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February 24, 2017

Date of Birth 12/iv/1948

État Civile: divorced

Tertiary Education

B.A. University of East Anglia: Philosophy/History of Music 1968 2.1 honours;

M.A. University of East Anglia: Philosophy (Dissertation Title: "Nominalism") 1969;

Ph.D. University of Cambridge: Mathematics (Dissertation on Quine's Set Theory NF) 1977.

Composition, years 1 and 2: Auckland Conservatory of Music 1978-9.

Other Qualifications

E.C.N.E. Qualifying Examination in Clinical Neurophysiology 1976

Prizes and other memorabilia

J.T. Knight Memorial Prize in Pure Mathematics, Cambridge 1974

In 2009 my article "The Iterative Conception of Set" (item 38 below) was named
by *The Philosophers' Annual* as one of the ten best philosophy articles of 2008.

Learned Societies, Editorships, etc.

I am a fellow of the Pittsburgh Center for Philosophy of Science, a *correspondent étranger* of the Belgian
Centre National de Recherches de Logique, an External Researcher of the Centre for Discrete Mathematics
and Theoretical Computer Science in Auckland, and Adjunct Researcher at the Department of Philosophy
and Religious studies at the University of Canterbury at Christchurch and an Associate Editor of The
Human Nature Review. (Membership of organisations which one can freely join is not listed here). I have
been external Ph.D. examiner for the University of Oxford and for the Free University of Brussels (ULB);
I have been consulted by departmental promotions committees at the Université Catholique de Louvain
and the University of California to advise on the granting of tenure, and by Boise State University to
advise on sabbatical applications and promotion to full professor. I have also been asked by the Science
funding body of the Government of Austria to referee project applications.

Positions Held

2016 to present
Bye-fellow in Pure Mathematics, The Queens' College, Cambridge.

2016 (second semester)
Erskine Fellow, Mathematics department, University of Canterbury, Christchurch, New Zealand.

2010(second semester)
Erskine Fellow, Philosophy Department, University of Canterbury, Christchurch, New Zealand.

2010-Present
Director of Studies in Pure Mathematics in St Edmund's College in the University of Cambridge.

2008-2011
Reader (30%), Philosophy Department, University of East Anglia.

2007-Present
Affiliated Lecturer, Department of Pure Mathematics and Mathematical Statistics, University of Cambridge.

2007-2011
Occasional Medical Technical Officer, Department of Clinical Neurophysiology, Hertford County Hospital, Hertford.

1990-Present
Life Associate in Residence and Director of Studies in Computer Science at Clare Hall in the University of Cambridge. (Since 2014 I have also been Director of Studies in Mathematics at Clare Hall.)

2006-7
University Lecturer (part time), Department of Philosophy and Religious studies, University of Canterbury, Christchurch, New Zealand.

2003-2006
Senior lecturer, Department of Computer Science, Distance Learning Section, Queen Mary Westfield College in the University of London.

Autumn 2005
Visiting lecturer, Dept. des Mathématiques, Université libre de Bruxelles.

2005 (second semester)
Visiting lecturer, Philosophy department / Fellow-in-residence, Centre for Discrete Mathematics and Theoretical Computer Science University of Auckland, Auckland, New Zealand.

2003
Senior Research Fellow in Residence, Centre for the Philosophy of Science, University of Pittsburgh

2002
University Lecturer, Dept. of Computer Science, Queen Mary Westfield College in the University of London.

2001
Visiting Researcher, School of Logic and Philosophy of Science, University of California at Irvine (spring quarter).

1993-2003
Medical Technical Officer (part-time), Addenbrooke's Hospital, Cambridge.

1990
Lecturer in Mathematics/Tutor in Philosophy (two one-year part-time appointments), University of Otago, Dunedin, New Zealand.

1989 Postdoctoral Research Associate, Department of Pure Mathematics and Mathematical Statistics, University of Cambridge.

1986-88
Postdoctoral Research Associate, Computer Laboratory, University of Cambridge.

1981-86
Lecturer and Tutor, Department of Philosophy, Victoria University of Wellington.

1979-81
Programmer-Analyst, Control Data Corporation, Wellington, New Zealand.

1977-79
Medical Technical Officer, Department of Clinical Neurophysiology Auckland Hospital, New Zealand

1976-77
Medical Technical Officer, Department of Clinical Neurophysiology, Radcliffe Infirmary, Oxford.

1971-72
Junior Lecturer, Philosophy Department, University of Auckland, New Zealand

1969-71
Medical Technical Officer, Cherry Farm Hospital, Dunedin, New Zealand.

Supervising

At Otago in 1990 I tutored first-year Ethics classes and first year Linear Algebra.

In Cambridge I supervise students for an assortment of undergraduate and graduate courses in Mathematics, Computer Science and Philosophy. I have also supervised HPS M. Phil. projects and Computer Science Diploma projects. A proposal of mine for a Part II (third year) project has been put on the Physiology department's list of suggested projects. (It involves repeating some Penrose-inspired studies which allegedly show quantum effects in the performance of conscious tasks. It has connections with my work in EEGs). There are three Part III (fourth year) Mathematics essays that I sponsor and I have a few takers every year.

Lecturing

Now that I am winding down my lecturing commitments and concentrating on looking after my Ph.D. students I have recently been lecturing only a Mathematics Part III (Fourth year, a kind of M.Sc.) course at Cambridge entitled "Computability and Logic", and a course in Logic for linguistics students, Linguistics department, University of Cambridge. However in 2016-7 I shall be lecturing a Part II course entitled "Set Theory and Logic". How long that will go on for is anyone's guess.

However at various times I have also lectured the following

- Phil 101 (introductory Logic) at the University of Auckland
- The first-year "Philosophical Skills" course for philosophy students at UEA
- The Logical-Prerequisites course for the M.Phil. In Computer Science at the University of Cambridge.
- The 209/309 Course in Further Logic at the University of Canterbury in New Zealand
- A Part II (third year) course in the Computer Science Tripos entitled "Philosophy" [for computer scientists]. Philosophy of Mind, of Language and of Mathematics naturally loomed large in it;
- A Philosophy of Mind course at the Victoria University of Wellington;
- The third year course in Logic and Set theory in the Mathematics Tripos at Cambridge. (see book 4 below);
- A course at the Cambridge University Science Summer School entitled "Applicable Pure Mathematics in the twentieth century";
- A Fourth year course in Foundations of Set theory (at the University of Auckland, second semester 2005, 2008);
- A Graduate level course in WQO and BQO theory (at the University of Auckland, second semester 2005);
- A Fourth year course in Foundations of Set Theory (at the Université Libre de Bruxelles, first semester 2005-6);

I have also been invited to contribute to DPMMS's programme of *Lectures Intended for Graduates* ("Part IV").

Ph.D. Supervision

I supervised Dang Vu and Zachiri Mckenzie (both now gainfully employed in Academe) and Philipp Kleppman (now in the private sector but planning to return to Academe) and am currently supervising Adam Lewicki. David Matthai has degraded but we hope he will return. Lewicki is planning to submit later this academic year.

Other Recent Relevant Activities

In 2003-4 I had a Postdoctoral Fellow, Olivier Esser from Brussels, to work on NF with me. I have also been an invited speaker at two conferences on Hardware Verification in recent years, in Malta and Madrid. I organised BILAP (Buddhism in Logic and Analytic Philosophy) which was held in Cambridge in November 2005 and the L & R (Logic and Rhetoric) which was held in Cambridge in October 2006.

Both these meetings were funded by the St. Luke's Institute. In 2007 (and again in 2008) I had Dr Libert of the ULB visit me holding the same Postdoctoral Fellowship. I was one of the organisers of the Cambridge conference to comemmorate the 100th anniversary of the publication of Russell-and-Whitehead's *Principia Mathematica* in 2010. More recently, in 2014 I was an invited speaker at *Young Researchers in Mathematics* (Warwick, 29/vi-4/vii) and at *Mathematical Beauty* (UEA 4-6/xii). Back in Cambridge in autumn 2014 I hosted Peter Koepke of Bonn and Alice Vidrine of Seattle, and Randall Holmes in may/june 2015.

In Michaelmas 2015 I hosted Alice Vidrine, and in Easter term 2016 I hosted Randall Holmes, Alice Vidrine, Paul Gorbow (a student from Gothenburg now working with my former student Zachiri Mckenzie, who shares the interest in category-theory + NF that animates Ms. Vidrine and my student Adam Lewicki. This is partly so we can continue work on item [53] below.) Also Asaf Karagila, a Ph.D. student from HUJI who is working on material related to Randall Holmes' work on Quine's NF.

In addition to my supervision work (college-based small-group teaching) in michaelmas 2015-6 I gave a Part III course on Computability and Logic, an introductory course in Logic-for-Linguists, and in Easter a "Part IV" (lectures intended for graduates) course on WQO and BQO theory.

I was an invited speaker at a workshop "Well Quasi-Orders in Computer Science" (16031), at Schloss Dagstuhl in Germany January 17-22, 2016.

In July 2016 I shall be attending the quadriennel meeting of the fellows of the Pittsburgh Centre for Philosophy of Science.

I shall be spending the second semester of 2016 as a Cambridge-Erskine fellow at the University of Canterbury in New Zealand, teaching MATH336-16S2.

Personal Interests

I have my own subscription to NATURE. I was a regular member of the (now defunct) Cambridge University Computer Laboratory Cricket team, for whom I used to bowl wrist-spin. I was Senior Treasurer of the (now dormant) Cambridge University branch of Greenpeace. I act when I can find the time, and I play the piano: I recently gave a brief recital at a concert at Clare Hall. I have a small share in a truffle farm in New Zealand. I have done two bungee jumps.

Publications

Much of this material is available in .ps or .pdf form from my home page: `www.dpmms.cam.ac.uk/~tf`.

Among the articles, items 16, 32, 40 and 50 in the list of articles below were the results of invited talks at various meetings. Items 24, 25 and 27 were written at the invitation of people compiling those volumes.

Books

[1] Quine's NF, an introduction. Cahiers du Centre de Logique, Louvain-La-Neuve 1981

[2] Set Theory with a Universal set. Oxford Logic Guides. OUP 1992.

[3] Second (revised) edition of [2]. Oxford Logic Guides. OUP 1995.

[4] Logic, Induction and Sets, London Mathematical Society Undergraduate Texts in Mathematics **56** Cambridge University Press.

[5] Reasoning about Theoretical Entities. Advances in Logic **3** World Scientific (UK)/Imperial College Press 2003.

Undergoing final revision

[6] An Introduction to the Axioms of Set Theory. Cambridge University Press.

In Preparation

[1] An Introduction to BQO and WQO theory. (with Monika Seisenberger and Nathan Bowler—being considered by CUP for the LMS lecture notes series)

[2] An Introductory Course in Logic for Philosophy Students (based on my lectures in Christchurch and UEA).

[3] A second, revised, edition of *Logic, Induction and Sets* for CUP

[4] Replacement, Implementation and Typing [a book about the Philosophy of Mathematics]

Book proposals

[1] Imaginaries in Mathematics: their History and Logic. (with Piers Bursill-Hall)—being discussed with WSP/ICpress.

[2] "The Axiom of Choice" (Growing out of my talk at YRM2014; a sequel to [30].) CUP want to publish it.

Collections

I was the editor of:

[1] The Cresswell Festschrift, a special number of Logique et Analyse, **46** fascicule 181 (2003) to coincide with Cresswell's 65th birthday.

[2] Logic and Rhetoric. Proceedings of a conference held in Cambridge, october 2006, appearing in a special number of *Logique et Analyse* **53** fascicule 210 June 2010.

[3] NF 2007. Proceedings of the 70th anniversary NF meeting in Cambridge in 2007, co-edited with Marcel Crabbé. *Cahiers du Centre de Logique* **16** 2009.
   `www.dpmms.cam.ac.uk/~tf/NFUK.html`.

Articles

[1] (with B.G.Smith) "A new proof of the Skolem-Löwenheim theorem" (abstract) *Journal of Symbolic Logic* **44** (1977) p 447.

[2] "Further Consistency and Independence results in NF obtained by the Permutation Method". *Journal of Symbolic Logic* **48** (1983) pp 236–8.

[3] "A Point of Contact between Complexity Theory, Mathematical Logic and Game Theory". *Eureka* **45** 1985 pp 15–20.

[4] "Axiomatising Set Theory with a Universal Set", *in* "La Theorie des ensembles de Quine" Cahiers du Centre de Logique **4**, CABAY, Louvain-La-Neuve 1983.

[5] "The Status of the Axiom of Choice in Set Theory with a Universal Set". *Journal of Symbolic Logic* **50** (1985) pp 701–7.

[6] "Term Models for a weak Set Theory with a Universal Set". *Journal of Symbolic Logic* **52** (1987) pp 374-387. (Reprinted in FØllesdal, ed: Philosophy of Quine, **V**. Logic, Modality and Philosophy of Mathematics Taylor-and-Francis 2001.

[7] "Permutation Models in the sense of Rieger-Bernays". *Zeitschrift für Mathematische Logic und Grundlagen der Mathematik* **33** (1987) pp 201–210.

[8] "A Consistent second-order Theory with no (second-order) Models". *Zeitschrift für Mathematische Logic und Grundlagen der Mathematik* **35** (1989) pp 385–6.

[9] "Permutation Models and Stratified Formulæ, a Preservation Theorem". *Zeitschrift für Mathematische Logic und Grundlagen der Mathematik* **36** (1990) pp 385–388.

[10] (With Richard Kaye) "End-extensions preserving Power Set". *Journal of Symbolic Logic* **56** pp 323–328. (Reprinted in FØllesdal, (ed.) Philosophy of Quine, **V**: Logic, Modality and Philosophy of Mathematics)

[11] "The Animal Rights Question" *Nature* July 4th, 1991. **352** 6330:9.

[12] "On a Problem of Dzierzgowski". *Bulletin of the Belgian Mathematical Society sér. B* **44** (1992) pp 207–214.

[13] "A Semantical Characterisation of the well-typed Formulæ of λ-calculus". *Theoretical Computer Science* **110**, (1993) 405–418.

[14] "Church-Oswald models for Set Theory". in: *Logic, Meaning and Computation: essays in memory of Alonzo Church*, Synthese library **305**. Kluwer, Dordrecht, Boston and London 2001.

[15] "Why Set Theory without the Axiom of Foundation?" *Journal of Logic and Computation.* **4**, number 4 (August 1994) pp. 333–335.

[16] "Weak Systems of Set Theory Related to `HOL`". (Invited talk given at the 1994 meeting of HUG) HUG94, Springer lecture notes in Computer Science **859** pp 193–204.

[17] (with C.M. Rood.) "Sethood and Situations". *Computational Linguistics.* **22**, (1996) pp 405–408.

[18] "Sixty years of NF" *The American Mathematical Monthly* **104** no. 9 (November 1997), pp. 838-845. (Reprinted in FØllesdal, ed: Philosophy of Quine, **V**. Logic, Modality and Philosophy of Mathematics. Taylor-and-Francis 2001.

[19] "Games Played on an Illfounded Membership Relation". in *A Tribute to Maurice Boffa* ed Crabbé, Point, and Michaux. Supplement to the December 2001 number of the *Bulletin of the Belgian Mathematical Society*.

[20] ZF + "Every Set is the same size as a Wellfounded Set" *Journal of Symbolic Logic* **58** (2003) pp 1–4.

[21] (with John Truss) "The illfoundedness of the "set of wellordered subsets of" relation". *Journal of Symbolic Logic* **68** (2003) pp 879–884.

[22] "Better-quasi-orderings and coinduction", *Theoretical Computer Science*, **309**, Issues 1-3, 2 December 2003, pp. 111–123.

[23] "Finite-to-one maps". *Journal of Symbolic Logic* **68** (dec 2003) pp 1251–1253.

[24] "AC fails in the natural analogues of L and the cumulative hierarchy that model the stratified fragment of ZF". (This was my invited talk for the AMS-MAA joint meeting at Baltimore) in *Contemporary Mathematics* **361** 2004.

[25] "The Modal Aether" in: Intensionality ed R. Kahle. *Lecture Notes in Logic* **22**, A.K. Peters, Wellesley, Mass, USA 2005 pp 1–19.

[26] "The Significance of Yablo's paradox without self-reference". *Logique et Analyse* **185-188** (2004) pp 461–2.

[27] "Asynchronous Games". *Proceedings of the 2004 Knowledge and games (KAG) meeting in Liverpool.*

[28] Article on NF for the *Stanford Online Encyclopædia of Philosophy*.

[29] "Permutations and Wellfoundedness: the True Meaning of the Bizarre Arithmetic of Quine's NF". *Journal of Symbolic Logic* **71** (2006) pp 227–240.

[30] "The Axiom of Choice and Inference to the Best Explanation". *Logique et Analyse* **194**, 2006 pp 191–197.

[31] "Deterministic and Nondeterministic Strategies for Hintikka Games in First-order and Branching-quantifier Logic". *Logique et Analyse* **195** 2006 pp 265–9.

[32] (With John Truss) "Ramsey's theorem and König's Infinity Lemma". Now online in *Archive for Mathematical Logic* 46 (2007), 37-42.

[33] "A Note on Paradoxes in Ethics". *in* Paradox: Logical, Cognitive and Communicative Aspects. *ed* Skilters, Eklund, Jónsson and Wiegand, University of Latvia 2006. pp 135–137.

[34] "Erdős-Rado without Choice". *Journal of Symbolic Logic* **72**, 2007, pp. 897–900.

[35] (with Olivier Esser). "Relaxing Stratification". *Bull. Belg. Math. Soc. Simon Stevin* **14** (2007), pp. 247–258.

[36] "Implementing Mathematical Objects in Set Theory". *Logique et Analyse* **50** No.197 pp 79–86 (2007).

[37] "Sharvy's Lucy and Benjamin Puzzle". *Studia Logica* **90** (2008) pp 249–256.

[38] "The Iterative Conception of Set". *Review of Symbolic Logic.* **1** (2008) pp 97-110.[1]

[39] (with Nathan Bowler) "Normal Subgroups of Infinite Symmetric Groups, with an Application to Stratified Set Theory". *Journal of Symbolic Logic* **74** (2009) pp 17–26.

[40] "Buddhism in Logic and Analytic Philosophy". Preface to "Pointing at the Moon"—the proceedings of BILAP, (Buddhism in Logic and Analytic Philosophy) Oxford University Press 2009 (see `www.dpmms.cam.ac.uk/~tf/BILAP.html`).

[41] "A Tutorial on Constructive NF", in the NF 70th anniversary volume *Cahiers du Centre de Logique* **16** 2009 pp 137–171.

[42] "Permutation methods in NF and NFU" (with Randall Holmes) in the NF 70th anniversary volume *Cahiers du Centre de Logique* **16** 2009 pp 33–76.

[43] "Paris-Harrington in an NF context", in OHYAST (100 Years of Axiomatic Set Theory) *Cahiers du Centre de Logique* 2010 **17** pp 97–109.

[44] "Yablo's Paradox and the Omitting Types Theorem for Propositional Logic", Logique et Analyse **54** No.215 (2011).

[45] "Alternative Set Theories" (in collaboration with Randall Holmes and Thierry Libert) in volume 6 ("Sets in the Twentieth Century") of the Handbook of the History of Logic, Elsevier 2012.

[46] "Rhetorical Devices in Analytic Philosophy": Editorial Introduction to Special Number of Logique et Analyse on Logic and Rhetoric, 2010.

[47] "NF at (nearly) 75". In the Special Quine number of Logique et Analyse, edited by Cresswell and Rini. 2010.

[48] (with Thierry Libert) "An Order-Theoretic account of some set-theoretical paradoxes" *Notre Dame Journal of Formal Logic* **52** (2011) pp 1–20.

[49] (with Jc Beall and Jeremy Seligman) "A Note on Freedom from Detachment in the Logic of Paradox", Notre Dame Journal of Formal Logic **54** 2012 pp 15–20.

[50] "Mathematical Objects arising from Equivalence Relations, and their Implementation in Quine's NF" in the proceedings of the Munich workshop, ed Cook and Reck; Philosophia Mathematica **24** 2016.

[51] "Yablo's Paradox as a theorem of Modal Logic" with Raj Goré. Logique et Analyse **59** No 235 (2016) pp 265–271.

Articles in press

[52] "Universal-Existential Sentences in the Theory of Positive and Negative Types" (with Anuj Dawar and Zachiri McKenzie) to appear in the Notre Dame Journal of Formal Logic

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[1]This was voted one of the ten best philosophy articles of 2008 by The Philosophers' Annual.

Papers under submission

[53] "The Category of Sets according to Stratified Set Theories" with Alice Vidrine and Adam Lewicki (submitted to the Journal of Symbolic Logic)

Papers in preparation

[54] "More on Church-Oswald Models" (A sequel to [14] and [38].)

[55] "Stratification-mod-n"

[56] "Scansets: a datatype of hereditarily strongly cantorian sets"

[57] "Scaling the Devil's Staircase: Recent work on the theory of positive and negative types"

[58] "Our Exagmination Round His Factification"—a backgrounder to Randall Holmes' recent proof of the consistency of Quine's New Foundations.

[59] "Dialetheism"

[60] "Delinearising Ehrenfeucht-Mostowski" (To be resubmitted to the Review of Symbolic Logic)

[61] "Curry-Howard in NF" (will possibly end up as joint work with Randall Holmes).

All of [53]-[61] are circulating in embargoed manuscript at the time of writing.

Extended Reviews

[1] From Dedekind to Gödel: Essays in the Development of the Foundations of Mathematics *Physis* 1997.

[2] Booth and Ziegler: "Finsler Set Theory: Platonism and Circularity" *Studia Logica* 1997.

[3] Barwise, J. and Moss, L. "Vicious Circles" *The Computer Journal* **40** (1998) pp 61-63.

[4] Hintikka, K. J. J. Selected papers vol 3: History and Philosophy of Logic (1999) **20** p 132.

[5] Pitts-Dybjer: Semantics and Logics of Computation *Studia Logica*.

[6] Kurt Gödel and the Riddle of the Nile, *New Scientist*, Nov 25, 2000 **168** (2266): 54-54.

[7] Luciano Floridi: *Philosophy and Computing: an Introduction.* Times Literary Supplement (August 11, 2000), 5080:27.

Translations-with-Commentaries

[1] Translation of Specker, E.P. Dualität (Dialectica, 1957) with a commentary, in Føllesdal, ed: Philosophy of Quine, **V**. Logic, Modality and Philosophy of Mathematics pp 7–16. Taylor-and-Francis 2001.

[2] Annotated translation of Jean Coret: *Sur les cas stratifiés du schema de remplacement.* Published electronically on `http://www.logic-center.be/Publications/Bibliotheque/default.html`.

[3] Annotated translation of Roland Hinnion's Ph.D thesis from 1976 "Sur La Théorie des Ensembles de Quine". Published electronically on `http://www.logic-center.be/Publications/Bibliotheque/default.html`