Curriculum Vitae

Name: **Dirk Conrad Bruere**
Occupation: **Engineer, electronics and software**
Nationality: **English**
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Areas of Specialisation:

Realtime software, hardware design
Custom Local Area Networks and communications. Medium frequency analogue design for interfacing, digital design, including precision audio. Home Automation (Domotics), networked audio-visual systems and servers. Fault tolerant and multiprocessor computer design. Product engineering and management. Systems integration and design for mass production including EMC testing.

Languages:

C, C++, C#, Java and various assemblers

Development Tools:

Netbeans, Microsoft Studio, Visual DSP++, also SDS and Metrowerks

Microprocessor used:

TSS400, Z80, Z8, 86E04, 6301, 6303, 68HC11, 6809, 8086, V25, PIC, 68000, DragonBall, 68330, PowerPC 821/823/860 AD21262.

Audio-Visual integration, Home Automation interfacing, custom Local Area Networks and communications. Medium frequency analogue design for interfacing. Fault tolerant and multiprocessor computer design. Product engineering and management. Design for mass production including EMC testing.
In general, the experience over the last twenty years has been varied, but the core has been in consultancy involving instrumentation and embedded systems, from concept through to full production and covering all aspects of design, including experimental physics.

Interests:

My interest in the sciences is wide ranging, with an emphasis on the philosophy of Quantum Mechanics, the nature of consciousness and what might be termed “fringe science”. With regard to the latter I occasionally perform experiments when time and resources permit. Most notable in that sphere was one test

concerning the Woodward hypothesis listed on the NASA Breakthrough Propulsion site.

Other interests include weapons technologies, military science, politics, chemistry and mysticism.

Personal Statement:

My major talent is problem solving; generating new ideas and ways of doing things. Related to this is an ability to both analyse and intuitively discern weakness in any system I understand. Another major strength is the rapidity with which I can learn new technologies and techniques. This is one reason why I have been successful in the diverse projects I have undertaken over the years, many of which have involved steep learning curves. Additionally, it is why I have been a successful designer for so long, rather than a manager.

September 2005 to date:

Technical Director of (name withheld) Ltd.
The company produces high end AV systems based around a unique speaker design and a dedicated interactive AV database for domestic use.

December 90 to 2005:

Freelance product design engineer trading as Artemis Design.

1987 to 1990

Project manager with CREATE, an engineering consultancy based at Cranfield University. Responsibility for client management and projects from initial concept to preparation. for mass production.

Projects Undertaken:

1987 to date, most recent first:

Design of audio DSP board with SPDIF/AES and 2 analog inputs, AES out plus 4 analog outputs

Java interface to AV media server and Home Automation and security.

Systems integration in high end AV, Home Automation

Freelance product design engineer trading as Artemis Design. Projects undertaken from 1990 onwards include, most recent first:

MS Visual C++ programming for a front end PC display of a gas chromatograph signal processor interface. Specifically, I programmed the graphical data display and related toolbar functions (eg zoom, undo, measure etc) and wrote the central data classes for the project. Some twenty thousand plus lines of code.

Power control driver for PowerPC 823E running Windows CE 2.12. Project was an electronic book by Cytale, Paris. Launched 15 December 2000.

Writing a protocol converter running on a PowerPC 860 using the QUICC, converting between a proprietory HDLC format and TCP/IP using an embedded stack (US Software)

Porting of a TCP/IP stack onto an embedded 186 to provide an Ethernet to multiport RS232 terminal server POS terminals.

Design of IR identity badge, and various IR communications products for POS use.

Hardware redesign of EPOS terminal for colour touch screen using 68330, creation of graphics scripting language written in C++ for the processor. This was put into production as the 'Colour Wedge' by Checkout Computers Ltd, (now XN corp.) Later upgraded to PowerPC 823 using Java as an experimental POST.

Acoustic signature analysis of sound made by the wheels of a continuous trolley system running on its track in order to identify wheel failures. (ParcelForce)

A small induction heater design using a cheap MOSFET power amplifier and an oscillator with the resonance point being controlled by a PIC using feedback from the LC head.

Design of low cost local area network for lighting control using PIC and Z8 microcontroller and assembler engineered for production quantities 20000+ per annum.

Design of oscillator and high sensitivity non-contact probe and amplifier to BT specifications for line tracing. Production engineered for quantities in excess of 20000 per annum.

Analysis and report on a Post Office (ParcelForce) data management system, with a view to ways of improving performance, or replacement. This type of project was undertaken twice at different sorting centres on different occasions.

Experimental study of heat flow in target materials under a high power laser.

Hardware and software design of hand held laser power meter using TSS400 and onboard interpreter.
Debugging H/W and S/W of a prototype temperature data logger based around a PC, and preparing for mass production.

Study of 3D-image data capture on computer utilising such techniques as laser scanning, moiré fringes and stereoscopic machine vision. (Cranfield University)

Study of ultrasonic and capacitative range finding. (Cranfield University)

Data processing program for ICI Paints

Software simulation, using C++ on a PC, of analytical instrument user interface for ergonomic studies before mass production.

Image processing work using Syscon hardware and software. Creation of C program to examine cuffed oro-endo-tracheal tubes.

Hardware and software design of data logger with modem interface, using V25 and C.
Hardware and software design using real time digital signal processing for precision real time frequency converter and user interface driver for water metering applications using 68HC11 and C.

Ultra low noise, high gain, low cost amplifier design for 200 kHz. (School of Mech. Eng. Cranfield University)

Interfacing of PC running LabTech software to electromechanical ink jet hardware.

Providing technical continuity for a company manufacturing a hospital installed nurse call system.

Project manager with CREATE, an engineering consultancy based at Cranfield University. Responsibility for client management and projects from initial concept to production. Some projects undertaken in this period include:

Hardware (H/W) and software (S/W) design of a retail database computer for ICI Dulux, using Z80 and assembler. Parts purchasing and manufacturing management of 1000+ machines. (Now in DIY stores)

Engine test cell S/W for Ford Motors using Basic and 68XX assembler Design and build of a data logging computer with PC interface and S/W for ICI.

Control and communications S/W for a remote dew point sensor using C and assembler on 6303.

H/W and S/W design of a telephone training machine, involving computer control of 7 tape decks, membrane key panel and display.

System design and costing of a building management system based on large numbers (up to 20,000) of cheap custom designed single board microcomputers with LAN interfaces (Intel bitbus).

Graphical and plotter interface S/W (HPGL) for a statistics package to run on a PC, replacing a VAX based system. Using MS QuickBasic programming to generate HPGL.

Analogue data multiplexer card, 96 channels.

Design, costing and prototyping of a triac based tungsten light dimmer for mass production.