

## Publications

### Completed Degrees

1. M.Sc. Computer Science,  
TU Clausthal, Clausthal-Zellerfeld, Germany, April 2000 (overall grade: 1.0)  
Thesis: *Eine Theorie der Konsistenzerzwingung auf Basis arithmetischer Logik*, in German  
Supervisor: Klaus-Dieter Schewe
2. PhD Information Systems,  
Dept Information Systems, Massey University, New Zealand, December 2004  
Thesis: *Dependencies in Complex-value Databases*  
Supervisors: Klaus-Dieter Schewe, Mike Hendy  
Examiners: Joachim Biskup, Robert Goldblatt, Sven Hartmann

### Refereed Journal Articles

1. On inferences of full first-order hierarchical decompositions, accepted for *Fundamenta Informaticae*, ISSN: 0169-2968, 2010
2. On Codd Families of Keys over Incomplete Relations (with S. Hartmann and U. Leck), accepted for *The Computer Journal*, ISSN: 1460-2067, 2010
3. Armstrong axioms and Boyce-Codd-Heath Normal Form under Bag Semantics (with H. Köhler), *Information Processing Letters*, Volume 110(16), pages 717-724, ISSN: 0020-0190, July 2010
4. Empirical evidence for the usefulness of Armstrong relations in the acquisition of meaningful functional dependencies (with Warren-Dean Langeveldt), *Information Systems - Databases: Creation, Management and Utilization*, Volume 35(3), pages 352-374, ISSN: 0306-4379, May 2010
5. Numerical constraints on XML data (with S. Hartmann), *Information and Computation*, Volume 208(5), pages 521-544, ISSN: 0890-5401, May 2010
6. Sample-based decision support for specifying XML constraints (with S. Hartmann and T. Trinh), *Journal of Research and Practice in Information Technology*, Volume 42(1), pages 15-36, ISSN: 1443-458X, January 2010
7. Constraint acquisition for Entity-Relationship models (with S. Hartmann and T. Trinh), *Data & Knowledge Engineering*, ISSN: 0169-023X, Volume 68(10), pages 1118-1155, 2009
8. Efficient reasoning about a robust XML Key Fragment (with S. Hartmann), *ACM Transactions on Database Systems*, ISSN: 0362-5915, Vol. 34(2), Article 10, 33 pages, June 2009
9. On Inferences of Weak Multivalued Dependencies (with S. Hartmann), *Fundamenta Informaticae*, ISSN: 0169-2968, Volume 92(1-2), pages 83-102, 2009
10. Weak Functional Dependencies (with S. Hartmann), *Journal of Universal Computer Science*, ISSN: 0948-6968, Volume 115(1), pages 112-156, 2009

11. Charting the Completeness Frontier of Inference Systems for Multivalued Dependencies, *Acta Informatica*, ISSN: 0001-5903, Volume 45(7-8), pages 565-591, 2008
12. On the implication of multivalued dependencies in partial database relations, *International Journal of Foundations of Computer Science*, ISSN: 0129-0541, Volume 19(3), pages 691-715, 2008
13. Characterising nested database dependencies by fragments of propositional logic (with S. Hartmann), *Annals of Pure and Applied Logic*, ISSN: 0168-0072, Volume 152(1-3), pages 84-16, 2008
14. Full Hierarchical Dependencies in fixed and undetermined universes (with S. Hartmann, H. Köhler), *Annals of Mathematics and Artificial Intelligence*, ISSN: 1012-2443 (print version), ISSN: 1573-7470 (electronic version), Volume 50(1-2), pages 195-226, 2007
15. Deciding Implication for Functional Dependencies in Complex-value databases (with S. Hartmann), *Theoretical Computer Science*, ISSN: 0304-3975, Volume 364(2), pp. 212-240, November 2006
16. Axiomatising Functional Dependencies in the Presence of Records, Lists, Sets and Multisets (with S. Hartmann, K.-D. Schewe), *Theoretical Computer Science*, ISSN: 0304-3975, Volume 355(2), pp. 167-196, April 2006
17. On a Problem of Fagin concerning Multivalued Dependencies in Relational Databases (with S. Hartmann), *Theoretical Computer Science*, ISSN: 0304-3975, Volume 353(1-3), pp. 53-62, March 2006
18. Functional and Multivalued Dependencies in Nested Databases generated by Record and List Constructor (with S. Hartmann), *Annals of Mathematics and Artificial Intelligence*, ISSN: 1012-2443 (print version), ISSN: 1573-7470 (electronic version), Volume 46(1-2), pp. 114-164, February 2006
19. An Equivalence between Dependencies in Nested Databases and a Fragment of Propositional Logic (with S. Hartmann), *Electronic Notes in Theoretical Computer Science*, ISSN: 1571-0661, Volume 143, pp. 73-85, 2005
20. Functional Dependencies over XML Documents with DTDs (with S. Hartmann, K.-D. Schewe), *Acta Cybernetica*, ISSN: 0324-721X, Vol. 17(1), pp. 153-171, 2005
21. The Implication Problem of Functional Dependencies in Complex-value Databases (with S. Hartmann), *Electronic Notes in Theoretical Computer Science*, Volume 123, ISSN: 1571-0661, pages 125-137, 2005
22. Distance Functional Dependencies in the Presence of Complex Values (with K.-D. Schewe), *Acta Cybernetica*, ISSN: 0324-721X, Volume 16(3), pp. 459-472, 2004
23. S. Hartmann, S. Link, K.-D. Schewe, B. Thalheim: Error-Robust Functional Dependencies (with S. Hartmann, K.-D. Schewe, B. Thalheim), *Fundamenta Informaticae*, ISSN: 0169-2968, Volume 59, Number 4, pp. 365-372, March 2004
24. A Membership Algorithm for Functional and Multi-valued Dependencies in the Presence of Lists (with S. Hartmann), ISSN: 1571-0661, *Electronic Notes in Theoretical Computer Science*, Volume 91, pp. 171-194, 2004

25. On Functional Dependencies in Advanced Data Models (with S. Hartmann), *Electronic Notes in Theoretical Computer Science*, ISSN: 1571-0661, Volume 84, 12 pages, 2003
26. Axiomatizing Functional Dependencies in the Higher-Order Entity-Relationship Model (with S. Hartmann, A. Hoffmann, K.-D. Schewe), *Information Processing Letters*, ISSN: 0020-0190, Vol. 87(3), pp. 133-137, 2003
27. An Arithmetic Theory of Consistency Enforcement (with K.-D. Schewe), *Acta Cybernetica*, ISSN: 0324-721X, Volume 15(3), pp. 379-416, 2002
28. Towards an Arithmetic Theory of Consistency Enforcement based on Preservation of  $\delta$ -Constraints (with K.-D. Schewe), *Electronic Notes in Theoretical Computer Science*, ISSN: 1571-0661, Volume 61, pp.62-83, 2002
29. Computability and Decidability Issues in the Theory of Consistency Enforcement (with K.-D. Schewe), *Electronic Notes in Theoretical Computer Science*, ISSN: 1571-0661, Volume 42, 12 pages, 2001

**Edited Book**

30. S. Link, H. Prade: Foundations of Information and Knowledge Systems 2010 - 6th International Symposium (FoIKS 2010), Sofia, Bulgaria, February 2010. Springer Lecture Notes in Computer Science, Volume 5956, ISBN: 978-3-642-11828-9.
31. A. Ghose, S. Link: Conceptual Modelling 2010 - Proceedings of the 7th Asia-Pacific Conference on Conceptual Modelling (APCCM 2010), Brisbane, Australia, January 2010. Conferences in Research and Practice in Information Technology (CRPIT), Volume 110, ISSN 1445-1336.
32. M. Kirchberg, S. Link: Conceptual Modelling 2009 - Proceedings of the Sixth Asia-Pacific Conference on Conceptual Modelling (APCCM 2009), Wellington, New Zealand, January 2009. Conferences in Research and Practice in Information Technology (CRPIT), Volume 96, ISBN 978-1-920682-78-1, ISSN 1445-1336.
33. S. Link, H. Ma, Y. Jang: E-BAG 2008 Workshop PC Chairs' Message. *WISE Workshops*, LNCS 5176, (ISSN: 0302-9743), pages 1-2, Springer, 2008, ISBN: 978-3-540-85199-8.

**Chapter in a Book**

34. F. Ferrarotti, S. Hartmann, S. Link and J. Wang: Promoting the semantic capability of XML keys. Proceedings of the Seventh International XML Symposium - XSym 2010, September 17, 2010, Singapore, Springer Lecture Notes in Computer Science, Volume 6309, pages 144-153, 2010.
35. S. Aleksic, M. Celikovic, S. Link, I. Lukovic, and P. Mogin: Faceoff: Surrogate vs. Natural Keys. Proceedings of the Fourteenth East-European Conference on Advances in Databases and Information Systems - AdBIS 2010, September 20 - 24, 2010, Novi Sad, Serbia, Springer Lecture Notes in Computer Science, Volume 6295, pages 543-546, 2010.
36. J. Biskup, S. Hartmann, S. Link and J.-H. Lochner: Efficient Inference Control for Open Relational Queries. Proceedings of the 24th Annual IFIP WG 11.3 Working Conference on Data and Applications Security - DBSec 2010, Rome, Italy, Springer Lecture Notes in Computer Science, Volume 6166, pages 162-176, 2010.

37. J. Biskup, S. Hartmann, S. Link and J.-H. Lochner: Chasing after secrets in relational databases. Proceedings of the 4th International Alberto Mendelzon Workshop - AMW 2010, Buenos Aires, Argentina, 2010.
38. S. Hartmann, S. Link, T. Trinh: Solving the Implication Problem for XML Functional Dependencies with Properties. Proceedings of 17th International Workshop on Logic, Language, Information and Computation - WoLLIC 2010, July 06-09, 2010, Brasilia, Brazil, Springer Lecture Notes in Computer Science, FoLLI/LNAI, Volume: 6188, pages: 161-175, 2010.
39. F. Ferrarotti, S. Hartmann, S. Link: On the Role of the Complementation Rule for Data Dependencies over Incomplete Relations. Proceedings of 17th International Workshop on Logic, Language, Information and Computation - WoLLIC 2010, July 06-09, 2010, Brasilia, Brazil, Springer Lecture Notes in Computer Science, FoLLI/LNAI, Volume: 6188, pages: 136-147, 2010.
40. S. Hartmann, U. Leck, S. Link: On Matrix Representations of Participation Constraints. Proceedings of ER Workshops 2009, Springer Lecture Notes in Computer Science, LNCS, Volume 5833, pages 75-84, ISBN 978-3-642-04946-0, 2009.
41. Spoilt for Choice: Full First-Order Hierarchical Decompositions. Proceedings of 16th International Workshop on Logic, Language, Information and Computation - WoLLIC 2009, June 21-24, 2009, Tokyo, Japan, Springer Lecture Notes in Computer Science, FoLLI/LNAI, Volume: 5514, 2009.
42. S. Hartmann, S. Link, T. Trinh: Boolean constraints for XML. In: Information Modelling and Knowledge Bases XX, Frontiers in Artificial Intelligence and Applications, Volume 190, pages 85-104, IOS Press, ISBN: 978-1-58603-957-8, DOI: 10.3233/978-1-58603-957-8-85, 2009.
43. S. Hartmann, H. Köhler, S. Link, T. Trinh, and J. Wang: On the Notion of an XML key. Proceedings of the Third International Workshop on Semantics in Data and Knowledge Systems - SDKB 2008, LNCS 4925, (ISSN: 0302-9743), pages 114-123, Springer, ISBN: 9783540885931.
44. J. Biskup, S. Link: Appropriate Reasoning about Data Dependencies in Fixed and Undetermined Universes, 5th International Symposium on Foundations of Information and Knowledge Systems - FoIKS 2008, Pisa, Italy, LNCS 4932, (ISSN: 0302-9743), pages 57-76, Springer, ISBN: 9783540776833.
45. H. Köhler, S. Link: Lossless Decompositions in Complex-valued Databases, 5th International Symposium on Foundations of Information and Knowledge Systems - FoIKS 2008, Pisa, Italy, LNCS 4932, (ISSN: 0302-9743), pages 329-347, Springer, ISBN: 9783540776833.
46. S. Hartmann, S. Link: Collection Types in Entity-Relationship Modeling, in: Twenty-Sixth International Conference on Conceptual Modeling, ER 2008, Auckland, New Zealand, LNCS 4801 (ISSN: 0302-9743), pp. 307-322, ISBN: 9783540755623
47. S. Hartmann, S. Link: Numerical keys for XML, in: Fourteenth International Workshop on Logic, Language, Information and Computation, WoLLIC 2007, Barcelona, Spain, LNCS 4576 (ISSN: 0302-9743), pp. 203-217, ISBN: 9783540734437

48. S. Hartmann, S. Link, T. Trinh: Efficient Reasoning about XFDs with Pre-Image Semantics, in: 12th International Conference on Database Systems for Advanced Applications (DASFAA 2007), Bangkok, Thailand, LNCS 4443 (ISSN: 0302-9743), pp. 1070-1074, ISBN: 9783540717027
49. S. Link, J. Zhao, K.-D. Schewe: Refinements in Typed Abstract State Machines, in I. Virbitskaite, A. Voronkov (Eds): Sixth International Andrei Ershov Memorial Conference on Perspectives of System Informatics, Akademgorodok, Russia, PSI 2006, LNCS 4378 (ISSN: 0302-9743), pp. 297-309, ISBN: 3540708804
50. S. Hartmann, S. Link: Unlocking keys for XML trees, in T. Schwentick, D. Suciú (Eds): Eleventh International Conference on Database Theory, ICDT 2007, Barcelona, Spain, LNCS 4353 (ISSN: 0302-9743), pp. 104-118, ISBN: 9783540692690
51. S. Link: On Multivalued Dependencies in Fixed and Undetermined Universes, in J. Dix, S.J. Hegner (Eds): Fourth International Symposium on Foundations of Information and Knowledge Systems, FoIKS 2006, Budapest, Hungary, LNCS 3861 (ISSN: 0302-9743), pp. 257-276, ISBN: 3540317821
52. S. Hartmann, S. Link: The Nested List Normal Form for Functional and Multivalued Dependencies, in J. Dix, S.J. Hegner (Eds): Fourth International Symposium on Foundations of Information and Knowledge Systems, FoIKS 2006, Budapest, Hungary, LNCS 3861 (ISSN: 0302-9743), pp. 135-156, ISBN: 3540317821
53. S. Hartmann, S. Link, K.-D. Schewe: Reasoning about Functional and Multivalued Dependencies in the Presence of Lists, in D. Seipel, J.M. Turull-Torres (Eds): Third International Symposium on Foundations of Information and Knowledge Systems, FoIKS 2004 (ISSN: 0302-9743), Vienna, Austria, LNCS 2942, pp. 134-154, ISBN: 3540209654
54. S. Hartmann, S. Link, K.-D. Schewe: Weak Functional Dependencies in Advanced Data Models, to appear in D. Seipel, J.M. Turull-Torres (Eds): Third International Symposium on Foundations of Information and Knowledge Systems, FoIKS 2004, Vienna, Austria, LNCS 2942 (ISSN: 0302-9743), pp. 116-133, ISBN: 3540209654
55. S. Hartmann, S. Link: More Functional Dependencies for XML, in L. Kalinichenko, R. Manthey, B. Thalheim., U. Wloka (Eds.): Advances in Databases and Information Systems, 7th East European Conference, AD-BIS 2003, Dresden, Germany, September 3-6 2003, LNCS 2798 (ISSN: 0302-9743), pp. 355-369, ISBN: 3540200479
56. S. Hartmann, S. Link, K.-D. Schewe: A new Normal Form for Conceptual Databases, in Y.Kiyoki, E.Kawaguchi, H.Jaakola, H.Kangassalo (Eds.): Information Modelling and Knowledge Bases XV (ISSN: 0922-6389), Frontiers in Artificial Intelligence and Applications, IOS press, 2004, pp. 88-105, ISBN: 1586033964
57. S. Link: Consistency Enforcement in Databases, in L. Bertossi, G.O. Kattana, K.-D. Schewe, B. Thalheim (Eds): Semantics in Databases, LNCS 2582 (ISSN: 0302-9743), pp. 139-159, 2002, ISBN: 3540009574

58. S. Link: Towards a Tailored Theory of Consistency Enforcement in Databases, in T. Eiter, K.-D. Schewe (Eds): Proceedings of the 2nd International Symposium on Foundations of Information and Knowledge Systems (FoIKS), LNCS 2284 (ISSN: 0302-9743), p. 160-177, 2002, ISBN: 354043205

#### **Invited Tutorials**

59. S. Link, T. Trinh: Know your Limits - Enhanced XML Modelling with Cardinality Constraints, ER 2007, Auckland, New Zealand.

#### **Refereed Conference Articles**

60. S. Hartmann, S. Link: When data dependencies over SQL tables meet the Logics of Paradox and S-3. Proceedings of the 29th ACM SIGACT-SIGART-SIGMOD Symposium on Principles of Database Systems - PODS 2010, Indianapolis, Indiana, U.S.A., pages 317-326, 2010.
61. R. Flatt, M. Kirchberg, S. Link: A decision support model for intermediary selection in the supply chain, Proceedings of 20th European-Japanese Conference on Information Modeling and Knowledge Bases - EJC 2010, Jyväskylä, Finland, pages 145-161, 2010.
62. M. Kirchberg, S. Link: Hippocratic databases: extending current transaction processing approaches to satisfy the limited retention principle, Proceedings of 43rd Annual Hawaii International Conference on System Sciences - HiCCS 2010, IEEE Computer Society Press, 10 pages, 2010.
63. S. Hartmann, S. Link: Expressive, yet tractable XML Keys. Proceedings of the 12th International Conference on Extending Database Technology - EDBT 2009, St. Petersburg, Russia, ACM International Conference Proceeding Series, Volume 360, pages 357-367, 2009.
64. S. Hartmann, S. Link, T. Trinh: Boolean Constraints for XML Modeling. Proceedings of the 18th European Japanese Conference on Information Modeling and Knowledge Bases, Tsukuba, Japan, pp. 85-104, 2008.
65. S. Hartmann, S. Link, T. Trinh: Constraint Acquisition - You can Chase but you cannot find, 5th Asia-Pacific Conference on Conceptual Modeling - APCCM 2008 Wollongong, Australia, Conferences in Research and Practice in Information Technology, Vol. 79, pages 59-68, ISSN: 1445-1336, ISBN: 9781920682606
66. S. Hartmann, S. Link: XML Query Optimisation: Specify your Selectivity, 2nd International Workshop on XML Data Management Tools and Techniques, DEXA Workshops, Regensburg, Germany, IEEE Computer Society 2007, ISSN: 1529-4188, pp. 30-34, ISBN: 0-7695-2932-1
67. S. Hartmann, S. Link: English Sentence Structures and EER Modeling, in A. Hinze and J. Roddick: Fourth Asia-Pacific Conference on Conceptual Modeling (APCCM), Ballarat, Australia, Conferences in Research and Practice in Information Technology, Volume 67, pp. 27-35, 2007, ISSN: 1445-1336, ISBN: 1-920-68235-X
68. S. Hartmann, S. Link: On Inferences of Full Hierarchical Dependencies, in G. Dobbie: Thirtieth Australasian Computer Science Conference (ACSC), Ballarat, Australia, Conferences in Research and Practice in Information Technology, Volume 62, pp. 69-78, 2007, ISSN: 1445-1336, ISBN: 1-920-68243-0

69. S. Link: A strongly minimal axiomatisation of multivalued dependencies in incomplete database relation, 2nd International Workshop on Logical Aspects and Applications of Integrity Constraints, DEXA Workshops, Krakow, Poland, IEEE Computer Society 2006, ISSN: 1529-4188
70. S. Link: On the Logical Implication of Multivalued Dependencies with Null Values, in B. Jay, J. Gudmundsson: Twelfth Computing: The Australasian Theory Symposium (CATS), Hobart, Tasmania, Australia, Conferences in Research and Practice in Information Technology, Volume 51, pp. 21-30, 2006, ISBN: 1920682333
71. S. Hartmann, S. Link: Horn Clauses and Functional Dependencies in Complex-value Databases, in J. Bailey, G. Dobbie: Seventeenth Australasian Database Conference (ADC), Hobart, Tasmania, Australia, Conferences in Research and Practice in Information Technology, Volume 49, pp. 113-122, 2006, ISBN: 1920682317
72. S. Hartmann, S. Link: Functional Dependencies on Nested Attributes: Algebraic, logical and topological Perspective, Proceedings of the 1st Workshop on Logical Aspects and Applications of Integrity Constraints, 16th International Workshop on Database and Expert Systems Applications (DEXA), Copenhagen, pp. 818-822, IEEE Computer Society 2005, ISBN: 0769524249
73. S. Hartmann, S. Link: An Equivalence between Dependencies in Nested Databases and a Fragment of Propositional Logic, Proceedings of the 12th Workshop on Logic, Language, Information and Computation (WoLLIC), Florianopolis, Brazil, 2005, pp. 71-82
74. S. Hartmann, S. Link: A topological View of Data Dependencies in Complex-valued Databases, Proceedings of the 3rd Chilean Workshop on Databases, Chilean Computing Week, Arica, Chile, 2004, ISBN: 956702118X
75. S. Hartmann, S. Link: Computing the Dependency Basis for Nested List Attributes, Proceedings of the 19th Brazilian Symposium on Databases (SBBD), Brasilia, Brazil, 2004, ISBN: 8576690098.
76. S. Hartmann, S. Link: Multi-valued Dependencies in the Presence of Lists, Proceedings of the 23rd ACM SIGMOD-SIGACT-SIGART Symposium on Principles in Database Systems (PODS), Paris, France, pp. 330-341, 2004, ISBN: 158113858X
77. S. Hartmann, S. Link: A Membership Algorithm for Functional and Multi-valued Dependencies in the Presence of Lists, in M. Atkinson (Ed.): Computing - The Australasian Theory Symposium, Pre-Proceedings of CATS 2004, Dunedin, New Zealand, pp. 152-174
78. S. Hartmann, S. Link: Normalisation in the Presence of Lists, in K.D. Schewe, H. Williams (Eds): 15th Australasian Database Conference, ADC 2004, Dunedin, New Zealand, Conferences in Research and Information Technology, Volume 27, pp. 53-64, ISBN: 1920682066
79. S. Hartmann, S. Link: Reasoning about Functional Dependencies in an Abstract Data Model, Proceedings of the 10th Workshop on Logic, Language, Information and Computation (WoLLIC), Ouro Preto, Minas Gerais, Brasil, 29.07. to 01.08.2003, pp. 118-129

80. S. Link: Towards dependencies on the Web - The Nested Attribute Approach. Conference Proceedings of the 7th World-Multiconference on Systemics, Cybernetics and Informatics (SCI), Volume IX, Computer Science and Engineering II, Orlando, Florida, USA, July 27 - 30, 2003, pp. 206 - 211, ISBN: 9806560019
81. S. Hartmann, S. Link, M. Kirchberg: A subgraph-based approach towards functional dependencies for XML. Conference Proceedings of the 7th World-Multiconference on Systemics, Cybernetics and Informatics (SCI), Volume IX, Computer Science and Engineering II, Orlando, Florida, USA, July 27 - 30, 2003, pp. 200 - 205, ISBN: 9806560019
82. S. Link, J.M. Turull-Torres: Towards optimising query evaluation with quotient databases. Advances in Databases and Information Systems, 7th East European Conference, ADBIS 2003, Dresden, Germany, September 3-6, 2003, Local Proceedings (ISSN: 1433-4135), pp.28-37
83. S. Hartmann, S. Link, K.-D. Schewe: Generalising Boyce-Codd Normal Form to Conceptual Databases. Proceedings of the 13th European Japanese Conference on Information Modeling and Knowledge Bases, Kitakyushu, Japan, pp.93-110,2003.
84. M. Kirchberg, S. Link: On the Implication Problem of Functional Dependencies in the Higher-Order Entity-Relationship Model, Proceedings of the 14th Australasian Database Conference, ADC 2003, Adelaide, Australia, Conferences in Research and Information Technology, Volume 17, pp. 115-124, Adelaide, 2003, ISBN: 090992595X
85. S. Link, K. D. Schewe: Towards an Arithmetic Theory of Consistency Enforcement based on Preservation of  $\delta$ -Constraints, Conference Proceedings for The Australasian Theory Symposium (CATS 2002), Australasian Computer Science Week 2002, Monash University
86. S.Link, K.-D.Schewe: Computability and Decidability Issues in the Theory of Consistency Enforcement, The Australasian Theory Symposium (CATS 2001), Australasian Computer Science Week 2001, Bond University

#### **Non-Refereed Conference Articles**

87. S. Hartmann, S. Link: On Functional Dependencies in Advanced Data Models (Abstract), in: Conference Report: 10th Workshop on Logic, Language, Information and Computation (WoLLIC'2003), Logic Journal of the IGPL, volume 11, issue 5, 2003, page 590
88. S. Link: Capturing Dependency Classes in Conceptual Databases (Abstract), The Bulletin of Symbolic Logic, vol. 9, 2003, page 261
89. S. Link: Consistency Enforcement - Achievements and a New Approach, annual meeting of the Australian Association for Logic, Wellington, 2001
90. S.Link: An Arithmetic Theory of Consistency Enforcement, Proceedings of the Sixth New Zealand Formal Development Colloquium, page 55 - 66, University of Canterbury

91. S.Link: Berechenbarkeits- und Entscheidbarkeitsprobleme in der Theorie der Konsistenzerzwingung, in: Informatiktage 99, Gesellschaft für Informatik, Konradin-Verlag 1999, p.51

#### **Technical Reports**

92. S. Link: On Multivalued Dependencies in fixed and undetermined Universes, Dept of Information Systems, Massey University, Palmerston North, 5/2005
93. S. Hartmann, S. Link: The Nested List Normal Form for Functional and Multivalued Dependencies, Dept of Information Systems, Massey University, Palmerston North, 4/2005
94. S. Hartmann, S. Link: On a Problem of Fagin concerning Multi-valued Dependencies in Relational Databases, Dept of Information Systems, Massey University, Palmerston North, 6/2004
95. S. Link: A topological View of Data Dependencies in the Presence of Lists, in R. Kaschek (Ed): Workshop on Algebra, Discrete Mathematics and Information systems, Dept of Information Systems, Massey University, Palmerston North, 5/2004
96. S. Hartmann, S. Link, K.-D. Schewe: Functional Dependencies in the Presence of Records, Lists, Sets and Multisets, Dept of Information Systems, Massey University, Palmerston North, 1/2004
97. S. Link: Dependency Theory for Complex-object Databases, in R. Kaschek, Kinshuk, K.-D. Schewe, J.M. Turull-Torres (Eds): PhD Workshop Communications, Dept of Information Systems, Massey University, Palmerston North, 6/2003
98. S. Hartmann, S. Link, K.-D. Schewe: Capturing Functional Dependencies in the Higher-Order Entity-Relationship Model, Dept of Information Systems, Massey University, Palmerston North, 4/2003
99. S. Hartmann, S. Link, K.-D. Schewe: Error-Robust Functional Dependencies, Dept of Information Systems, Massey University, Palmerston North, 2/2003
100. A. Hoffmann, S. Link, K.-D. Schewe: Axiomatizing Functional Dependencies in the Higher-Order Entity-Relationship Model, Dept of Information Systems, Massey University, Palmerston North, 1/2002
101. S. Link, K.- D. Schewe: An Arithmetic Theory of Consistency Enforcement, Dept of Information Systems, Massey University, Palmerston North, 3/2000

#### **Research Presentations**

1. “Berechenbarkeits- und Entscheidbarkeitsprobleme in der Theorie der Konsistenzerzwingung” (in german), *Computer Science Days 1999*, Bad Schussenried, Germany, 12.11.1999
2. “An Arithmetic Theory of Consistency Enforcement”, Department of Information Systems, Palmerston North, New Zealand, 18.07.2000
3. “An Arithmetic Theory of Consistency Enforcement”, School of Mathematical and Computing Science, Victoria University, Wellington, 11.08.2000 (invited)

4. "A Theory of Consistency Enforcement on Top of Arithmetic Logic", *CAST 2000*, University of Canterbury, Christchurch, 29.08.2000
5. "An Arithmetic Theory of Consistency Enforcement", Department of Computer Science, The University of Auckland, 01.09.2000 (invited)
6. "A Theory of Consistency Enforcement on Top of Arithmetic Logic", *Semantics in Databases*, Dagstuhl, Germany, 07.01.2001 (invited)
7. "Computability and Decidability Issues in the Theory of Consistency Enforcement", *CATS 2001, The Australasian Computer Science Week*, Bond University, Gold Coast, 30.01.2001
8. "Maximal Consistent Effect Preservers as a new Approach to Consistency Enforcement", Department of Information Systems, Palmerston North, New Zealand, 07.08.2001
9. "Consistency Enforcement - Achievements and a new Approach", *annual meeting of the Australasian Association for Logic*, Victoria University, Wellington, 30.11.2001
10. "Axiomatic Program Semantics and Theories of Consistency Enforcement", Department of Artificial Intelligence, University of New South Wales, Sydney, Australia, 24.01.2002
11. "Tailoring the Enforcement of Correct Programs", Department of Information Systems, University of Wollongong, Australia, 25.01.2002
12. "Towards an Arithmetic Theory of Consistency Enforcement based on the Preservation of  $\delta$ -constraints", *CATS 2002, The Australasian Computer Science Week*, Monash University, Melbourne, Australia, 29.01.2002
13. "Towards a Tailored Theory of Consistency Enforcement in Databases", *2nd International Symposium on Foundations of Information and Knowledge Systems*, Salzau Castle, Kiel, Germany, 22.02.2002
14. "Axiomatizing Functional Dependencies in the Higher-Order Entity-Relationship Model", *Mathematics Graduate Seminar*, Palmerston North, 24.06.2002
15. "Capturing Functional Dependencies in Conceptual Databases", *Information Systems Research Series*, Palmerston North, 24.09.2002
16. "Mathematical Foundations of Internet Security", *An Evening for Teachers, Mathematical and Statistics Staff*, Palmerston North, 16.10.2002
17. "Capturing Dependency Classes in Conceptual Databases", Annual Meeting of the Australasian Association for Logic, Canberra, Australia, 1.12.2002
18. "On the Implication Problem for Functional Dependencies in the Higher-Order Entity-Relationship Model", *ADC 2003*, Adelaide, 06.02.2003
19. "Reasoning about Functional Dependencies in an Abstract Data Model", Workshop on Discrete Mathematics and Applications in Information Sciences, Information Science Research Centre, Dept of Information Systems, Palmerston North, 10.03.2003
20. "Generalising Boyce-Codd Normal Form to Conceptual Databases", 13th European-Japanese Conference on Information Modeling and Knowledge Bases, 03.06.2003
21. "Dependency Theory for Complex-object Databases", PhD-Workshop, Dept of Information Systems, Palmerston North, 10.06.2003

22. "Functional Dependencies for XML: The More the Merrier", Information Systems Seminar Series, Dept of Information Systems, Palmerston North, 24.06.2003
23. "Towards Dependencies on the Web: The Nested Attribute Approach", 7th World-Multiconference on Systemics, Cybernetics and Informatics (SCI), Invited Session: Dependency Theory on the Web, Sheraton World Resort, Orlando, Florida, USA, 28.07.2003
24. "Reasoning about Functional Dependencies in an Abstract Data Model", 10th Workshop on Logic, Language, Information and Computation, Ouro Preto, Minas Gerais, Brazil, 01.08.2003
25. "Towards Optimising Query Evaluation with Quotient Databases", Advances in Databases and Information Systems (AdBIS), Dresden, Germany, 05.09.2003
26. "A Membership Algorithm for Functional and Multi-valued Dependencies in the Presence of Lists", Computing: The Australasian Theory Symposium (CATS), Australasian Computer Science Week, Dunedin, New Zealand, 19.01.2004
27. "Normalisation in the Presence of Lists", The Australasian Database Conference (ADC), Australasian Computer Science Week, Dunedin, New Zealand, 20.01.2004
28. "Reasoning about Functional and Multi-valued Dependencies in the Presence of Lists", Foundations of Information and Knowledge Systems (FoIKS), Vienna, Austria, 17.02.2004
29. "Functional Dependencies in Complex-value Databases", University of Dortmund, Dortmund, Germany, 02.03.2004
30. "Future Databases: The Beauties and the Beasts", Information Systems Seminar Series, Dept of Information Systems, Palmerston North, 04.05.2004
31. "Database Design in the Presence of Lists", School of Mathematical and Computing Sciences, Victoria University, Wellington, 03.06.2004
32. "Multi-valued Dependencies in the Presence of Lists", 23rd ACM SIGMOD-SIGACT-SIGART Symposium on Principles of Database Systems (PODS), Paris, France, 16.06.2004
33. "The Lord of the MVDs", Information Systems Seminar Series, Dept of Information Systems, Palmerston North, 29.06.2004
34. "Database Design in the Presence of Lists", School of Computer Engineering, Nanyang Technological University, Singapore, 16.07.2004
35. "The Implication Problem of Functional Dependencies in Complex-value Databases", 11th Workshop on Logic, Language, Information and Computation (WoLLIC), Paris-Fontainebleau, France, 22.07.2004
36. "Surprise, surprise: The List Constructor Strikes", Information Systems Seminar Series, Dept of Information Systems, Palmerston North, 31.08.2004
37. "Computing the Dependency Basis for Nested List Attributes", 19th Brazilian Symposium on Databases, Brasilia, Brazil, 20.10.2004
38. "A topological View of Data Dependencies in Complex-valued Databases", Proceedings of the 3rd Chilean Workshop on Databases, Chilean Computing Week, Arica, Chile, 09.11.2004

39. "An Equivalence between Dependencies in Nested Databases and a Fragment of Propositional Logic", 12th Workshop on Logic, Language, Information and Computation (WoLLIC), Florianopolis, Brazil, 21.07.2005
40. "Functional Dependencies on Nested Attributes: Algebraic, Logical and Topological Perspective", 1st International Workshop on Logical Aspects and Applications of Integrity Constraints, 16th International Conference on Database and Expert Systems Applications (DEXA), Copenhagen, Denmark, 26.08.2005
41. "On Multivalued Dependencies in fixed and undetermined Universes (What Planet are you from?)", Information Systems Seminar Series, Dept of Information Systems, Palmerston North, 13.09.2005
42. "Horn Clauses and Functional Dependencies in Complex-value Databases", 17th Australasian Database Conference (ADC) 2006, Hobart, Tasmania, Australia, 16.01.2006
43. "On the Logical Implication of Multivalued Dependencies with Null Values", 12th Computing: The Australasian Theory Symposium (CATS), Hobart, Tasmania, Australia, 18.01.2006
44. "On Multivalued Dependencies in fixed and undetermined Universes", 4th International Symposium on Foundations of Information and Knowledge Systems (FoIKS), Budapest, Hungary, 17.02.2006
45. "Equivalences between Data Dependencies in Nested Databases and Fragments of Propositional Logic", University of Dortmund, Dept of Computer Science, Dortmund, Germany, 02.03.2006
46. "Unlocking keys for XML trees", The University of Queensland, School of Information Technology and Electrical Engineering, Brisbane, Australia, 31.08.2006
47. "A strongly minimal axiomatisation of multivalued dependencies in incomplete database relations", 2nd International Workshop on Logical Aspects and Applications of Integrity Constraints, 17th International Conference on Database and Expert Systems Applications (DEXA), Krakow, Poland, 08.09.2006
48. "Unlocking keys for XML trees", The National University of Singapore, School of Computing, Dept of Computer Science, Singapore, 19.09.2006
49. "Unlocking keys for XML trees", Eleventh International Conference on Database Theory, ICDT 2007, Barcelona, Catalonia, Spain, 10.01.2007
50. "English Sentence Structures and EER Modelling", 4th Asia-Pacific Conference on Conceptual Modelling, APCCM 2007, Ballarat, Victoria, Australia, 31.01.2007
51. "On Inferences of Full Hierarchical Dependencies", 30th Australasian Computer Science Conference, ACSC 2007, Ballarat, Victoria, Australia, 01.02.2007
52. "Efficient Reasoning about XFD's with Pre-Image Semantics", 12th International Conference on Database Systems for Advanced Applications (DAS-FAA), Bangkok, Thailand, 12.04.2007
53. "Numerical Constraints for XML", 14th International Workshop on Logic, Language, Information and Computation (WoLLIC), Rio de Janeiro, Brazil, 03.07.2007

54. XML Query Optimisation: Specify your Selectivity, *DEXA Workshops*, Regensburg, Germany, 05.09.2007
55. Developing Core Competencies for tomorrow's E-Commerce Professionals, Victoria University, Wellington, New Zealand, 09.10.2007
56. Collection Type Constructors in Entity-Relationship Modelling, *ER 2007*, Auckland, New Zealand, 04.11.2007
57. Know your Limits - Enhanced XML Modelling with Cardinality Constraints, *ER 2007 Tutorial*, Auckland, New Zealand, 05.11.2007
58. Constraint Acquisition - You can Chase but you cannot Find, 5th Asia-Pacific Conference on Conceptual Modelling, Wollongong, Australia, 24.01.2008
59. Lossless Decompositions in Complex-valued Databases, 5th International Symposium on Foundations of Information and Knowledge Systems (FoIKS), Pisa, Italy, 12.02.2008
60. Appropriate Reasoning about Data Dependencies in Fixed and Undetermined Universes, 5th International Symposium on Foundations of Information and Knowledge Systems (FoIKS), Pisa, Italy, 13.02.2008
61. Boolean Constraints for XML Modeling, 18th European-Japanese Conference on Information Modelling and Knowledge Bases, Tsukuba, Japan, 03.06.2008
62. Cardinality Constraints for XML, Graduate School of Informatics, Kyoto University, Japan, 09.06.2008
63. Inference-Proof Access Control in Relational Databases with Functional and Join Dependencies, Information Security Engineering Laboratory, Graduate School of Information Science and Technology, Osaka University, 11.06.2008
64. Keys on Data Trees - Notions, Properties and Applications, Invited Tutorial, The 9th International Conference on Web Information Systems Engineering - WISE 2008, Auckland, New Zealand, 01.09.2008
65. Reasoning about XML constraints, Information Security Engineering Laboratory, Graduate School of Information Science and Technology, Osaka University, Japan, 16.06.2009
66. Spoilt for choice: full first-order hierarchical decompositions, 16th International Workshop on Logic, Language, Information and Computation (WoLLIC 2009), Tokyo, Japan, 21.06.2009
67. Reasoning about XML constraints, National Institute of Informatics, Tokyo, Japan, 22.06.2009
68. English sentence structures and extended Entity-Relationship modelling, Faculty of Environmental Information, Keio University, Japan, 23.06.2009
69. When Real-World Database Constraints meet Para-consistent Logics, School of Computer Science and Information Technology, RMIT, Melbourne, Australia, 21.02.2010
70. Empirical evidence for the usefulness of perfect samples in the acquisition of meaningful business rules, School of Information Management, Victoria University of Wellington, New Zealand, 10.02.2010
71. When Real-World Database Constraints meet Para-consistent Logics, School of Computing, National University of Singapore, Singapore, 02.03.2010

72. Chasing after secrets in relational databases, IV Alberto Mendelzon Workshop on Foundations of Data Management, Buenos Aires, Argentina, 19.05.2010
73. A decision support model for intermediary selection in the supply chain, The 20th European-Japanese Conference on Information Modelling and Knowledge Bases, Jyvaeskylae, Finland, 01.06.2010
74. When data dependencies over SQL tables meet the Logics of Paradox and S-3, The 29th ACM SIGMOD-SIGART-SIGACT Symposium on Principles of Database Systems, Indianapolis, U.S.A., 10.06.2010
75. On the role of the complementation rule for data dependencies over incomplete relations, The 17th Workshop on Logic, Language, Information and Computation, Brasilia, Brazil, 08.07.2010

### External Reviewer

1. 2nd International Symposium on Foundations of Information and Knowledge Systems, FoIKS 2002
2. 6th East-European Conference on Advances in Databases and Information Systems, AdBIS 2002
3. 21st International Conference on Conceptual Modeling, ER 2002
4. Semantics in Databases, Second International Workshop, Dagstuhl Castle, Germany, January 7-12, 2001, Revised Papers. Lecture Notes in Computer Science 2582 Springer 2003
5. Database Technologies 2003, Proceedings of the 14th Australasian Database Conference, ADC 2003, Adelaide, South Australia, February 2003. CRPIT 17 Australian Computer Society 2003
6. Perspectives of System Informatics, PSI 2003
7. 5th Asia-Pacific Web Conference, APWeb 2003
8. 3rd International Symposium on Foundations of Information and Knowledge Systems, FoIKS 2004
9. Database Technologies 2004, Proceedings of the Fifteenth Australasian Database Conference, ADC 2004, Dunedin, New Zealand, 18-22 January 2004. CRPIT 27 Australian Computer Society 2004
10. Conceptual Modelling 2004, First Asia-Pacific Conference on Conceptual Modelling (APCCM2004), Dunedin, New Zealand, January 18-22, 2004
11. Australasian Database Conference, ADC 2005
12. 7th Asia-Pacific Web Conference, APWeb 2005
13. 17th Conference on Advanced Information System Engineering , CaISE 2005
14. 4th International Symposium on Foundations of Information and Knowledge Systems, FoIKS 2006
15. Australasian Database Conference, ADC 2006
16. Australasian Software Engineering Conference, ASWEC 2006
17. 25th International Conference on Conceptual Modeling, ER 2006
18. 10th East-European Conference on Advances in Databases and Information Systems, AdBIS 2006

19. 7th International Conference on Web Information Systems Engineering, WISE 2006
20. 20th Conference on Advanced Information System Engineering , CaISE 2008
21. 27th International Conference on Conceptual Modeling, ER 2008
22. 19th Australasian Conference on Information Systems, ACIS 2008
23. 14th International Conference on Database Systems for Advanced Applications, DASFAA 2009

### **Journal Reviews**

1. Annals of Mathematics and Artificial Intelligence, Springer
2. Journal on Data Semantics, Springer
3. Information Sciences, Elsevier
4. The Computer Journal, Oxford
5. Transactions on Database Systems, ACM
6. Data and Knowledge Engineering, Elsevier
7. Journal of Universal Computer Science
8. Journal of Applied Logics, Elsevier
9. Information Systems, Elsevier
10. Transactions on Knowledge and Data Engineering, IEEE
11. Transactions on Software Engineering and Methodology, ACM

### **Program Committee Member**

1. The 2nd Asia-Pacific Conference on Conceptual Modelling, Newcastle, Australia, January 30 - February 4, 2005
2. The 3rd Asia-Pacific Conference on Conceptual Modelling, Hobart, Tasmania, Australia, 2006
3. The 16th European-Japanese Conference on Information Modelling and Knowledge Bases, Czech Republic, 2006
4. The 18th Australasian Database Conference, Ballarat, Australia, 2007
5. The 4th Asia-Pacific Conference on Conceptual Modelling, Ballarat, Australia, 2007
6. The 17th European-Japanese Conference on Information Modelling and Knowledge Bases, Pori, Finland, 2007
7. The 1st International Workshop on Conceptual Modelling for Life Sciences Applications (ER Workshop), Auckland, New Zealand, 2007
8. The 19th Australasian Database Conference, Wollongong, Australia, 2008
9. The 5th Asia-Pacific Conference on Conceptual Modelling, Wollongong, Australia, 2008
10. The 5th International Symposium on Foundations of Information and Knowledge Systems (FoIKS), Pisa, Italy, 2008
11. The 18th European-Japanese Conference on Information Modelling and Knowledge Bases, Tsukuba, Japan, 2008

12. The 9th International Conference on Web Information Systems Engineering, Auckland, New Zealand, 2008
13. The 4th Workshop on Ontologies-based Techniques for DataBases in Information Systems and Knowledge Systems (VLDB Workshop), Auckland, New Zealand, 2008
14. The 2nd International Workshop on Conceptual Modelling for Life Sciences Applications (ER Workshop), Barcelona, Spain, 2008
15. The 20th Australasian Database Conference, Wellington, New Zealand, 2009
16. The First International Workshop on Benchmarking of XML and Semantic Web Applications, 2009
17. The First International Workshop on Evolving Theories of Conceptual Modelling (ETheCoM) co-located with the 28th International Conference on Conceptual Modeling (ER 2009)
18. The First International Workshop on Conceptual Modelling in the Large (CoMoL) co-located with the 28th International Conference on Conceptual Modeling (ER 2009)
19. The 19th European-Japanese Conference on Information Modelling and Knowledge Bases, 2009
20. The 4th International Conference on E-Business (ICE-B), Milan, Italy, 2009
21. The 20th International Conference on Database and Expert Systems Applications (DEXA), Linz, Austria, 2009
22. The International Workshop on Logic in Databases, Roskilde, Denmark, 2009
23. The 21st International Conference on Database and Expert Systems Applications (DEXA), Bilbao, Spain, 2010
24. The 5th International Conference on E-Business (ICE-B), Athens, Greece, 2010
25. The 20th European-Japanese Conference on Information Modelling and Knowledge Bases (EJC), Jyväskylä, Finland, 2010
26. The Second International Workshop on Benchmarking of Database Management Systems and Data-Oriented Web Technologies (BenchmarX'10), Tsukuba, Japan, 2010
27. The Fourth International Workshop on Semantics in Data and Knowledge Bases (SDKB), Bordeaux, France, 2010
28. The Second International Workshop on Semantic Web Information Management, 2010
29. The First Workshop on Semantic Data Management, Singapore, 2010
30. The Asia-Pacific Computing and Philosophy Conference, Wellington, New Zealand, 2010

#### **PC Co-Chair**

1. The 1st International Workshop on Web Information Systems Engineering for Electronic Businesses and Governments, Auckland, 2008
2. The 6th Asia-Pacific Conference on Conceptual Modelling, Wellington, New Zealand, 2009

3. The 1st International Workshop on Schema Languages for XML (X-Schemas'09), Brisbane, Australia, 2009
4. The 7th Asia-Pacific Conference on Conceptual Modelling, Australia, 2010
5. The 6th International Symposium on Foundations of Information and Knowledge Systems (FoIKS), Bulgaria, 2010

### Awards

1. *Cardinality Constraints for XML: Challenging the Trade-off between Expressiveness and Tractability*, Marsden grant, NZ\$400,000, Royal Society of New Zealand, 2009-2011
2. *Investigating Complex-value Database Design Problems using Brouwerian Algebras*, Marsden Fast-Start grant, NZ\$140,000, Royal Society of New Zealand, 2006/2007
3. Highly Commended Emerging Researcher 2004, College of Business, Massey University
4. Early Career Award 2006, College of Business, Massey University

### Services at Victoria University

1. Research Degree Committee Member
2. Research Committee Member
3. Human Ethics Committee Member
4. Senior Management Team Member
5. Technical Hui 2008
6. Discovery Camp 2008
7. Project in the Undergraduate Research Development Program 2008
8. Member of the MIST panel for the internal PBRF round 2009

### Students

1. Postdoc: Flavio Ferrarotti, from February 2010  
*Cardinality Constraints for XML*
2. PhD Co-supervisor: Bao Van Le, from February 2010  
*On the Usefulness of Perfect Sample Databases*
3. PhD Co-supervisor: Diane Strode, since 2008  
*Agile Methods in Software Development*
4. PhD Co-supervisor: Jing Wang, since 2008  
*Ontology Consolidation in Bioinformatics* Bright Future Top Achiever Doctoral Scholarship for 2008-2010
5. PhD Co-supervisor: Thu Trinh, 2005-2009  
*XML Functional Dependencies based on Tree Homomorphisms*  
Bright Future Top Achiever Doctoral Scholarship for 2005-2008

6. Remy Flat: *Charting XML-enabled Organizations in Wellington* Undergraduate Research Development Programme 2008
7. Aaron Steele, *Intelligent Algorithms for Combining Task-specific Security Techniques*, M.Sc. Thesis, 2008, Massey University
8. Jing Wang, *Using tree patterns for flexible handling of XML keys*, M.Sc. Thesis, 2007 Massey University
9. Douglas Mubayiwa: *Bioinformatics, XML and Bio-mirror issues*, M.Sc. Thesis, 2006 Massey Masterate Scholarship
10. Aaron Steele: *The Reality of Project Estimation*, Research Report, 2006 Massey Postgraduate Scholarship for 2005
11. Thu Trinh: *Functional Dependencies for XML*, M.Sc. Thesis, 2005 Lovell and Berys Clark Masterate Scholarship William Georgetti Scholarship for 2004
12. Zheng Zhou: *Algorithms and Implementation of Functional Dependency Discovery in XML*, M.Sc. Thesis, 2006 Massey Masterate Scholarship for 2005
13. Jayson Speer: *Implementing a Membership Algorithm for Functional and Multivalued Dependencies in the Presence of Lists*, Research Report, 2004
14. Jing Wang: *Challenges in Laboratory Information Management Systems*, Research Report, 2004
15. Kathrin Maul: *Implementing a Strategy for Agents in Electronic Market Places*, Research Report, 2004
16. Alexander B. Donaldson: *Implementation of the AES Algorithm as an Online Teaching Website*, Research Report, 2003
17. Hui Ma: *A Survey of Published Approaches to Fragmentation and Allocation for Distributed Relational Databases*, Research Report, 2001