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Personal

Dr Malleson is an Associate Professor of Geographical Information Science at the Centre for Spatial Analysis and Policy at the School of Geography, University of Leeds, UK. He has a PhD in Geography and undergraduate degrees in Computer Science (BSc) and Multidisciplinary Informatics (MSc).

Most of his research focuses on the development of computer models that help to understand and explain social phenomena. He has a particular interest in simulations of crime patterns, and in models that can be used to describe the flows of people around cities. More recently, he has become interested in how 'big data', agent-based modelling, and smart cities initiatives can be used to reduce the impacts of phenomena such as pollution or crime.

Education

PhD. School of Geography, University of Leeds, 2010.

MSc Multidisciplinary Informatics (distinction). School of Computing, University of Leeds, 2006.

BSc Computer Science (2-i). School of Computing, University of Leeds, 2005.

Employment History

Jan 2016 - present. Associate Professor of Geographical Information Science, University of Leeds.

July 2012 – Jan 2016 . Lecturer in GIS, University of Leeds.

Feb 2010 – July 2012. Research fellow, University of Leeds.

Oct 2006 – Feb 2010. ESRC-funded doctoral student with lecturing duties, University of Leeds.

Sept 2005 – Aug 2006. Masters student, University of Leeds.

Sept 2002 – Aug 2005. Undergraduate student, University of Leeds.

Journal Articles

Published

Harris, Richard, David O'Sullivan, Mark Gahegan, Martin Charlton, Lex Comber, Paul Longley, Chris Brunsdon, **Nick Malleson**, Alison Heppenstall, Alex Singleton, Daniel Arribas-Bel, Andy Evans (2017). More bark than bytes? Reflections on 21+ years of geocomputation. *Environment and Planning B: Urban Analytics and City Science* 44 (4) 598–617. Online first: <http://journals.sagepub.com/doi/full/10.1177/2399808317710132>. DOI: 10.1177/2399808317710132.

Alotaibi, Nawaf Ibrahim, Andrew J. Evans, Alison J. Heppenstall, and **N. Malleson** (2017) How Well Does Western Environmental Theory Explain Crime in the Arabian Context? The Case Study of Riyadh, Saudi Arabia. *International Criminal Justice Review*. DOI: <https://dx.doi.org/10.1177/1057567717709497>.

Andresen, M.A., S.J. Linning and **N. Malleson** (2017). Crime at places and spatial concentrations: exploring the spatial stability of property crime in Vancouver BC, 2003-2013. *Journal of Quantitative Criminology* 33(2), 255 - 275. DOI: <http://dx.doi.org/10.1007/s10940-016-9295-8>

Ward, J., A. Evans, **N. Malleson** (2016) Dynamic calibration of agent-based models using data assimilation. *Royal Society Open Science*. 3:150703. (open access) DOI: <https://dx.doi.org/10.1098/rsos.150703>

Malleson, N., and Andresen, M.A. (2016) Exploring the impact of ambient population measures on London crime hotspots. *Journal of Criminal Justice* pp 52-63. (open access) <http://dx.doi.org/10.1016/j.jcrimjus.2016.03.002>

Heppenstall, A., **N. Malleson** and A. Crooks (2016) ‘Space, the Final Frontier’: How Good are Agent-Based Models at Simulating Individuals and Space in Cities? *Systems* 4(1) 9. DOI: 10.3390/systems4010009

Malleson, N. and M.A. Andresen (2015a) Spatio-temporal crime hotspots and the ambient population. *Crime Science* 4(10). Available online: <http://www.crimesciencejournal.com/content/4/1/10>

Andresen, M.A., and **N. Malleson** (2015). Intra-week spatial-temporal patterns of crime. *Crime Science* 4(12). Available online: <http://www.crimesciencejournal.com/content/4/1/12>

Malleson, N., Andresen, M.A. (2015b). The impact of using social media data in crime rate calculations: shifting hot spots and changing spatial patterns. *Cartography and Geographic Information Science* 42, 112–121. doi:10.1080/15230406.2014.905756

Andresen, M.A. and **N. Malleson** (2014). Police Foot Patrol and Crime Displacement: A Local Analysis. *Journal of Contemporary Criminal Justice* 30(2) 186–199. doi:10.1177/1043986214525076

Jenkins, K., J. Hall, V. Glenis, C. Kilsby, M. McCarthy, C. Goodess, D. Smith, **N. Malleson**, M. Birkin (2014) Probabilistic spatial risk assessment of heat impacts and adaptations for London. *Climatic Change* 1–13.

Birkin, M., Harland, K., **Malleson, N.**, Cross, P., Clarke, M. (2014) An Examination of Personal Mobility Patterns in Space and Time Using Twitter *International Journal of Agricultural and Environmental Information Systems* 5, 55–72.

Birkin, M., K. Harland and **N. Malleson** (2013). The Classification of Space-Time Behaviour Patterns in a British City from Crowd-Sourced Data. In Murgante, B., Misra, S., Carlini, M., Torre, C., Nguyen, Hong-Quang, Taniar, D., Apduhan, B. O. and Gervasi, O. (Eds) *Computational Science and Its Applications – Lecture Notes in Computer Science* 7974 179-192

Malleson, N., A. Evans, A. Heppenstall, L. See (2013) The Leeds Burglary Simulator. *Informatica e diritto* special issue: *Law and Computational Social Science* 1 211-222

Andresen, M.A. and **N. Malleson** (2013). Crime seasonality and its variations across space. *Applied Geography*, in press.

Hirschfield, A., M. Birkin, C. Brunson, **N. Malleson** and A. Newton (2013). How Places Influence Crime: The Impact of Surrounding Areas on Neighbourhood Burglary Rates in a British City. *Urban Studies* online first: <http://usj.sagepub.com/content/early/2013/06/19/0042098013492232>

Malleson, N., A. Heppenstall, L. See and A. Evans (2013). Using an Agent-Based Crime Simulation to Predict the Effects of Urban Regeneration on Individual Household Burglary Risk. *Environment and Planning B: Planning and Design* 40 405–426.

Malleson, N. and M. Birkin (2012). Analysis of crime patterns through the integration of an agent-based model and a population microsimulation. *Computers, Environment and Urban Systems* 26(6) 551-561.

Malleson, N., L. See, A. Evans and A. Heppenstall (2012). Implementing Comprehensive Offender Behaviour in a Realistic Agent-Based Model of Burglary. *Simulation: Transactions of the Society for Modeling and Simulation International* 88(1) 50-71.

M. Birkin, **N. Malleson**, A. Hudson-Smith, S. Gray and R. Milton (2011). Calibration of a spatial simulation model with volunteered geographical information. *International Journal of Geographical Information Science* 25(8) 1221-1239.

N. Malleson and M. Birkin (2011). Towards Victim-Oriented Crime Modelling in a Social Science e-Infrastructure. *Philosophical Transactions of the Royal Society A* 369(1949) 3353-3371.

M.A. Andresen and **N. Malleson** (2011). Testing the stability of crime patterns: implications for theory and policy. *Journal of Research in Crime and Delinquency* 48(1): 58 - 82.

Malleson, N., A. Heppenstall and L. See (2010). Crime reduction through simulation: An agent-based model of burglary. *Computers, Environment and Urban Systems* 31(3) 236-250.

Malleson, N., A. Evans, and A. Jenkins (2009). An Agent-Based Model of Burglary. *Environment and Planning, B: Planning and Design* 36(6) 1103-1123.

Malleson, N. and P. L. Brantingham (2009). Prototype Burglary Simulations For Crime Reduction and Forecasting. *Crime Patterns and Analysis* 2(1).

Other Publications

Malleson, N., Alison Heppenstall and Andrew Crooks (2018) Place-Based Simulation Modeling: Agent-Based Modeling and Virtual Environments. *Oxford Research Encyclopedia of Criminology*. Oxford University Press. DOI: 10.1093/acrefore/9780190264079.013.319

Crooks, A.T., **Malleson, N.**, Wise, S. and Heppenstall, A. (under review). Big Data, Agents and the City, in Schintler, L.A. and Chen, Z. (eds), *Big Data for Urban and Regional Science*, Springer.

Crooks, A.T., Heppenstall, A. and **Malleson, N.** (under review). Agent-based Modelling, in Huang, B. (ed), *Comprehensive Geographic Information Systems*, Elsevier.

Heppenstall, A. and **N. Malleson** (2015). How big data and The Sims are helping us to build the cities of the future. *The Conversation*. Published 22 October, 2015 2.38pm BST.

Birkin, M. and **N. Malleson** (2015) Modelling and Simulation. In Halfpenny, P. and Procter, R. (Eds) *Innovations in Digital Research Methods*, Chapter 6. SAGE Publications Ltd.

Malleson, N. and A. Evans (2014) Agent-Based Models to Predict Crime at Places. In G. Bruinsma and D. Weisburd (Eds) *Encyclopedia of Criminology and Criminal Justice* pp 41-48 . Springer.

Malleson, N. (2014) Calibration of Simulation Models. In G. Bruinsma and D. Weisburd (Eds) *Encyclopedia of Criminology and Criminal Justice* pp 243 ? 252 . Springer.

Malleson, N., L. See, A. Evans, A. Heppenstall (2014) Optimising an Agent-Based Model to Explore the Behaviour of Simulated Burglars. *Theories and Simulations of Complex Social Systems*. Volume 52 of Intelligent Systems Reference Library, pp 179-204. Springer.

Birkin, M. and **N. Malleson** (2014) An investigation of the sensitivity of a dynamic microsimulation model of urban neighbourhood dynamics. In Dekkers G., Keegan, M. and O'Donoghue, C. (eds) *New pathways in microsimulation*. Ashgate.

Malleson, N. and M. Birkin (2013). Estimating Individual Behaviour from Massive Social Data for An Urban Agent-Based Model. In A. Koch and P. Mandl (Eds) *GeoSimulation: Modeling Social Phenomena in Spatial Context*. Germany: Lit Verlag. ISBN: 978-3-643-90345-7

Andresen, M.A. and **N. Malleson** (2013). Spatial heterogeneity in crime analysis. In M. Leitner (ed.) *Crime Modeling and Mapping Using Geospatial Technologies*. New York, NY: Springer, in press.

Malleson, N. (2012) Using Agent-Based Models to Simulate Crime. In Heppenstall, A., Crooks, A., See, L. and Batty, M (editors) *Agent-based Models of Geographical Systems*. Springer.

Malleson, N. (2010). *Agent-Based Modelling of Burglary*. PhD Thesis, School of Geography, University of Leeds.

Malleson, N. (2008). Simulating burglary: what does the future hold for Leeds? *The Yorkshire and Humber Regional Review* 18(2).

Major Grants Awarded (as principal investigator)

€1.5M (£1.3M) ERC Starting Grant entitled *Data Assimilation for Agent-Based Models* (<https://dust.leeds.ac.uk/>).

£312k ESRC Future Research Leaders grant entitled *Understanding Urban Movements through Big Data and Social Simulation* (<http://surf.leeds.ac.uk/>).

Grants Awarded (as co-investigator)

£250k, ESRC, *HABITS: Improved Policy to Mitigate Pollutant and Inactivity Related Health Burdens through New Big Data*

£6.7M, ESRC, *Consumer Data Research Centre*

£5.5M, HEFCE, *N8 Policing Research Partnership: Innovation and the Application of Knowledge for More Effective Policing*

£130k, ESRC, *An Exploratory Knowledge Exchange Platform for Policing: Exploiting Knowledge Assets, Utilising Data and Piloting Research Co-production*

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