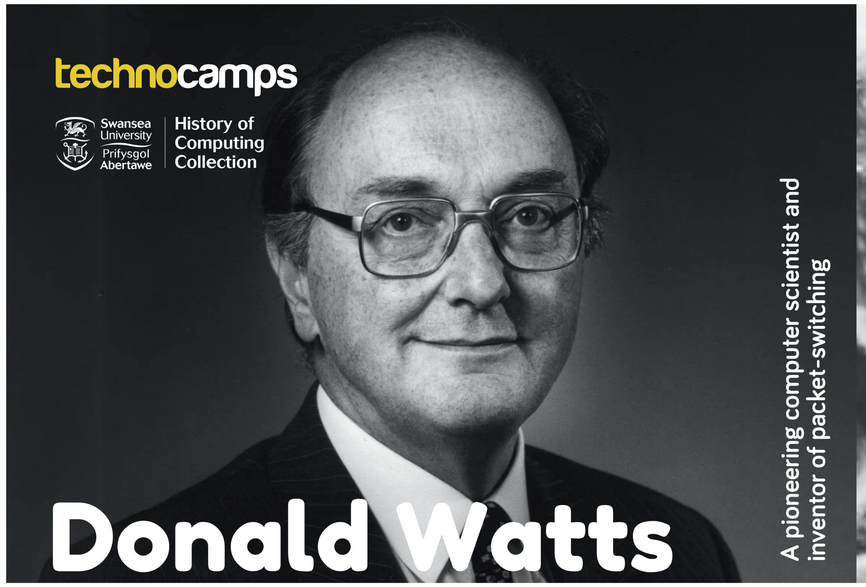
technocamps

Swansea University Prifysgol Abertawe | History of Computing Collection



A pioneering computer scientist and inventor of packet-switching

Donald Watts Davies

1924-2000

Donald Watts Davies made pioneering contributions to computer science, including computer development, networking and security.

Born in Treorchy into a mining family, Davies was brought up in Portsmouth following the death of his father. His studies in Physics and Mathematics at Imperial College, London, were interrupted with war work on atomic weapons. In 1947, he joined the National Physical Laboratory to work on the ACE computer with its designer Alan Turing. After Turing's departure to Manchester, Davies worked on the development, construction and use of the Pilot ACE, which was operational in 1950; it was commercialised by English Electric (as the DEUCE), and by other companies.

In 1965, Davies developed the idea of packet switching – breaking down a message into 'packets' before transmitting them separately over a digital data network and reassembling the packets at the destination to recover the message. He built a working online system with services for users at NPL that functioned until 1986. Packet switching was used in creating the first internet (ARPANET), and became the fundamental technology of computer networks. Davies later turned to developing computer security, continuing after his retirement from NPL in 1984. He was made a CBE in 1983 and a Fellow of the Royal Society in 1987.

A Welsh mathematician and leading figure in fuzzy topology

Mary Wynne Warner

1932-1998

Mary Wynne Warner (née Davies) was a pure mathematician and leading figure in the field of fuzzy topology, which is a study of continuous processes on data that are inherently inexact or 'fuzzy'. Her aim was 'to make precise the property of imprecision'.

Mary Wynne Davies was born in Carmarthen. Having excelled at Howell Girl's School, Denbigh, she won a scholarship to study mathematics at Oxford University; she graduated in 1953, and continued her studies specialising in algebraic topology. In 1956, she married diplomat and intelligence officer Gerald Warner, and began to travel widely with him through his many postings. She combined a demanding diplomatic, social and family life with her mathematical research, holding academic positions in countries such as China, Myanmar, Switzerland, and Poland, where she wrote a PhD thesis in algebraic topology for the University of Warsaw in 1966. Her husband was knighted for his services to the Secret Intelligence Service (SIS/MI6), for which he was sometime a Deputy Chief. Lady Warner's research on tolerance spaces and automata, led her to be one of the foremost researchers in fuzzy mathematics. She became a professor in 1996, and died in 1998, aged 65.

Welsh computer programmer and key figure in the development of Linux

Alan Cox

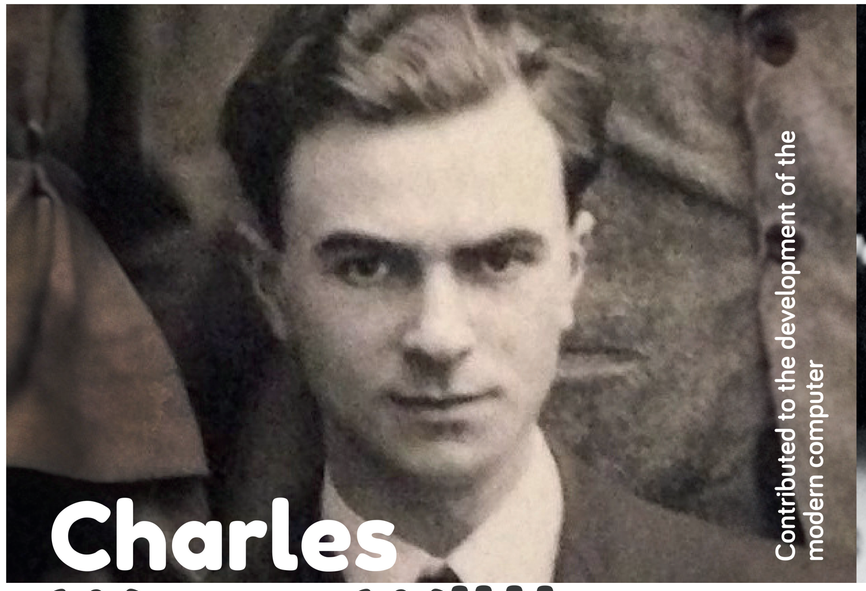
1968-Present

Alan Cox is a computer scientist and programmer. Born in Solihull, he has made his home in Swansea from where he has profoundly influenced the open source software movement that promotes the sharing and building upon source code.

Linux is a free, open-source operating system, created in 1991 by Linus Torvalds, then a student at Helsinki University. Through the collaborative work of enthusiasts, Linux has evolved with versions running the world's computers and digital infrastructures, from retail stores to nuclear submarines. This dominance was made possible by creating a stable and robust 'enterprise branch' of Linux, whose origin is the '2.2 branch' of 1999. The leading figure in this development was Alan Cox.

Cox studied at Aberystwyth and Swansea, graduating with a BSc in Computer Science from Swansea University in 1991. Cox installed an early Linux version on a university computer – perhaps the first installation on a busy network. The bugs in the code prompted Cox to rewrite the networking software. This led him to become one of the main developers, maintainers and distributors of the Linux kernel, and being regarded as 'second in command' to Torvalds by the Linux community.

Cox was involved in other projects promoting free, open-source software (e.g., GNOME, the desktop environment for Linux). He has continued to work at the technical edge of modern computing systems with Red Hat and Intel.



Contributed to the development of the modern computer

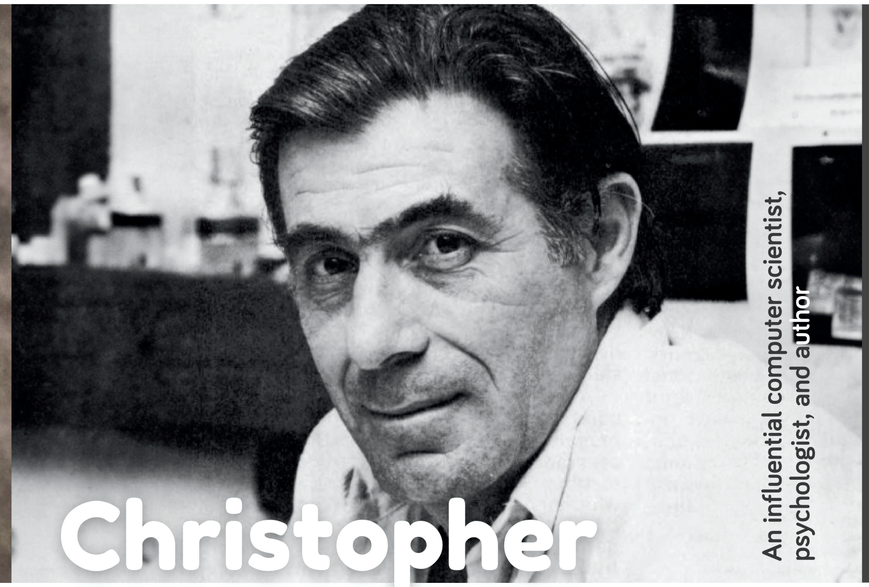
Charles Wynn-Williams

1903-1979

Charles Eryl Wynn-Williams was an electronic engineer and physicist, who was influential in the development of nuclear physics and computing.

Wynn-Williams was born in Swansea. On graduating in electronics at Bangor University, he began working at the Cavendish Laboratory, Cambridge, under the supervision of the physicist and Nobel Laureate Ernest Rutherford. Wynn-Williams conducted pioneering research on electronic instrumentation for detecting and counting atomic particles in experiments with radioactivity and nuclear physics. His electronic devices transformed experiments in nuclear research, which was difficult to reproduce and hence scientifically controversial in its early years. The devices were used in James Chadwick's discovery of the neutron in 1932. Among these inventions was his 'scale-of-two counter', which used electronics for counting with binary numbers, a major milestone in the development of the modern computer.

In World War II, he worked on radar at Malvern but was called to Bletchley Park to enhance Turing's Bombe machines with electronic processors to crack an improved Enigma ciphering system. He also helped build a machine, the Heath Robinson, to crack the Lorenz cipher, which was a forerunner of the Colossus, the first electronic computer. After the War, Wynn-Williams taught physics at Imperial College. He returned to Wales and died in 1979 in Dôl-y-bont, Dyfed, Wales.



An influential computer scientist, psychologist, and author

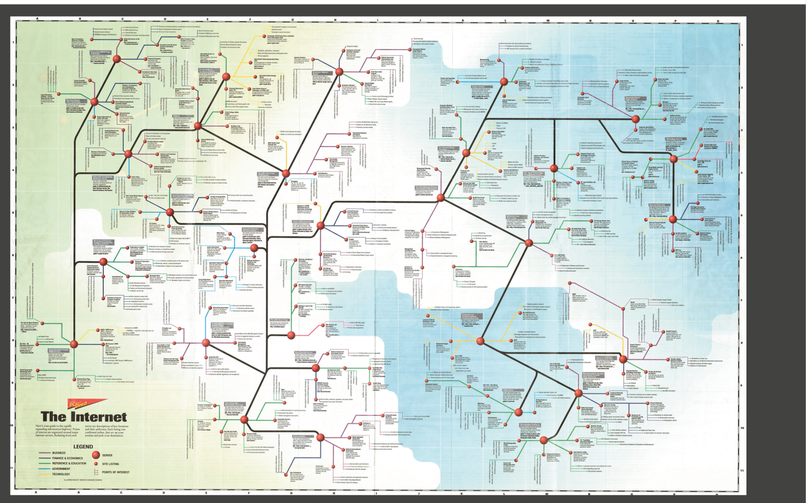
Christopher Evans

1931-1979

Christopher Evans was a computer scientist and psychologist. He advocated a new approach to computing, and conducted research on human-computer interactions and the future of computing. Evans was born in Aberdyfi and schooled at Christ's College, Brecon. After serving in the RAF, he studied Psychology at University College, London, and Physics at Reading University, where he gained his PhD for work on eye movement. On joining the National Physical Laboratory (NPL) in 1963, he applied his technical expertise on human sight and sound to computing.

Under Donald Watts Davies, he set up the NPL's pioneering man/machine interaction unit, and developed novel systems using the newly emerging microcomputers. A particular specialism was conversational systems, such as a patient-interviewing system Mickie that could record medical histories of patients by questions and answers; and a system Mavis that provided new input and output methods to help disabled people use computers. His systems were deployed in hospitals and other relevant units.

Realising the speed of change in computing, for the Science Museum, London, he recorded historically important interviews with many early computing pioneers preserving their views on their own contributions. In 1979, Evans published a best-seller The Mighty Micro: The Impact of the Computer Revolution in which he offered a vision in which computing was to become ubiquitous. This became a television series, presented by Evans himself. Christopher Evans died of cancer in 1979, before the series was broadcast on ITV.



The World Wide Web Comes to Wales

1993

The World Wide Web (WWW) was developed in CERN, the European particle physics laboratory, by Tim Berners-Lee in 1989-90. In 1993, the software was freely released and became known to the technically interested public. This poster from 1994, was designed by Timothy Edward Downs to interest readers of personal computing magazines.

The 1994 map shows the dominance of government and education: it features some 30 servers and a few hundred sites. By 2014, there were a billion sites. The map shows two early sites in Wales, at Swansea and Cardiff Universities, both set up by students.

Swansea on Gower Surfing: Visiting Los Angeles in 1993, David Dunbar, a lecturer at Swansea, saw the web pages of the experimental particle physicists and installed web software for his hosts, the UCLA theoreticians. Mentioning this in emails with PhD students in Swansea, on their own initiative, Peter Coyle and Chris Abrahams installed the web on a machine belonging to the Swansea particle physicists and created this site for surfers.

Cardiff on Movies: Rob Hartill was born in Pontypridd in 1969 and did both his BSc and PhD in Computer Science at Cardiff University. He was active in a newsgroup that collected reviews posted by members and, in 1993, he produced a web interface to this database. Bought by Amazon in 1998, it became the Internet Movie Database (IMDb).

Hartill went on to become one the pioneers of the World Wide Web, co-founding and developing software infrastructure (the dominant Apache server system) and content (the open research report repository ArXiv.org at Los Alamos).