. Ross. The speakers for the second session, *Causality*, are C. Hitchcock, J. Pearl, and P. Spirtes. For the third session, *Pluralism*, the speakers are R. Cook and J.-P. Marquis. The members of the Program Committee are P. Ehrlich, J. Joyce, and S. Shapiro (Chair).
- 2010 ASL North American Annual Meeting. *March* 17–20, 2010, *Washington, D.C.* The twenty-first annual Gödel Lecture will be delivered by A. Razborov. A tutorial will be offered by B. Coecke on *Quantum Computing*. The invited speakers include: Z. Chatzidakis, B. Kjos-Hanssen, K. Landsman, L. Moss, D. Raghavan, T. Scanlon, E. Schimmerling, H. Towsner, and R. Weber. Special sessions are planned on categorical logic, computational complexity, logic and foundations of physics, model theory, and set theory. The members of the Program Committee are: W. Gasarch, J. Hamkins, A. Kolesnikov, R. Rynasiewicz, P. Selinger, and R. Solomon (Chair). The Local Organizing Committee includes: A. Enayat, A. Eskandarian, J. Chubb, M. Friend, J. Goodrick, V. Harizanov (Chair), and A. Kolesnikov.
- 2010 ASL European Summer Meeting (Logic Colloquium '10). *July* 25–*July* 31, 2010, *Paris, France*. The Program Committee includes: A. Atserias, Z. Chatzidakis, T. Coquand,

P.-L. Curien, M. Detlefsen, C. Dimitracopoulos, J. Floyd, I. Juhasz, M. Magidor, M. Rathjen (Chair), T. Scanlon, A. Soskova, and Y. Venema. The Local Organizing Committee includes: S. Abbes, V. Balat, R. Cori (Chair), T. Ehrhard, R. Labib-Sami, R. Lassaigne, Y. Legrandgérard, G. Malod, S. Périfel, J.-E. Pin, P. Rozière, and B. Velikovic. For further information, contact R. Cori (email: `cori@logique.jussieu.fr`) or T. Ehrhard (email: `thomas.ehrhard@pps.jussieu.fr`), or visit `http://www.logic2010.org`.

Abstracts of contributed talks submitted by ASL members will be published in *The Bulletin of Symbolic Logic* if they satisfy the Rules for Abstracts (see below). Abstracts should be submitted online by the deadline of April 5, 2010 at the official meeting website: `http://www.logic2010.org`.

- 2011 ASL North American Annual Meeting. *March* 24–27, 2011, *Berkeley, California*. The Local Organizing Committee includes: P. Mancosu, T. Scanlon (Chair), T. Slaman, and W.H. Woodin.
- Rules for Abstracts. The rules for abstracts of contributed talks at ASL meetings (including those submitted "by title") may be found at the website `http://www.aslonline.org/rules_abstracts.html`. *The rules were recently revised and all authors who wish to submit abstracts are urged to consult the new rules*. Please note that abstracts *must* follow the rules as set forth there; those which do not conform to the requirements will be returned immediately to the authors submitting them. Revised abstracts that follow the rules will be considered if they are received by the announced deadline.
- Third World Congress and School on Universal Logic (UNILOG 2010). *April* 18–25, 2010, *Lisbon, Portugal*. Invited speakers include: H. Field, G. Grätzer, Y. Gurevich, G. Jäger, M. Kracht, H. Ono, G. Sambin, J. Seldin, A. Sernadas, and D. Scott. The school is intended for Ph.D. students, postdoctoral students, and young researchers. Tutorials will be offered by: J.-Y. Beziau, P. Blackburn, J. Branquinho, A. Buchsbaum, M. Coniglio, R. Diaconescu, C. Dutilh-Novaes, F. Ferreira, A. Herzig, D. Krause, J.-L. Lee, J. Marcos, P. Mateus, F. Moltmann, A. Moretti, J. Sallantin, F. Schang, C. Sernadas, T. Skura, H. Wansing, G. Wheeler, and A. Wisniewski. For further information, visit `http://www.uni-log.org`. (ASL Sponsored Meeting.)
- Fifth Conference on Logic, Computability and Randomness. *May* 24–28, 2010, *Notre Dame, Indiana*. This event, to be held at the University of Notre Dame, will focus on algorithmic randomness and related topics in logic, computability, complexity, and randomness. The Chair of the Program Committee is P. Cholak. The Local Organizing Committee includes: L. Axon, P. Cholak, and L. Tranberg. For further information, visit `https://www.math.nd.edu/conferences/AlgoRandomness/welcome.shtml`. (ASL Sponsored Meeting.)
- North American Summer School in Logic, Language, and Information (NASSLLI 2010). *June* 21–25, 2010, *Bloomington, Indiana*. This event, loosely modeled on the long-running ESSLLI series in Europe (see below), will consist of a number of courses and workshops with a focus on interdisciplinary work involving logic, linguistics, computer science, cognitive science, philosophy, and artificial intelligence. The Program Committee Chair is D. Beaver and the Chair of the Steering Committee is L. Moss. For more information, visit `http://www.indiana.edu/~nasslli/`. (ASL Sponsored Meeting.)
- Seventeenth Workshop on Logic, Language, Information and Computation (WoLLIC'2010). *July* 6–9, 2010, *Brasilia, Brazil*. This is the seventeenth in a series of workshops intended to foster interdisciplinary research in pure and applied logic. The Chair of the Program Committee is A. Dawar. The Co-chairs of the Organizing Committee are M. Ayala-Rincon and R. de Queiroz. For further information, visit `http://www.wollic.org/wollic2010/`. (ASL Sponsored Meeting.)

- Twenty-fifth Annual IEEE Symposium on Logic in Computer Science (LICS 2010). *July* 11–14, 2010, *Edinburgh, Scotland.* The LICS Symposium is an annual international forum on theoretical and practical topics in computer science that relate to logic in a broad sense. LICS 2010 will be organized as part of the the Fifth Federated Logic Conference (FLoC 2010; see below). The Program Chair is J.-P. Jouannaud, the General Chair is R. Alur, and the Conference Chair is M. Escardó. For further information, visit `http://www2.informatik.hu-berlin.de/lics/lics10/`. (ASL Sponsored Meeting.)
- Logical Approaches to Barriers in Computing and Complexity. *February* 17–20, 2010, *Greifswald, Germany.* This workshop is jointly organized by the Deutsche Vereinigung für Mathematische Logik und für Grundlagen der Exakten Wissenschaften (DVMLG), the Polskie Towarzystwo Logiki i Filozofii Nauki (PTLiFN), the Association for Computability in Europe (ACiE), and the European Association for Computer Science Logic (EACSL); it is sponsored by the Stiftung Alfried Krupp Kolleg Greifswald and the Deutsche Forschungsgemeinschaft (DFG). The workshop shall focus on logical descriptions of complexity (e.g., descriptive complexity, bounded arithmetic), complexity classes of abstract, algebraic and infinite structures, barriers in proving complexity results, and Kolmogorov complexity and randomness. The invited speakers include: A. Carbone, L. Fortnow, E. Grädel, P. Koiran, L. Kolodziejczyk, and A. Kolokolova. There also will be a special session on "Complexity in Arbitrary Structures," organized by C. Gassner and M. Ziegler. The Program Committee Chair is A. Beckmann. For further information, including paper submission, visit `http://www.cs.swan.ac.uk/greifswald2010/`.
- Fifth Federated Logic Conference (FLoC'10). *July* 9–21, 2010, *Edinburgh, Scotland.* This event brings together several synergistic conferences that apply logic to computer science. The following eight conferences will participate in FLoC '10: Conference on Computer-Aided Verification (CAV), Computer Security Foundations Symposium (CSF), International Conference on Logic Programming (ICLP), International Joint Conference on Automated Deduction (IJCAR), International Conference on Interactive Theorem Proving (ITP), the ASL-sponsored IEEE Symposium on Logic in Computer Science (LICS), International Conference on Rewriting Techniques and Applications (RTA), and International Conference on Theory and Applications of Satisfiability Testing (SAT). Pre-conference workshops will be held on July 9–10, 2010. The General Chair for FLoC'10 is M. Vardi and the Conference Co-Chairs are L. Libkin, and G. Plotkin. For further information, visit `http://www.floc-conference.org`.
- 2009 Ackermann Award Winner. The European Association for Computer Science (EASCSL) has announced the winner of its 2009 Outstanding Dissertation Award for Logic in Computer Science, the Ackermann Award: Jakob Nordstrom for his thesis, "Short Proofs May Be Spacious: Understanding Space in Resolution" (Royal Institute of Technology (KTH); Advisor: Johan Hastad). The Jury members were: J. van Benthem, B. Courcelle, M. Grohe, M. Hyland, J. Makowsky, D. Niwinski, G. Plotkin, and A. Razborov. For further information, visit `http://www.eacsl.org/award.html`.
- Call for Nominations: 2010 Ackermann Award. The European Association for Computer Science Logic (EASCSL) invites submissions for its Outstanding Dissertation Award for Logic in Computer Science (Ackermann Award). To be eligible for the 2010 Ackermann Award, the candidate must have completed a Ph.D. dissertation in topics specified by the EACSL and LICS conferences that was formally accepted as a Ph.D. thesis at a university or equivalent institution between January 1, 2008 and December 31, 2009. The deadline for submission is March 15, 2010; details are available at `http://www.eacsl.org/submissionsAck.html`. For the years 2010-2012, the Award is sponsored by the Kurt Gödel Society.