CV/RÉSUMÉ FOR DR J GERARD WOLFF

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EDUCATION AND QUALIFICATIONS

- Cambridge University, BA Hons (Natural Sciences: Psychology, Zoology, Botany, Geology).

- PhD (computer modelling of language learning), University of Wales Cardiff.

- MIEEE, MACM, MBCS (CITP).

- Chartered Engineer, since 1993.

PROFESSIONAL EXPERIENCE

- 2002-present. Director of CognitionResearch.org. This is primarily a vehicle for the development of the SP theory of intelligence and its applications, as described in several publications below.

- 2006-2012. Coordinator of Desertec-UK, Energy Fair, the Kyoto2 Support Group (K2S) and Food Plus.[1] From early 2006 to late 2012 I was engaged full time on campaigns related to climate change.

- 1997-2002 Honorary Research Fellow, School of Informatics, University of Wales, Bangor. I was engaged full time on developing the SP theory of intelligence and its applications (as above).

- 1988-1997 Lecturer in Computer Systems Engineering in the School of Electronic Engineering and Computer Systems, University of Wales, Bangor. Responsibilities were primarily lectures and tutorials for students, examinations, supervision of research students, and research developing the SP theory of intelligence (as above).

- 1984-1988 Software Engineer with Praxis Systems plc in Bath, England. Responsibilities were software development in a variety of contracts, research for the development of an integrated project support environment, publication of "'Project SP' and the 'New Spiral Model" (see below), and discovering a lead for a major contract for the company.

- 1983-1984 IBM Research Fellow (Winchester, England), working on several projects related to the generation of 'high quality' speech from text.

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[1] www.desertec-uk.org.uk, www.energyfair.org.uk, www.k2support.org, and www.foodplus.org.uk.

- 1976-1983 Lecturer in Psychology, University of Dundee, Scotland. My primary research interests were in developing computer models of language learning. I also initiated and ran one of the first projects to develop predictive typing, taking advantage of redundancies in natural language.
- 1970-1976 Research Psychologist in the University Hospital of Wales (Cardiff). My primary research was developing computer models of language learning.

KEYNOTE TALKS

- "Information compression and the representation and processing of knowledge in the Brain", at the "7th International Conference on Neuroscience and Neurological Disorders" held during June 08-09, 2020, as Webinar.

MORE RECENT PUBLICATIONS

All of these more recent publications are by J G Wolff.

"Intelligence Via Compression of Information". In preparation, 2023, https://tinyurl.com/388nattr. This is a tutorial about the SP Theory of Intelligence and associated ideas.

"The *SP Theory of Intelligence*, and its realisation in the *SP Computer Model, as a foundation for the development of artificial general intelligence*", *Analytics*, 2023, 2(1), 163-197, tinyurl.com/yts34bvh . The theme of this paper is that the *SP Theory of Intelligence* (SPTI), and its realisation in the *SP Computer Model* (SPCM), is a promising Foundation for the Development of Artificial General Intelligence (FDAGI). Evidence is presented showing that the SPTI has substantial advantages as an FDAGI compared with six alternatives. This is a major advance, challenging the pervasive assumption that deep neural networks are the way forward for the development of AGI.

"Twenty significant problems in AI research, with potential solutions via the SP Theory of Intelligence and its realisation in the SP Computer Model", *Foundations*, 2022, 2(4), 1045-1079, doi.org/10.3390/foundations2040070. This paper describes the clear potential of the SP System to help solve 20 problems in AI research, most of them described by influential experts in AI, in interviews with science writer Martin Ford, reported by him in his book *Architects of Intelligence*.

"How the SP system may promote sustainability in energy consumption in IT systems" (PDF, Sustainability 2021, 13 (8), article number 4565, 2021. doi.org/10.3390/su13084565, tinyurl.com/2ccs5z3b.).

"The potential of the SP system in machine learning and data analysis for image processing," (PDF, *Big Data and Cognitive Computing*, 5(1), 7, 2021, DOI: 10.3390/bdcc5010007).

"[Mathematics as information compression via the matching and unification of patterns](#)," *Complexity*, vol. 2019, Article ID 6427493, 25 pages, 2019, *DOI:* [doi.org/10.1155/2019/6427493](#) (PDF, [bit.ly/2LqUHIr](#)).

"[Transparency and granularity in the SP Theory of Intelligence and its realisation in the SP Computer Model](#)" (PDF, [tinyurl.com/2f5hca8d](#), Published in the book *Interpretable Artificial Intelligence: A Perspective of Granular Computing*, Witold Pedrycz and Shyi-Ming Chen (editors), Springer: Heidelberg, 2021, ISBN 978-3-030-64948-7, DOI: 10.1007/978-3-030-64949-4).

"[Information compression as a unifying principle in human learning, perception, and cognition](#)," *Complexity*, vol. 2019, Article ID 1879746, 38 pages, 2019, *DOI:* [doi.org/10.1155/2019/1879746](#) (PDF: [bit.ly/2GdIqnY](#)).

"[The SP Theory of Intelligence: distinctive features and advantages](#)" (PDF, *IEEE Access*, 4, 216-246, 2016, [bit.ly/2qgq5QF](#)).

"[Information compression, multiple alignment, and the representation and processing of knowledge in the brain](#)" (PDF, *Frontiers in Psychology*, 7, 1584, 2016, [bit.ly/2esmYyt](#)).

OLDER PUBLICATIONS

Note: Most of these publications may be downloaded via links from [www.cognitionresearch.org/sp.htm](#). Links to recent papers may be found near the top of that page.

Wolff, J. G. (2014). Autonomous robots and the SP theory of intelligence, *IEEE Access*, 2, 1629-1651.

Wolff, J. G. (2014). Big data and the SP theory of intelligence, *IEEE Access*, 2, 301-315.

Wolff, J. G. (2014). Application of the SP theory of intelligence to the understanding of natural vision and the development of computer vision, *SpringerPlus*, 3, 552.

Wolff, J. G. (2014). The SP theory of intelligence: benefits and applications, *Information*, 5 (1), 1-27.

Wolff, J. G. (2013). The SP theory of intelligence: an overview, *Information*, 4 (3), 283-341.

Wolff, J. G. (2007). Towards an intelligent database system founded on the SP theory of computing and cognition. *Data & Knowledge Engineering* 60, 596-624.

Wolff, J. G. (2007). Aspects of intelligence in an 'SP' intelligent database system. In Zongmin Ma (Ed.) *Intelligent Databases: Technologies and Applications*. Idea Group Publishing. ISBN: 1-59904-120-0 (hardcover); 1-59904-121-9 (softcover); 1-59904-122-7 (ebook), pp. 197-237.

Wolff, J. G. (2006). *Unifying Computing and Cognition*. CognitionResearch.org. ISBN: 0-9550726-1-1 (print edition); 0-9550726-0-3 (ebook edition).

Wolff, J. G. (2006). Medical diagnosis as pattern recognition in a framework of information compression by multiple alignment, unification and search. *Decision Support Systems* 42, 608-625.

Wolff, J. G. (2006). The SP theory and the representation and processing of knowledge. In Zongmin Ma (Ed.), *Soft Computing in Ontologies and Semantic Web*, Heidelberg: Springer-Verlag, pp 79-101.