The Transputer in Tokyo, 1984

David May

Inmos

1978

SUNDAY TIMES Sunday 23 July 1978

Debut of the mighty micro men

By James Poole

Meet the micro men Iann Barron, Dr. Dick Petritz, and Dr. Paul Schroeder, founders of Inmos, at the door of the NEB.

CONFIRMATION of details of the National Enterprise Board's venture into micro-electronics has taken a lot of wind out of the sails of the industry's critics. But continued sniping is expected from opponents both within the Labour Government and among anti-NEB Tories.

The three founding members of the new company, Inmos, are an impressive group. As The Sunday Times has already reported, Dick Petritz, a leading US electronics entrepeneur, put the components together. Iann Barron, a UK computer specialist, too far ahead of his time in Britain, recently advised the NEB and Government on an electronics strategy for Britain. He helped bring Inmos to Britain's state-backed industrial holding company. Dr. Paul Schroeder from Bell Labs and Mostek Corporation is the scientist with most of the credit for creating the now standard 4K memory, and the 16K replacements that is racing into the market. Backing such a man, who wants to create his own company, is probably worth the risk.

These three men will have the right to up to 27½% of the shares in the new company. This aspect of the State investment possibly making all three of them, together with other executives, millionaires, has been widely criticised. But they will not profit until the NEB investment has been covered.

According to Petritz, one of the main attractions of the NEB as backer is that it envisages allowing the company to regain independence as a public company in the years ahead. It is increasingly difficult to find such venture capital backing in the US.

As we have already reported, a main product area will be micro memory devices, including the 64K RAM described in previous articles. Dr. Schroeder is confident there is a major opportunity here for the new company, despite critics who say that such devices are already in preproduction. Dr. Schroeder says simply that being first is not what matters, it is making a product which works to the standards expected by customers.

Inmos reveals no particular technical tricks for its new range of devices. The founders argue quite simply that a new company, unencumbered by obsolete investment, by existing, partly-amortized products, and by past research blind alleys, can take off on the back of a change in technology such as the micro-electronics industry is now experiencing. The switch to Very Large Scale Integration – halving the size of the circuits etched into a silicon wafer a quarter of an inch square – is just such an opportunity.

To answer critics that one product is insufficient to launch a new company, Inmos has a second major development planned under Iann Barron that will produce, it is hoped, the first, cheap British micro- computer to join Ferranti's high specification F1100 chip. As the plan is to create a company simultaneously in the US and the UK, with a major marketing effort in the US and assembly in the Far East, most of the specific industry criticisms, made before the NEB released the details yesterday, fall away.

The NEB admits quite frankly that this is a risky business, and it would like to see several more such ventures before being happy that the UK had a secure place in the world micro-electronic league. The partners are shooting high. To support a projected labour force of 4,000 in the UK and 1,000 in the US, a minimum business of £250m a year is envisaged.

Dick Petritz, who helped launch Mostek, and several other electronic new ventures, points out that most successful electronic companies started from scratch and did not grow out of the established giants. Clearly, the hope is that the process which spawned Intel, then Mostek in the 1970s, will continue the tradition with Inmos.

Background 1978-83

1978: Inmos founded with £50 million backing from UK government

1979: Operations start in Colorado Springs and Bristol

1979: Bristol team grows to about 50; average age about 25

1979-83: occam, transputer architecture, CAD system, prototype chip

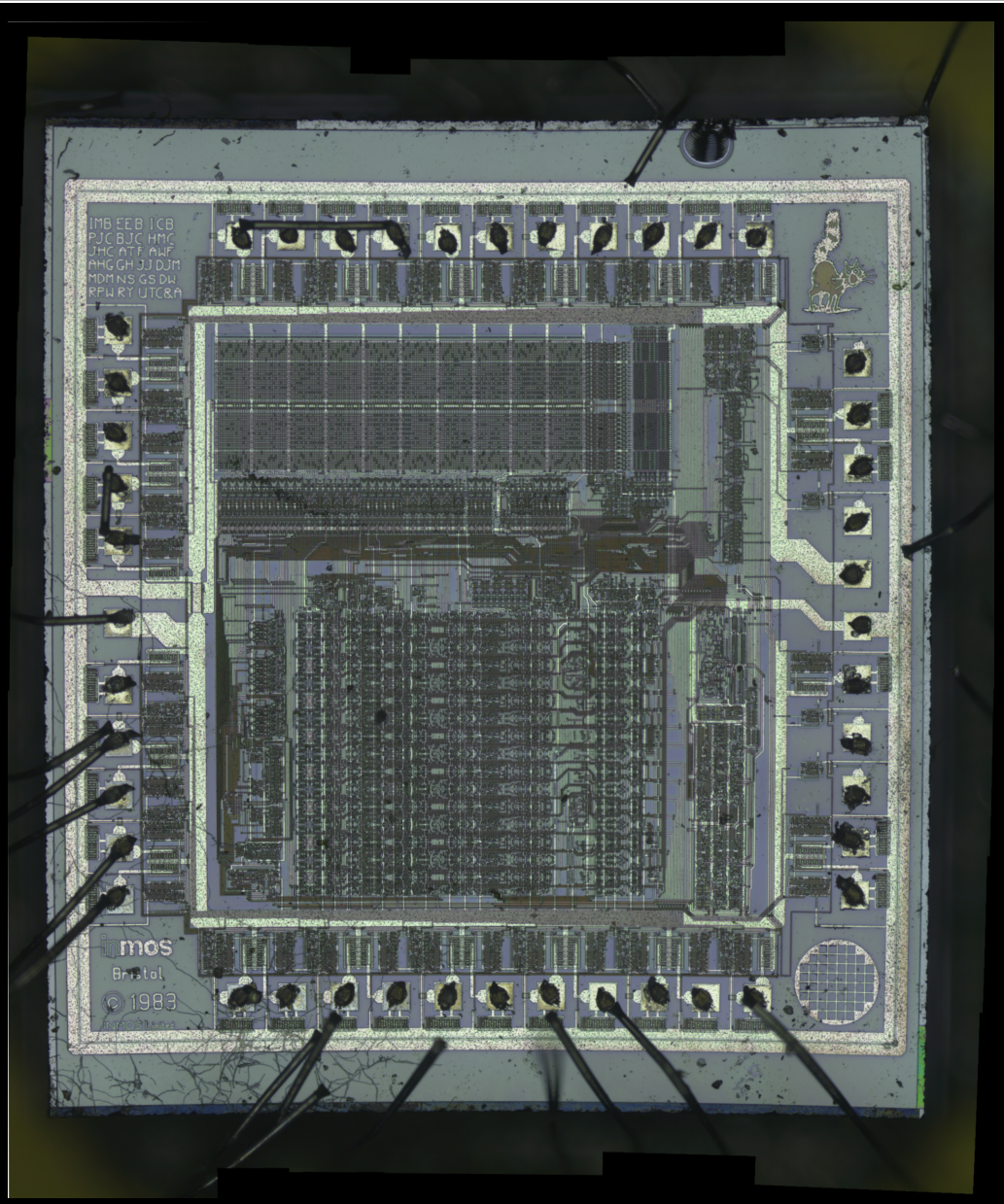
1982-83: first articles about occam and transputer published

1982: Inmos Newport factory (Richard Rogers partnership)

Japanese MITI starts $1billion *fifth generation* project; founds ICOT

Simple 42

1983



Occam 1978-84

1978: Communicating Sequential Processes (Hoare); EPL (May)

1983: First occam 1 programming manual

1984: Drafts of occam 2 language defintion

February 1984: ACM Sigplan occam article

September 1984: Demo of Simple 42, Occam User Group, Bristol

November 1984: occam programming system (VAX) and portakit

Hoare and Roscoe, *Programs are Predicates*, Tokyo, 1984

Processor Architecture 1980-84

Intel: 8086, 80186, 80286; iAPX 432

Motorola: 68000

Berkeley RISC (Patterson): led to Sun Microsystems SPARC

Stanford MIPS (Hennesy): led to MIPS Computer

Acorn ARM (Wilson and Furber): led to ARM Limited and ...

The RISC vs. CISC debate was in full swing ...

Transputer: it was neither RISC nor CISC ... or maybe it was both!

Parallel Computing 1980-84

Manchester Dataflow Computer (Gurd and Watson)

MIT Connection Machine (Hillis)

Caltech Cosmic Cube (Fox and Seitz)

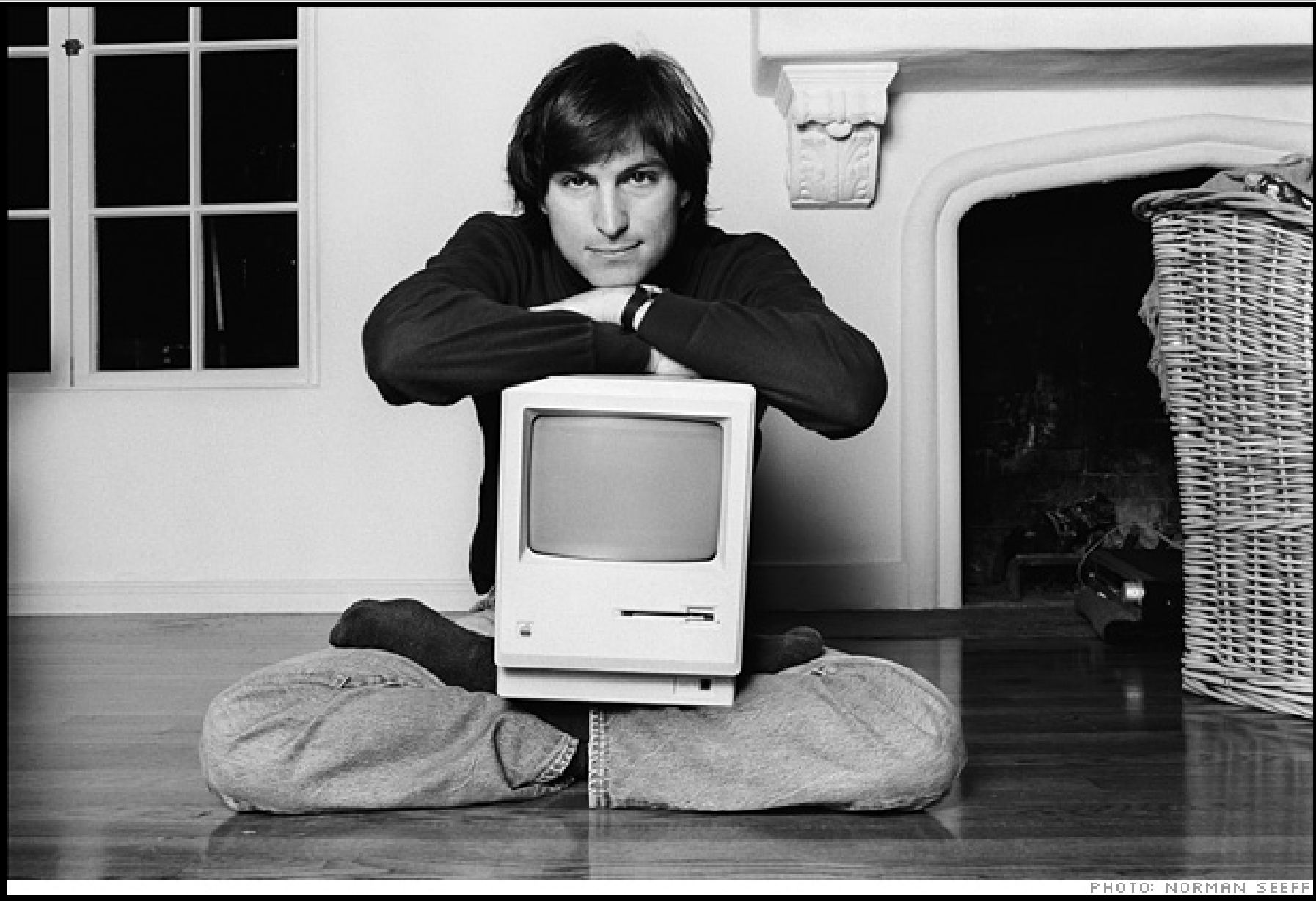
ICL Distributed Array Processor; Thinking Machines (SIMD)

Intel Scientific Computers formed; nCube founded (message passing)

Sequent founded; Encore founded (shared memory)

Cydrome founded; Multiflow founded (VLIW)

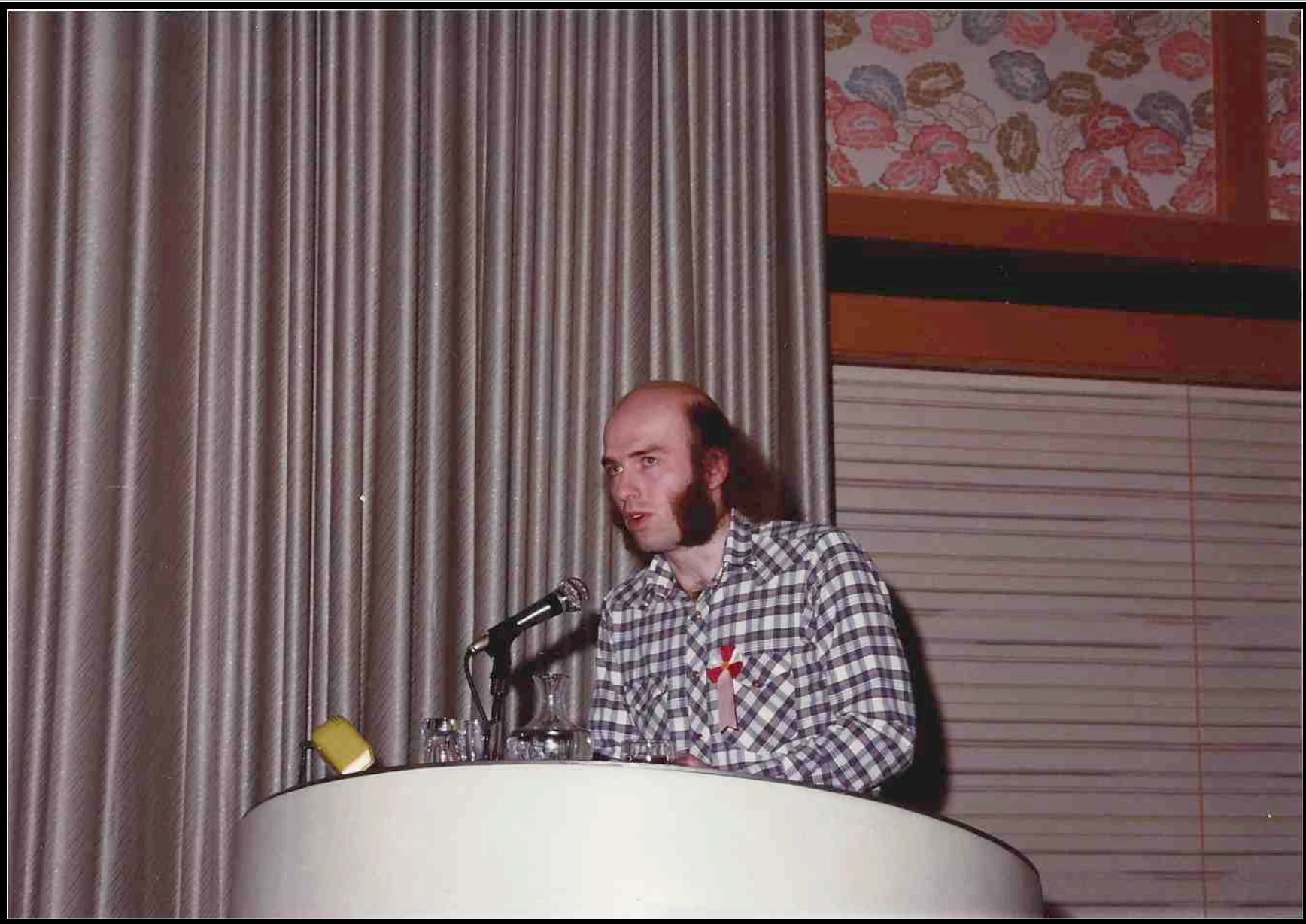
The Mac 1984



FGCS 1984

Tokyo

FGCS 1984 November 9



The Transputer Implementation of occam

David May and Roger Shepherd
Inmos

Timeline to T414 Launch

November 1984: T424 reference manual; Electronics Weekly article

December 1984: T202 demonstrated at the Royal Society

May 1985: Byte magazine article; Meiko founded in Bristol

June 1985: International Symposium on Computer Architecture paper

July 1985: Meiko Demo at Siggraph using 256 T202s, fly-through

September 1985: T414 (Newport) transputer documentation

October 1, 1985: Launch in London, followed by New York and Tokyo

Legacy

User group: 5000 members in 50 countries ... and more ...

Hundreds of projects: graphics, AI, databases, robotics, control, ...

HPC: Edinburgh Concurrent Supercomputer, IBM Victor ...

First parallel implementation of Pixar Renderman ... in Bristol

Transputer processor used in volume products; around 1billion sold

The origin of the microelectronics component of Bristol's cluster

A very successful government intervention in growing new industry!

And next ... 2015-35

It's in Apple's DNA that technology alone is not enough - it's technology married with liberal arts, married with the humanities, that yields us the result that makes our heart sing

Steve Jobs

The minute I dropped out I could stop taking the classes that didn't interest me, and begin dropping in on the ones that looked interesting

Steve Jobs

Growing Bristol's Cluster 2015-35

Build on our strengths in technology, design and creativity

Create a new generation of graduates to enable growth

Build design, entrepreneurship and team-work into the curriculum ...

... across disciplines and cultures

Bring together entrepreneurs, students, investors and supporters

... and create great workplaces for students and start-ups

If you'd you'd like to be part of this, let me know: dave@cs.bris.ac.uk