Prof Peter R N Childs - FREng, FIMechE, FASME, CEng, , DPhil, BSc (hons)
Professorial Lead in Engineering Design, Dyson School of Design Engineering, Imperial College London, UK
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General interests include: creativity; the application of creative tools in industry; mechanical and product design; robotics; manufacture; rotating flow and heat transfer; sustainable energy system design.

Current Roles include:

- Professorial Lead in Engineering Design, Imperial College London.
- Professor at Large for the Innovation Design Engineering double masters (MA and MSc at Imperial College London and the Royal College of Art.
- Editor Journal of Power and Energy, Part A, Proc. IMechE
- Chairperson and Founder Director, Q-Bot Ltd
- Professor of Excellence, MD-H, Berlin
- Deputy Director Leverhulme Centre Cellular Bionics

Prior to current role:

- Founding Head of School (2013-19), Dyson School of Design Engineering, Imperial College London
- Professor in the Mechanical Engineering Department, Imperial College London
- Head of Programme, Innovation Design Engineering (IDE), Global Innovation Design (GID).
- Founding Director of InQbate, the Higher Education Funding Council for England (HEFCE) funded Centre of Excellence in Teaching and Learning (CETL) in Creativity, University of Sussex.
- Director of the Rolls-Royce University Technology Centre (UTC) for Aero-Thermal Systems
- Professor of Engineering Design, University of Sussex.
- Line manager: 50 personnel at Sussex University (InQbate, Rolls-Royce UTC, Product Design)
- Budget holder for InQbate (>£4Million), Rolls-Royce UTC (ca. £400k/annum).
- Supervision of interdisciplinary, collaborative projects, across engineering, design, the humanities and business. Supervision of over thirty Phds.
- Managing director Llama Linda Ltd, director at SEED
- Prior to attending Sussex undertook an apprenticeship as a locksmith, Universal Locks.

Publications and achievements include:

- ➢ Over 200 refereed papers.
- ➢ Mechanical Design Engineering Handbook, now in its 2nd edition (Elsevier 2013, 2019); Text book on Mechanical Design (Butterworth Heinemann/Elsevier), 2nd edition and reprinted 11 times.
- ➢ Six research monographs on temperature measurement and rotating flow.
- ➢ Four edited proceedings on vehicle technology and design.
- ✓ Winner of the American Society of Mechanical Engineers – International Gas Turbine Institute John P. Davis award for exceptional contribution to the literature of gas turbine technology;
- ✓ IMechE 2004, ASME 2010, Design 2014, ICED 2017, Design 2018, ICED 2019 best paper awards
- ✓ Design Society Distinguished Paper Award, 2019
- ✓ IEEE innovation award 2015, CIBSE innovation award 2018, Ashden Award 2018.
- ✓ Elected as Fellow of the Royal Society for the Arts, ASME and IMechE.
- ✓ Appointed by the Peoples Republic of China, under the Programme 111 technology development initiative with the role of developing autonomous design capability.

Keynote speaker at

- Robotics and Automation 2018, IEEE Information and Automation for Sustainability (ICIAfS) 2018
- European Conference on Renewable Systems 2018, Cleantech Futures 2019.
- International Symposium on Jet Propulsion and Power Engineering in 2006, 2010, 2012, 2014, 2017
- International Chinese Turbomachinery Conference 2018, 4th and 5th Int. Gas Turbine Conferences 2008, 2010; UCAN 2019
- Engineering and Product Design Education Conference in 2011; and EDE12; EdCrunch 2017
- Thermal Energy Storage 2016; CE100 2016; International Aircraft Cabin Air Conference 2017

Industry Experience

- Research and development contracts for Alstom, Ford, Rolls-Royce plc, Snecma, EME, Bosch, DaimlerChrysler, MTU, Volvo, Johnson Matthey, Siemens, ITP, Fiat, Airbus, Rover, BMW, Ricardo Consulting Engineers, Naked Energy, Rio-Tinto, EPSRC, TSB and the EU as well as SMEs
- Principal or co-investigator on contracts totalling over £80 million with extensive management experience.
- Founder Director, QBot Ltd, a spin out company (2012-present); Creative Director ICeni Labs (2013-2016), Director Descreco (2013-present)
- International Advisory Committee for Collaborative Innovation Center for Advanced Aero Engine, China
- Institute for Gas Turbine, China, International Advisor

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Peter Childs FREng is the Professorial Lead in Engineering Design, Innovation Design Engineering Professor at Large and was Founding Head of the Dyson School of Design Engineering at Imperial College London. His general interests include: creativity tools and innovation; design process and design rationale; fluid flow and heat transfer, particularly rotating flow; sustainable energy component, concept and system design; robotics. Prior to his current post at Imperial he was director of the Rolls-Royce supported University Technology Centre for Aero-Thermal Systems, director of InQbate and professor at the University of Sussex. He has contributed to over 200 refereed journal and conference papers, and several books including the Handbook on Mechanical Design Engineering (Elsevier, 2013, 2019) as well as co-authoring books on rural urban migration, inclusive sports and sports technology. He has been principal or co-investigator on contracts totalling over £80 million. His roles at Imperial include Professor at Large for the Innovation Design Engineering double master degree run jointly by Imperial and the Royal College of Art, and Design Lead for the Manufacturing Futures Lab. He is Editor of the Journal of Power and Energy, Professor of Excellence at MD-H, Berlin, and Chair and Founder Director at QBot Ltd.

Selected Publications

Chen, X., Liu, X., Childs, P., Brandon, N., Wu, B. A Low Cost Desktop Electrochemical Metal 3D Printer. Advanced Materials Technologies, 2017.

Childs, P.R.N. Aircraft cabin air supply and the internal air system. (2019) 2017 International Aircraft Cabin Air Conference. Journal of Health and Pollution: December 2019, Vol. 9, No. 24, pp. S1-S142.

Childs, P.R.N. Mechanical design engineering handbook, 2nd Edition. Elsevier Butterworth Heinemann, 2019.

Garvey, B., Chen, L., Shi, F., Han, J., Childs, P.R.N. New directions in computational, combinational and structural creativity. Journal of Mechanical Engineering Science, 2018

Han, J, Shi, F, Chen, L, and Childs, P.R.N. The Combinator – A computer-based tool for creative idea generation based on a simulation approach. Design Science, Vol. 4, 2018.

Han, J., Park, D., Shi, F., Chen, L., Hua, M., and Childs, P.R.N. Three driven approaches to combinational creativity: Problem-similarity- and inspiration-driven. Proc IMechE Part C: J Mechanical Engineering Science, 2017.

Han, J., Shi, F., Chen, L., Childs, P.R.N. A computational tool for creative idea generation based on analogical reasoning and ontology. Artificial Intelligence for Engineering Design, Analysis and Manufacturing. AI EDAM, Volume 32, Special Issue 4 (Design Creativity), pp. 462-477, 2018.

Liuqing Chen, Pan Wang, Hao Dong, Feng Shi, Ji Han, Yike Guo, PRN Childs, Jun Xiao, Chao Wu. An artificial intelligence based data-driven approach for design ideation. Journal of Visual Communication and Image Representation. Vol. 61, pp. 10-22, 2019.

Michalakoudis, I., Aurisicchio, M., Childs, P., Koutlidis, A., Harding, J. Empowering manufacturing personnel through functional understanding. Production Planning & Control, 2018

Michalakoudis, I., Childs, P., Aurisicchio, M., and Harding, J. Using functional analysis diagrams to improve product reliability and cost. Advances in Mechanical Engineering, Vol. 8, pp. 1-11, 2017.

Shi, F., Chen, L., Han, J., and Childs, P.R.N. A data-driven text mining and semantic network analysis for design information retrieval. ASME. J. Mech. Des., 139(11):111402-111402-14, 2017.

Spyrakos-Papastavridis, E., Kashiri, N., Childs, P.R.N, Tsagarakis, N.G. Impedance regulation techniques for compliant humanoid balancing. Robotics and Autonomous Systems 104 0–13, 2018

Spyrakos-Papastavridis, E., Medrano-Cerda, G.A., Tsagarakis, N.G., Childs, P.R.N., Dai, J.S., Caldwell, D.G. JMR-17-1137 (Research Paper), Selective-compliance based Lagrange model and multilevel non-collocated feedback control of a humanoid robot. Journal of Mechanisms and Robotics. 10(3), 031009, Paper No: JMR-17-1137, 2018. http://doi.org/10.1115/1.4039394

Xiaolong Chena Xinhua Liua Mengzheng Ouyang Peter Childs Nigel Brandon Billy Wu. Electrospun composite nanofibre supercapacitors enhanced with electrochemically 3D printed current collectors.Journal of Energy Storage, Vol. 26, 2019

Zhu, L., Li, N., and Childs, P.R.N. Light-weighting in aerospace component and system design. Propulsion and Power Research, Vol. 7, pp. 103-119, 2018.