

# MARTIN SEWELL — CURRICULUM VITAE

## PERSONAL DETAILS

<b>Name:</b>	Martin Sewell	<b>Title:</b>	Dr
<b>Address:</b>	34 St Matthew's Gardens CAMBRIDGE CB1 2PJ	<b>Date of Birth:</b>	6 November 1968
		<b>Place of Birth:</b>	Reading, United Kingdom
		<b>Nationality:</b>	British
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## HIGHLIGHTS

- **PhD in machine learning/financial markets**
- **Cambridge postdoc**
- **quant trader**
- **blockchain research**
- **ultramarathon runner**

## ACADEMIC ACHIEVEMENTS

Apr. 13 – Jan. 16 Member of the **Postdocs of Cambridge** (PdOC) Communications and Events Subcommittees. Organised many events including leading a Postdocs of Cambridge team to successfully complete a Tough Mudder event, plus led a hiking trip to Snowdonia with 34 hikers. Also led a hike up Helvellyn via Striding Edge, took 26 postdocs up Ben Nevis and helped navigate the Yorkshire Three Peaks. A founding member and the **Treasurer of Entrepreneurial Postdocs of Cambridge** (EPOC).

Sep. 12 – Sep. 13 Postdoctoral Member of **Clare Hall, University of Cambridge**. On the Clare Hall May Ball 2013 committee.

Jan. 00 – Nov.08 **University College London** *PhD in Application of Machine Learning to Financial Time Series Analysis*. The research was motivated by the following thesis question: 'Can one improve upon the state of the art in financial time series analysis through the application of machine learning?' Registered as a full-time student, but at times worked part-time or full-time in parallel.

Oct. 93 – Sep. 94 **Birkbeck College, University of London** *Degree of MSc in Computing Science*

Oct. 87 – Jun. 90 **University of Bristol** *Degree of BSc with Honours in Mathematics*

Sep. 82 – Jul. 87 Sharnbrook Upper School and Community College *10 O levels, 4 A levels*

## EMPLOYMENT

Jan. 16 – present **Research and Development Specialist** at **nChain**. Conducting research in cryptography, blockchain technologies, cryptocurrencies (primarily Bitcoin) and writing white papers detailing innovations suitable as source documents for patent preparation. Also writing peer-reviewed journal publications and some development in C++ and Python.

Jan. 15 – Jun. 15 **Supervisor** for the Computer Laboratory, **University of Cambridge**, teaching *1B Computation Theory* and *1B Concepts in Programming Languages* for Girton College and Pembroke College.

Feb. 13 – present Undertook four research projects for **CAX Capital**. Project 1: Forecasting M&A (18 days), Project 2: CAX Cambridge Research Centre (5 days), Project 3: Analysis of Quant Capital, Part 1 (Q1 2014) (14 days), Project 4: Analysis of Quant Capital, Part 2 (Q1 2014) (16 days). Plus other contract work, wrote a literature review on systemic/country risk modelling. Working for **Titan CXi** on a start-up in the financial services industry. Helped **Cambridge Coding Academy** design a Machine Learning module as part of a course on Practical Data Analysis.

Jan. 02 – Jan. 13 Creator, developer and proprietor of **Tenancy-Agreements.co.uk**. Negligible time commitment. Sold business to Canonbury Management.

Aug. 12 Gave supervisions and took students on day trips as part of the *Cambridge Horizons Programme* at the University of Cambridge run by **Cambridge Educational Horizons**. The two-week residential course includes seminars on real estate

- economics, basic real estate valuation principles, real estate development and financial modelling for real estate.
- Apr. 10 – Jul. 12 Member of the Steering Committee of the **E3 Foundation**, a think-tank based in Cambridge, with editorial responsibility. The think tank develop policy solutions to the interconnected economic, energy and environmental problems that threaten future global prosperity. Unpaid.
- Apr. 12 – Jul. 12 Worked on a **Temporary Worker** contract for the Centre for Risk Studies at **Judge Business School**, University of Cambridge, on the Supply Chain Project. Reviewed publications on supply chain networks taken from the operations management literature, with an emphasis on risk. Helped model a supply chain from the automotive industry. Helped model the distribution side of a laptop supply chain, modelled an illustrative supply chain from the German automotive industry, sourced data for input-output tables and constructed a worldwide city dataset.
- Jan. 12 – Jun. 12 For two terms, worked as a **Supervisor** in the Faculty of Economics, **University of Cambridge**, providing undergraduate supervisions to 27 students for the Economics Tripos. Specifically, *Part I, Paper 3: Quantitative Methods in Economics* (Mathematics) (for Homerton College and Newnham College) and *Part IIA, Paper 3: Theory and Practice of Econometrics I* (for Newnham College, Queens' College and St Edmund's College).
- Jan. 12 – Feb. 12 Gave tutorials and took students on day trips as part of the two-week residential *Introductory Real Estate Finance Seminar* at the University of Cambridge run by **Cambridge Educational Horizons**.
- Mar. 09 – Sep. 11 **Senior Research Associate** at The Cambridge Centre For Climate Change Mitigation Research (4CMR), Department of Land Economy, **University of Cambridge**; working on climate change mitigation research for the Three Guineas Trust research project. The focus of the work was on econometric modelling of energy, the environment and the economy at the global level, using Fortran, IDIOM and Ox. Raised funds on two occasions, from Quant Capital and from E3G. Fixed term contract.
- Jun. 10 – Oct. 10 A **Quantitative Arbitrage Researcher** for **Quant Capital**, a New York-based hedge fund that focuses on merger arbitrage. Ran the research office in Cambridge. Performed a thorough literature review, the primary goal of which was to seek domain knowledge in order to optimally select relevant independent variables for a regression analysis that forecasts M&A-related activity. The other important goal was to assess the performance of the various linear and non-linear methods employed in the literature, e.g. linear discriminant analysis, logistic regression, artificial neural networks, etc. Hedge fund closed due to funding difficulties.
- Feb. 10 – May 10 As a remote contractor, wrote risk management software in MATLAB for **eStats Capital**, a fully automated, high frequency, short-term trading business located in Sydney.
- Nov. 05 – Jul. 07 A quant with the statistical arbitrage hedge fund **Cirrus Capital** in London. Paid expenses only.
- Jan. 05 – Mar. 05 As below, but part-time and mostly GIS (geographic information system).
- Oct. 04 – Nov. 04 **Temporary programmer** in The School of Water Sciences, **Cranfield University**. C++ programming for the TiGrESS project. Full time.
- Aug. 99 – Oct. 01 Worked for **Hurst Consulting** at Ladbroke's Head Office.
- Jan. 99 – Dec. 00 Researching academia for the Society of Technical Analysts. Paid expenses only.
- Jan. 99 – Apr. 99 Attended **STA Diploma** Course and passed exam at Southbank University.
- Jul. 97 – Sep. 97 Studied and passed **SFA Futures & Options Representative Examination**.
- May 97 – Jun. 97 Returned to work for OCM Ltd to help sort things out. Company ceased trading.
- Jan. 97 – Feb. 97 **Spot FX Trader's Assistant** with **OCM Ltd** in Gerrards Cross. Traded interbank Spot FX including cross currencies for institutional clients. Responsible for the whole of the back office and all operations. Wrote back office system.
- Apr. 96 – Jun. 96 **Assistant Coffee Trader** with **Truxo Coffee Limited**. On the physical trading desk, responsibilities included FX, keeping our position and back office work. Also spent time on the London Commodity Exchange floor.
- Jul. 95 – Jan. 96 A **Spot FX Trader** with **Prime Forex Limited**, London. Commission only.

Jan. 92 – Sep. 93 R & D Technician for **Unilever Research**, at their Colworth Laboratory. Worked on Lipton Ice Tea and also developed the tetrahedral tea bag. Left in order to pursue master's degree.

## COMPUTING

Hardware: PCs (10 years), DEC VAX-6310, Sun SPARCserver 470, BBC Model B (3 years)  
OSs/Guis: KDE, Linux, MS-DOS, UNIX, VAX/VMS, Windows (10 years)  
Languages: machine code; assembly language (6 months); BASIC (3 years), C (3 years), C# (1 year), C++ (5 years), COBOL (6 months), FORTRAN (1 year), IDIOM (1 year), Java, LISP, Pascal (1 year); MATLAB (2 years), MySQL, Ox, Python, R (6 months), SQL (1 year), Visual Basic (3 years)  
Applications: Access (2 years), ArcGIS (6 months), Cajá (3 months), Excel (10 years), Harvard Graphics (1 year), Lotus 1-2-3, MapInfo, PostgreSQL, Smart, Sun Accounts, TradingSolutions (6 months), Word (10 years), WordPerfect, Works (3 years)  
Web: HTML (5 years), XHTML (5 years), CSS (5 years), PHP (5 years), JavaScript

## SOFTWARE

[SVM<sub>dark</sub>](#) in C for Win32  
[winSVM](#) in C++ for Win32  
[formatlibsvm](#) in C++  
[Fisher kernel](#) in C++  
[Order book reconstruction](#) in C#  
[Rescaled range analysis](#) in C++  
[Fractal image compression](#) in C

## EXCEL/VBA

[Rescaled range analysis](#)  
[Monte Carlo portfolio optimization](#)  
[Portfolio performance measurement](#)  
[Kelly criterion](#)  
[Cumulative prospect theory calculator](#)  
[Performance metric analysis](#)  
[Runs test](#)

## WEB-BASED SCRIPTS (PHP)

[Buy/Sell Investment Tool](#)  
[Money management](#)  
[Cumulative prospect theory calculator](#)  
[Return and Volatility Converter](#)  
[Portfolio performance measurement calculator](#)  
[Significance test](#)

## FINANCE

Equities: PhD thesis includes a statistical analysis of stock markets, and an artificial stock market is developed. Work at Quant Capital was purely equity-based.  
Futures: eStats Capital trade futures markets.  
Foreign exchange: Prime Forex, OCM Ltd and Cirrus Capital traded FX. PhD thesis forecasts six FX markets using five machine learning models and daily data.  
Commodities: Worked on the physical desk at Truxo Coffee. During research for PhD, built trading systems to forecast the price of gold and silver on a daily basis.

## INTERESTS

Efficient market hypothesis, technical analysis, behavioural finance, trading, machine learning, kernel methods, support vector machines, multiagent systems, philosophy of science, probability, Bayesian inference, evolution, evolutionary psychology, market microstructure, climate change, climate change mitigation, econometrics, obstacle racing, running (including marathons, trail marathons and ultramarathons).

## PUBLICATIONS

- SEWELL, Martin V., 1994. [Fractal image compression](#). Master's thesis, Birkbeck College, University of London, London.
- McINTOSH, B. S., *et al.*, 2006. [Taking account of water supply infrastructure in land-use planning: An integrated supply-demand approach](#). In: Alexey VOINOV, Anthony J. JAKEMAN, and Andrea E. RIZZOLI, eds. *Proceedings of the iEMSs Third Biennial Meeting, "Summit on Environmental Modelling and Software"*. Burlington, VT: International Environmental Modelling and Software Society.
- SEWELL, Martin, 2008. [Gender \(sic\) equality \(sic\)](#). *Opticon*1826, 4.
- SEWELL, Martin V., and Wei YAN, 2008. [Ultra high frequency financial data](#). In: Maarten KEIJZER, ed. *Proceedings of the 2008 GECCO Conference Companion on Genetic and Evolutionary Computation*. New York: ACM, pp. 1847–1850.
- YAN, Wei, Martin V. SEWELL, and Christopher D. CLACK, 2008. [Learning to optimize profits beats predicting returns – Comparing techniques for financial portfolio optimisation](#). In: Maarten KEIJZER, ed. *Proceedings of the 10th Annual Conference on Genetic and Evolutionary Computation*. New York: ACM, pp. 1681–1688.
- THOMAS, Ray and Martin SEWELL, 2008. [The qualities of statistics as facts about society](#). *DataCritica: International Journal of Critical Statistics*, 1(2), 17–24.
- SEWELL, Martin, 2008. [Optimization and methods to avoid overfitting](#). Talk presented at the Automated Trading 2008 conference, London, 15 October 2008.
- BARKER, Terry, *et al.*, 2009. The economic benefits of international cooperation in mitigating climate change. An analysis using the E3MG model (version 2.4), carried out for *The Climate Group*. 3 August 2009.
- SEWELL, Martin, 2009. [Algorithm bias: A statistical review](#). *Futures*, September 2009, 38–40.
- SEWELL, Martin, 2009. [Decision making under risk: A prescriptive approach](#). *Proceedings of the 2009 Symposium; Academy of Behavioral Finance and Economics, September 23-25, 2009, Chicago, Illinois*. Montrose, CA: Academy of Behavioral Finance and Economics, p. 9. [slides](#)
- BARKER, Terry, *et al.*, 2009. [Breaking the climate deadlock. Cutting the cost: The economic benefits of collaborative climate action](#). Presented by Tony Blair to UN Secretary General Ban Ki-moon at the opening ceremony of Climate Week NYC in September 2009.
- SEWELL, Martin, 2009. Presentation on [Analysis of the economic implications of a strong global climate deal at the United Nations Climate Change Conference in Copenhagen, Business in the Community Ireland, CEO Forum on Climate Change](#), Dublin, 15 October 2009. video: [Part 1](#) [Part 2](#) [Part 3](#)
- STRETTON, Stephen and Martin SEWELL, 2009. The macroeconomic costs and benefits of stronger action to mitigate climate change at the EU level. Report for E3G, London, 11 November 2009.
- SEWELL, Martin, 2009. [Benefits of cooperation vis-à-vis mitigating climate change](#). Global video-conference on Copenhagen treaty, Common Future, 27–28 November 2009.
- BARKER, Terry, *et al.*, 2009. [The economic benefits of international cooperation in mitigating climate change](#). Briefing Note 42, Tyndall Centre for Climate Change Research, Norwich.
- SEWELL, Martin, 2009. [The benefits of cooperation vis-à-vis climate change mitigation](#). *The South-North Journal*, 32–33. Published at Copenhagen Summit, 11 December 2009.
- SEWELL, Martin, 2010. Spoke at [Copenhagen Storytelling](#), Cambridge, 26 January 2010.
- SEWELL, Martin, 2010. [COP 15](#). 4CMR Seminar Series, Lent 2010, Cambridge, 23 February 2010.
- SEWELL, Martin, 2010. [Behavioural finance](#), behaviouralfinance.net, 14 April 2010.
- SEWELL, Martin, *et al.*, 2010. Quant Capital's M&A strategy. 19 June 2010.
- SEWELL, Martin, 2010. The social discount rate: An evolutionary approach. Credexea meeting, Amsterdam, 20–21 June 2010. [abstract \(.pdf\)](#), [PowerPoint](#)
- SEWELL, Martin, 2010. [Emotions help solve the prisoner's dilemma. Behavioural Finance Working Group Conference: Fairness, Trust and Emotions in Finance](#), London, 1–2 July 2010. [slides](#)
- SEWELL, Martin, 2010. [Discussion of 'Portfolio optimisation for the anxious' presented by Greg Davies. Behavioural Finance Working Group Conference: Fairness, Trust and Emotions in Finance](#), London, 1–2 July 2010.
- SEWELL, Martin, 2010. Speaker on Algo panel: Innovation trading and technological developments in FX algo trading, [FX Week Europe](#), London, 16 November 2010.
- SEWELL, Martin, 2011. [The evolution of entrepreneurs and venture capitalists](#). In: Rassoul YAZDIPOUR, ed. *Advances in Entrepreneurial Finance: With Applications from Behavioral Finance and Economics*. New York: Springer, Chapter 11, pp. 205–217.
- SEWELL, Martin, 2011. [Policy via science](#). Discussion Paper 2011-01, E3 Foundation, Cambridge.

- SEWELL, Martin, 2011. [Being certain about climate change uncertainty](#), Mitigating Apathy, 17 January 2011.
- SEWELL, Martin, 2011. [Characterization of financial time series](#). Research Note RN/11/01, University College London, London.
- SEWELL, Martin, 2011. [Ensemble learning](#). Research Note RN/11/02, University College London, London.
- SEWELL, Martin, 2011. [Fund performance](#). Research Note RN/11/03, University College London, London.
- SEWELL, Martin, 2011. [History of the efficient market hypothesis](#). Research Note RN/11/04, University College London, London.
- SEWELL, Martin, 2011. [Money management](#). Research Note RN/11/05, University College London, London.
- SEWELL, Martin, 2011. [The Fisher kernel: A brief review](#). Research Note RN/11/06, University College London, London.
- SEWELL, Martin, 2011. [Psychology of successful investing](#), behaviouralfinance.net, 12 February 2011.
- SEWELL, Martin, 2011. [Human behaviour under risk and uncertainty: Are we really just conservative?, envecon 2011: Applied Environmental Economics Conference](#), London, 4 March 2011. [Presentation](#)
- SEWELL, Martin, 2011. [Model selection and uncertainty in climate change mitigation research. All models are wrong...: Model uncertainty & selection in complex models](#), Groningen, 14–16 March 2011.
- HAYNES, Paul, Sören LINDER, and Martin SEWELL, 2011. [Modelling energy-environment-economy interdependencies: A comparative analysis of ten E3 models](#), 12 May 2011. Available at SSRN: <http://ssrn.com/abstract=1839649>.
- SEWELL, Martin, 2011. [Climate change policy and game theory](#), Rapid Decarbonisation Project: Workshop 3, London, 21 September 2011.
- SEWELL, Martin, 2012. An artificial stock market. In: Joaquim FILIPE and Ana FRED, eds. [ICAART 2012: Proceedings of the 4<sup>th</sup> International Conference on Agents and Artificial Intelligence, Volume 2. Vilamoura, Algarve, Portugal, 6 - 8 February, 2012](#). Setúbal: SciTePress, pp. 293–300. [poster](#)
- SEWELL, Martin, and John SHAWE-TAYLOR, 2012. [Forecasting foreign exchange rates using kernel methods](#). *Expert Systems with Applications*, **39**(9), 7652–7662.
- SEWELL, 2012. [The demarcation of science, Young Statisticians' Meeting](#), Cambridge, 2–3 April 2012.
- SEWELL, Martin, Daniel RALPH, and Giovanni GIALLOMBARDO, 2012. Supply chain networks: A review of the operations management literature with a focus on risk. Judge Business School, University of Cambridge, 2 May 2012.
- SEWELL, Martin V., 2012. [Climate change, water and uncertainty](#). In: *IWA World Congress on Water, Climate and Energy*. London: International Water Association.
- SEWELL, Martin, 2012. [Ideology-free politics: A bottom-up approach](#), CRASSH Postdoctoral Research Seminar Series. Cambridge, 21 June 2012. [PowerPoint](#).
- SEWELL, Martin, 2012. [The philosophy of risk](#). In: *URMPM World Congress 2012 in London. "The Human Factor in Risk". Proceedings*. Union of Risk Management for Preventive Medicine (URMPM), pp. 80.
- SEWELL, Martin, 2012. [The efficient market hypothesis: Empirical evidence](#). *International Journal of Statistics and Probability*, **1**(2), 164–178.
- SEWELL, Martin, 2013. Forecasting M&A targets. CAX Technologies, 2 May 2013.
- SEWELL, Martin, 2013. CAX Cambridge Research Centre. CAX Technologies, 2nd Quarter 2013.
- SEWELL, Martin, 2013. [Philosophy, anti-fragility & statistics. Anti-fragility and statistical thinking](#) session, Royal Statistical Society 2013 International Conference. Newcastle, 2–5 September 2013. Invited speaker.
- SEWELL, Martin, 2014. [Evolution](#), Cambridge, 31 March 2014.
- Quant Capital Ltd, 2014. Merger Arbitrage: Model and Platform Technology.
- SEWELL, Martin, and Stephen STRETTON, 2014. Systemic/country risk modelling.
- CRAWFORD-BROWN, Doug, and Martin SEWELL, 2014. [The case for decarbonisation](#). In: Doug CRAWFORD-BROWN and Terry BARKER, eds. *Decarbonising the World Economy: Assessing the Feasibility of Policies to Reduce Greenhouse Gas Emissions*. London: Imperial College Press, Chapter 1.
- SEWELL, Martin, 2015. [Hypothermia at Tough Guy – a real life story](#). Muddy Race, 5 February 2015.
- PATEL, Nikunj, and Martin SEWELL, 2015. [Calendar anomalies: A survey of the literature](#). *International Journal of Behavioural Accounting and Finance*, **5**(2), 99–121.
- SEWELL, Martin Victor, 2017. [Application of Machine Learning to Financial Time Series Analysis](#). PhD thesis, University College London, London.

Reviewed papers for *International Journal of Neural Systems, Managerial Finance, Neurocomputing*, 2011 *International Joint Conference on Neural Networks (IJCNN 2011)*, *Environmental and Resource*

*Economics, 2012 International Joint Conference on Neural Networks (IJCNN 2012), Artificial Intelligence Research, Mathematical Problems in Engineering, International Journal on Artificial Intelligence Tools, IEEE Symposium Series on Computational Intelligence (SSCI) 2013, The Journal of Behavioral Finance & Economics (JBF&E), Journal of Educational Research and Studies, Neural Network World, International Joint Conference on Neural Networks (IJCNN 2015), Journal of Scientific Research and Studies, Physica A, Journal of Business Economics and Management, Journal of Water and Climate, Expert Systems with Applications, Quantitative Finance and Economics and International Journal of Economics and Business Research. On the Editorial Review Board of Artificial Intelligence Research.*

## **REFEREES**

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