Professor Tim Baines MSc PhD CEng FI MechE FIET FHEA
Chair in Operations Strategy, Aston Business School.

Professor Baines is a leading international authority on servitization and spends much of his time working hands-on with both global and local manufacturing companies to understand servitization in practice and help to transform businesses.

At Aston Professor Baines holds responsibility for leading the Aston Centre for Servitization Research and Practice. This is a global activity pioneering research, community development, and education on servitization. He is also the Head of the Operations and Information Management Group, and member of the Business School Executive. Prior to joining Aston he led the Manufacturing Systems Centre at Cranfield; the Product-Service Systems (PSS) theme of the EPSRC sponsored IMRC (Innovative Manufacturing Research Centre); and was a co-creator and Technical Director of the Boeing Centre in IVHM (technology systems for asset management).

Professor Baines works extensively across engineering and management disciplines, he is highly active in post-graduate and executive teaching and supervision, has a strong track record of raising research funding, and consistently publishes in the leading journals of his field. He is especially engaged with programmes that bridge engineering and management disciplines. In particular, he was a co-founder of the Operations Excellence MSc programme at Cranfield, which was largely supported by Rolls-Royce and BAE Systems. He receives excellent feedback for his teaching at all levels. As a supervisor, he has personally supervised over 90 post-graduate students and several industrially supported group projects.

Professor Baines has experience that covers a wide range of disciplines including manufacturing strategy, industrial engineering, and technology management. His career started with engineering apprenticeship training and has progressed through a variety of industrial and academic positions, including that of Visiting Scholar within the Centre for Technology, Policy and Industrial Development at the Massachusetts Institute of Technology. He holds a variety of positions, including membership of EPSRC College of Peers, a Fellow of both the Institution of Mechanical Engineers and Institution of Engineers and Technologists, and is a Chartered Engineer.

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CURRENT EMPLOYMENT

Professor of Operations Strategy, Aston Business School, Birmingham. Since October 2011

Management responsibilities include:

- Head of Operations and Information Management Group (Since September 2013). Group consists of almost 40 members of academic, research and administration staff delivering a range of undergraduate and postgraduate programmes. Head of Group responsibilities include the leading the development of the group, all associated administrative processes, and acting on the Executive of the Business School.

Teaching responsibilities include:

- MBA, Operations Management, Full-time and part-time programmes

Research programmes include:

- Director, Aston Centre for Servitization Research and Practice. (Created May 2012). This is the world’s first and only centre dedicated entirely to understanding and promoting servitization within the global market, and incorporates researchers, practitioners and industry leaders who have a unique depth of knowledge and experience of the models, frameworks and practical requirements of this business model transformation for manufacturers. The Centre’s mission is threefold:
  - Pioneer internationally leading research to develop knowledge and tools that enable servitization
  - Foster global networks of practitioners and researchers to inspire adoption of advanced services
  - Develop leaders across the globe with the skills to drive business transformation

The Centre hosts a range of Research Council and European-funded research and business support projects which provide the opportunity to work alongside businesses undergoing servitization, and develop tools such as serious gaming technologies to further enable that transformation. All members of the Centre engage regularly with industry through in-depth longitudinal research or design and delivery of executive education and development. The year’s work within both academia and industry culminates in the annual Spring Servitization Conference, an international event hosted at Aston University which brings together leading thinkers and executives from around the world to share and develop best practice.

Since its launch, the Aston Centre is now: (1) leading a grant portfolio of over £3M from EPSRC, ESRC and ERDF (see Table 1); (2) hosting twelve full-time posts at Aston and one each at the Universities of Sheffield and Coventry; (3) working with over 80 business ranging from SMEs in the West Midlands to Internationals such as Goodyear and Xerox; (4) having impact on regional small business to the tune of more than £6M; (5) holder of the most highly-cited research papers on servitization and Product-Service Systems; (6) authorship of frequent articles in the national press such as the Times and business magazines such as The Manufacturer; (7) home of the Spring Servitization Conference; (8) delivering two MBA modules on technology-led services; and (9) holding the number one position on Google for servitization.

<table>
<thead>
<tr>
<th>Funding body</th>
<th>Value</th>
<th>Duration</th>
<th>Key partners</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERDF</td>
<td>£ 814,000</td>
<td>3 years</td>
<td>Pera Training, UKCeB</td>
</tr>
<tr>
<td>EPSRC</td>
<td>£1635662</td>
<td>5 years</td>
<td>Advanced Manufacturing Research Centre, University of Sheffield; Serious Games Institute, Coventry University</td>
</tr>
<tr>
<td>ESRC</td>
<td>£25,000</td>
<td>30 months</td>
<td>University West of England, University of Strathclyde, University of Reading, Lancaster University, University of Warwick, University of Exeter.</td>
</tr>
<tr>
<td>Xerox, Goodyear, PTC and others</td>
<td>£215,000</td>
<td>Ongoing</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Table 1: Overview of key funding of the Aston Centre (since May 2012)
PREVIOUS EMPLOYMENT

Professor of Strategic Manufacture, Department of Manufacturing, Cranfield University. 2005 - 2011

Management responsibilities included:

- Head of the Manufacturing Systems Centre within the Department for Manufacturing (since August 2004). Group consisted of 10 members of academic staff along with the associated responsibility for four Masters Programmes.

- Leader of the Product-Service Systems research of the Cranfield Innovative Manufacturing Research Centre. (responsibility for £4,600,000). This theme dealt with the adoption of services-led competitive strategies by UK based manufacturers. This leadership role included responsibility for EPSRC funding, and almost forty staff and students across the Schools of Management, Engineering and Science at Cranfield. Duties included development and execution of the research agenda and process, represent the programme at the Centre Management Committee and Industrial Steering Committee. Thirty industrial collaborators to this programme, including Rockwell, BAE Systems, Bombardier, Babcock, HP and IBM. The international review of this research was extremely complementary about the management and development of this multi-disciplinarily theme.

- Co-creator and Technical Director of the Cranfield Boeing Integrated Vehicle Health Management (IVHM) Centre (Industry / RDA £8,500,000). This Centre resulted directly from successes within the PSS theme of the IMRC. Together with Professor Phil Irving led a competitive bid to The Boeing Company to create an AMRC style research activity at Cranfield for IVHM (technology systems for asset management). Subsequently, BAE Systems, Thales, Meggit and Rolls Royce Plc have all joined the Centre, each contributing £1 million cash, and complementing a further £3.5 million won from the EEDA and the EPSRC.

- Course Director for the Engineering and Management of Manufacturing Systems MSc (September 2003-7). This programme has been running since 1983 and typically recruits 30 students each year.

- Course Director on the Manufacturing Consultancy MSc (September 2003-7).

- Coordinator and monitor of all MSc individual thesis projects and group projects (2003-7) for both Engineering and Management of Manufacturing Systems and Manufacturing Consultancy. Typically 60 individual theses and four group projects each year.

Teaching responsibilities included:

Doctorate level: Typically delivered as part of the cross-schools research training programme. Lectures given on the topics of:

- Cross-School collaborative research
- Approaches to research and practical Research Methods
- Writing Research Papers and proposals

Masters level: Topics covered include:

- Manufacturing Operations Strategy
- Realising Competitive Manufacture
- Manufacturing in Action (International study-tour programme)

Short courses: A number of short course programmes have been delivered and these include:

- ‘Time Based Manufacturing’ (2000). A three day, open short course, run along with CIM consultants
Research programmes included:

Research income generated at Cranfield exceeds several million pounds (see Tables 2). Funding was been won from both industry and the EPSRC. All EPSRC work was been assessed as either ‘outstanding’ of ‘tending towards outstanding’ and there are many examples of repeat funding from industrial partners. In later years significant contributions were made towards winning and leading large research programmes (i.e.: Boeing Centre of Excellence). These resulted in a range of outcomes, including over 200 research papers and successful supervision of 20 doctoral students (appendix 1 & 2). Key research programmes at Cranfield included:

- Organising for services growth and productivity; secondment to Caterpillar Inc, USA (Global Network Award, Royal Academy of Engineering/ £27,000). The Caterpillar organisation is a world leader in the delivery of products and services. A secondment was negotiated with Caterpillar to enable a study of their practices and technology. This was supported by a prestigious award from the Royal Academy of Engineering, and engaged CAT Research, Development and Marketing functions along with a selection of their dealerships and customers across the USA.

- PSS-Operations: Design of the services delivery system (£520,000 IMRC/EPSRC). This was a core project within the PSS theme of the Cranfield IMRC. It set out to establish the strategic principles of successful operations for delivering product-centric services. Of particular interest is the transformation from traditional production to product-centric service operations (the servitization process). The principal industrial collaborators with this project are MAN, Xerox, Caterpillar, Alstom and Smiths.

- PSS/IVHM Mapping (£420,000 IMRC/EPSRC). This project linked the PSS theme of the IMRC with the IVHM Centre. It set out to understand the role of informed product technologies in services strategies. The principal industrial collaborators were The Boeing Company, Rolls-Royce Plc, BAE Systems, Thales and Meggit Avionics.

- Green operations (EPSRC, £30,000). This project represents an embryonic and personal interest in environmental issues, along with a desire to maintain an engagement with EPSRC responsive mode funding. It is concerned with the particular operations management challenges faced by green producers. This was a relatively small (£30,000) exploratory study in collaboration with the Business School at Exeter University.

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Senior Lecturer, Department of Manufacturing, Cranfield University. (May 1998 – August 2005)
This position was taken to enable a more research centric career progression. Within the then Manufacturing Systems Department, responsibilities were taken for development of research and teaching in Manufacturing Strategy and Systems Modelling.

This position was taken on my return from the USA and was an extension of normal duties as a Senior Lecturer at Stafford. These duties included; co-chair school research committee; preparation of research portfolio documentation; and preparation of research supervision code of practice.

Supported by a prestigious award from the Royal Academy of Engineering. Principal research was an investigation into manufacturing technology sourcing practices. Hosts at MIT were Professor Charlie Fine and Dr Daniel Whitney within the Center for Technology, Policy and Industrial Development (CTPID), Sloan School of Management. To complement this work, two months were also spent at Auburn University, Alabama, working with Professor Paul Swamidass. This work investigated strategies and policies in the adoption and development of technology within manufacturing operations.

Senior Lecturer, School of Engineering, Staffordshire University, Stafford, England. (1989 – February 1996)
Teaching load at Masters and Undergraduate, typically between 350 and 400 hours each year. At Masters level teaching and supervision included; manufacturing system modelling; manufacturing and operations strategy and advanced manufacturing technology. In addition, undergraduate teaching included; simulation modelling (final year honours); manufacturing strategy (final year honours); technology management (second year honours). Short courses including: ‘Just-in-time Manufacturing’ for JCB Excavators; ‘Advanced Manufacturing Technology’ for JCB Excavators; ‘Manufacturing System Modelling’ for Creda/Hotpoint. Various administration duties including; Course Director for MSc in CAE 1992 – 94; Responsible for 2 manufacturing technology laboratories and associated technicians; and involved with the programme management and delivery of three Teaching Company Schemes.
Production Engineer, GEC Turbine Generators, Stafford 1987 – 1989

The principal responsibility in this role was the development of the company’s manufacturing operation. Projects included; setting up a machining cell for prismatic and rotational components; acquisition of a large Rotor Lathe (120 Tonnes between centres); and leading a team of four graduate engineers to carry out an investigation into sub-contracting. Final position was as project leader for a similar team addressing total machine shop reorganisation and investment, directly reporting to the Managing Director.

Earlier employment includes:
- Visiting Scholar Instituto Superior Técnico, Lisbon, Portugal 1990
- Graduate Engineer, Baker Perkins, Peterborough 1985 – 1987
- Process Engineer, Campden Food Preservation Research Association, Gloucestershire 1984 – 1985
- Technical Apprentice, Manor Bakeries, Wythenshawe, Manchester 1982 - 1983

OTHER PROFESSIONAL APPOINTMENTS

Appointments that are largely associated with my current position at Aston include:
- Member of the Consortium of Manufacturing Engineering Heads
- Member of the European Operations Management Association
- Member of the Production and Operations Management Society
- Member of EPSRC College of Peers
- Member of the UK Manufacturing Professors Forum
- Chartered Engineer
- Fellow of the Institution of Mechanical Engineers
- Fellow of the Institution of Engineers and Technologists
- Currently referee a number of journals, including: The International Journal of Production and Operations Management (since 1998); International Journal of Advanced Manufacturing Systems (since 2000); International Journal of Production Research (since 2000).

EDUCATION

PhD in Manufacturing Strategy Formulation, Cranfield University 1990 – 1994

This research programme focused on how to evaluate the effects of a manufacturing strategy on the performance of operations. Personal achievements during this programme included; experience of facilitating strategy formulation at five manufacturing companies, a comprehensive knowledge of manufacturing management, technologies and methodologies, and modelling techniques. This programme was conducted on a part-time basis during my employment at Staffordshire University, and was nominated for the Lord Kings Norton prize.

MSc in Manufacturing Systems Engineering, Cranfield University 1985 – 1987

This two year programme focused at the design and operation of manufacturing facilities. Sponsored by Baker Perkins, Peterborough. Topics covered included; manufacturing operations management, advanced manufacturing technology; systems engineering; and simulation of manufacturing systems. This programme included group project work for JCB Excavators Ltd, (Group project, team leader), and an individual thesis for Baker Perkins based on the modelling and analysis of an automated materials storage system. The first year of this programme was equivalent to the final year of an honours degree, and his overall grade was First Class.

Earlier education was carried out as part of technician apprenticeship training. This included a HND sandwich course in Mechanical Engineering (North Staffordshire Polytechnic 1981 – 1984) which incorporated two industrial placements each of six months duration. These were carried out with Manor Bakeries Ltd (Manchester) and A.L. Dunn Ltd (Nuneaton). This training as a technician apprentice built on a foundation provided by an OND in Technology (Newcastle College of Further Education. 1979 – 1981) which introduced basic principles of engineering and management. Apprenticeship training was completed with Baker Perkins Ltd (Peterborough).
<table>
<thead>
<tr>
<th>Projects (in chronological order)</th>
<th>Sponsor</th>
<th>Total income (cash)</th>
<th>Final Year</th>
<th>Grant form</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMRC Continuation Funding (co-author with P. Deasley, D. Stephenson, D. Tranfield and A. Neely)</td>
<td>EPSRC</td>
<td>4,600,000</td>
<td>2011</td>
<td>Programme</td>
</tr>
<tr>
<td>The Cranfield Boeing Integrated Vehicle Health Management Centre</td>
<td>EEDA Boeing BAE Systems Meggit Thales EPSRC</td>
<td>3,000,000 1,000,000 1,000,000 1,000,000 1,000,000 500,000</td>
<td>2014</td>
<td>Programme</td>
</tr>
<tr>
<td>Service Delivery System design</td>
<td>IMRC / EPSRC</td>
<td>520,000</td>
<td>2011</td>
<td>Research</td>
</tr>
<tr>
<td>Mapping High Value IVHM</td>
<td>IMRC / EPSRC</td>
<td>420,000</td>
<td>2011</td>
<td>Research</td>
</tr>
<tr>
<td>Global Network Award with Caterpillar, USA.</td>
<td>Royal Academy of Engineering</td>
<td>27,000</td>
<td>2010</td>
<td>Research</td>
</tr>
<tr>
<td>Green production pilot study (with Exeter University Business School)</td>
<td>EPSRC</td>
<td>35,000</td>
<td>2009</td>
<td>Research project</td>
</tr>
<tr>
<td>Stage 00: A study of servitization at Rolls-Royce Plc (with S. Evans)</td>
<td>IMRC / EPSRC</td>
<td>320,000</td>
<td>2008</td>
<td>Research project</td>
</tr>
<tr>
<td>Manufacturing systems design for the composite wing</td>
<td>Airbus</td>
<td>28,500</td>
<td>2008</td>
<td>MSc Group Project</td>
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<tr>
<td>Green factory design</td>
<td>Airbus</td>
<td>20,000</td>
<td></td>
<td>MSc Group project</td>
</tr>
<tr>
<td>Process for ramping-up capabilities</td>
<td>Airbus</td>
<td>20,000</td>
<td></td>
<td>MSc Group project</td>
</tr>
<tr>
<td>Factory design project</td>
<td>Brompton Bicycles</td>
<td>14,000</td>
<td>2007</td>
<td>MSc Group project</td>
</tr>
<tr>
<td>Engine plant simulation</td>
<td>Ford Motor Company</td>
<td>20,000</td>
<td></td>
<td>MSc Group project</td>
</tr>
<tr>
<td>Technology monitoring</td>
<td>Ford Motor Company</td>
<td>20,000</td>
<td></td>
<td>MSc Group project</td>
</tr>
<tr>
<td>White Collar Lean</td>
<td>Airbus</td>
<td>45,000</td>
<td>2006</td>
<td>Consulting</td>
</tr>
<tr>
<td>People: Modelling their behaviour in manufacturing environments</td>
<td>EPSRC Ford Motor Company</td>
<td>180,000 195,000</td>
<td>2005</td>
<td>Research project</td>
</tr>
<tr>
<td>Human Performance Modelling Research Network</td>
<td>EPSRC / IMRC</td>
<td>80,000</td>
<td></td>
<td>Network</td>
</tr>
<tr>
<td>Supply chain analysis</td>
<td>Unipart</td>
<td>10,000</td>
<td></td>
<td>MSc Group project</td>
</tr>
<tr>
<td>New engine facility design</td>
<td>Ford Motor Company</td>
<td>15,000</td>
<td></td>
<td>MSc Group project</td>
</tr>
<tr>
<td>Strategically positioning the boundary between internal and external operations</td>
<td>EPSRC LCP Consultants Instem Technologies Nycomed Amersham</td>
<td>106,000 20,000 20,000 16,000</td>
<td>2004</td>
<td>Research project</td>
</tr>
<tr>
<td>Manufacturing strategy implementation</td>
<td>Emerson Electric</td>
<td>32,000</td>
<td></td>
<td>Research project</td>
</tr>
<tr>
<td>The manufacturing technology acceptance process</td>
<td>Ford Motor Company</td>
<td>60,000</td>
<td></td>
<td>Research project</td>
</tr>
<tr>
<td>Human Centred Manufacturing at the A380 factory</td>
<td>Airbus</td>
<td>50,000</td>
<td>2003</td>
<td>Consulting</td>
</tr>
<tr>
<td>A methodology for business process improvement</td>
<td>Benefits Agency</td>
<td>45,000</td>
<td>2002</td>
<td>Research project</td>
</tr>
<tr>
<td>A process for outsourcing the manufacturing function</td>
<td>Instem Technologies</td>
<td>50,000</td>
<td></td>
<td>Research project</td>
</tr>
<tr>
<td>Assessing the positioning of the manufacturing organisation; A feasibility study</td>
<td>EPSRC</td>
<td>50,000</td>
<td></td>
<td>Research project</td>
</tr>
<tr>
<td>A process for manufacturing technology acquisition</td>
<td>Rolls-Royce Plc EPSRC</td>
<td>24,000 50,000</td>
<td>2001</td>
<td>Research project</td>
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<tr>
<td>Study tour to the Thomas Walter Center for Technology Management, USA</td>
<td>EPSRC</td>
<td>2,500</td>
<td></td>
<td>Travel award</td>
</tr>
<tr>
<td>Modelling the resource we call human</td>
<td>Ford Motor Company</td>
<td>20,000</td>
<td>2000</td>
<td>MSc Group project</td>
</tr>
</tbody>
</table>
OTHER INDUSTRIAL RESEARCH COLLABORATIONS


APPENDIX 1: RESEARCH PUBLICATIONS AND CONFERENCE ACTIVITIES

Keynotes since joining Aston:

<table>
<thead>
<tr>
<th>Event</th>
<th>Date</th>
<th>Event type</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIM, Budapest</td>
<td>Sep 2012</td>
<td>Academic/ industry network</td>
</tr>
<tr>
<td>WBR, Atlanta</td>
<td>Sep 2012</td>
<td>Industrial network</td>
</tr>
<tr>
<td>Chief Field Service Officers’ World Summit, Shanghai</td>
<td>April 2013</td>
<td>Industrial network</td>
</tr>
<tr>
<td>PTC Live Service Exchange, Anaheim</td>
<td>June 2013</td>
<td>Industrial network</td>
</tr>
<tr>
<td>CRIT Seminar on Servitization, Bologna, Italy</td>
<td>Sep 2013</td>
<td>Industrial network</td>
</tr>
<tr>
<td>Field Service East, North Carolina</td>
<td>Sep 2013</td>
<td>Industrial network</td>
</tr>
<tr>
<td>Field Service Europe, Amsterdam</td>
<td>Oct 2013</td>
<td>Industrial network</td>
</tr>
<tr>
<td>The Manufacturer’s Directors Conference</td>
<td>Dec 2013</td>
<td>Industrial network</td>
</tr>
<tr>
<td>PTC Service Exchange, Nice</td>
<td>March 2014</td>
<td>Industrial network</td>
</tr>
<tr>
<td>The Manufacturer’s Future Factory Supply Chain Event, London</td>
<td>April 2014</td>
<td>Industrial network</td>
</tr>
<tr>
<td>Spring Servitization Conference, Aston</td>
<td>May 2014</td>
<td>Academic/ industrial conference</td>
</tr>
<tr>
<td>Service Community, Manchester</td>
<td>Oct 2014</td>
<td>Industry summit</td>
</tr>
<tr>
<td>Aftermarket Business Platform, Amsterdam</td>
<td>Oct 2014</td>
<td>Industry conference</td>
</tr>
<tr>
<td>Field Service Europe, Amsterdam</td>
<td>Oct 2014</td>
<td>Industry conference</td>
</tr>
<tr>
<td>Business Servitization Conference, Bilbao</td>
<td>Nov 2014</td>
<td>Academic conference</td>
</tr>
<tr>
<td>Engineering Employers Federation round table at Resource 2015, ExCel Centre, London</td>
<td>Mar 2015</td>
<td>Industry exhibition fringe event</td>
</tr>
<tr>
<td>Oracle’s Value Chain Summit, London</td>
<td>Mar 2015</td>
<td>Industry conference</td>
</tr>
<tr>
<td>Innovation Round Table (The Leading Network in Europe for Innovation Executives in Large Firms), Stuttgart</td>
<td>May 2015</td>
<td>Industry conference</td>
</tr>
<tr>
<td>The European House- Ambrosetti ‘Quota 8000’ event, Milan</td>
<td>May 2015</td>
<td>Industrial conference</td>
</tr>
<tr>
<td>Logimed conference, Amsterdam</td>
<td>Nov 2015</td>
<td>Industrial conference</td>
</tr>
</tbody>
</table>
Appendix 1: RESEARCH PUBLICATIONS AND CONFERENCE ACTIVITIES

Publications in refereed journals

1. Baines, T. & Shi V. (Forthcoming) ‘A Delphi study to explore the adoption of servitization in UK companies’ Production Planning and Control.


19. Baines, T; Lightfoot, H; Evans, S; Neely, A; Greenough, R; Peppard, J; Roy, R; Shehab, E; Braganza, A; Tiwari, A; Alcock, J; Angus, J; Bastl, M; Cousins, A; Irving, P; Johnson, M; Kingston, J; Lockett, H; Martinez, V; Micheli, P; Tranfield, D; Walton, I; and Wilson, H. (2007) ‘State-of-the-art in Product Service-Systems’ Proc. IMechE Part B: Journal of Engineering Manufacture. Vol 221, 1543-1533.


Publications in the proceedings of refereed conferences


Publications in other technical journals and workshops


Books and Book Chapters


APPENDIX 2: DOCTORATE SUPERVISION

Doctorates to completion:

Redding, L IVHM implementation Cranfield University
Ang, J Product Service Systems in Singapore Cranfield University
Goh Kiah Mok (EngD)(2009) System simulation and intelligent products Cranfield University

Awarded Kings Norton Medal for Best Doctoral thesis

2008/9

Nipram, J (EngD)(2007) Capacity planning models Cranfield university
Mason, P (EngD) (2005) ‘Understanding the impact of the physical environment on manufacturing system performance’ Cranfield University
Bhamra, R (2002) ‘Core competences within a manufacturing strategy’ Cranfield University

In addition to these Doctoral candidates I have successfully supervised some 80 Masters students to completion