The Transputer in Tokyo, 1984

David May
Debut of the mighty micro men

By James Poole

Meet the micro men Ian Barrow, Dr. Dick Petritz, and Dr. Paul Schrader, founders of Inmos, at the door of the NER.

CONFIRMATION of details of the National Enterprise Board’s venture into microelectronics has taken a lot of wind out of the sails of the industry’s critics. But continued success is expected from opponents 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 entrepreneur, put the company together; Ian Barrow, a UK computer speculator, too far ahead of his time in Britain, recently founded the NER and Government on an electronic strategy for Britain. He helped bring Inmos to Britain’s staid-backed industrial holding company, Dr. Paul Schrader from Bell Labs and Meehle Corporation is the scientist with most of the credit for creating the new 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 25% of the shares in the new company. This aspect of the Board investment possibly making all three of them, together with other executives, millionaires has been widely criticized. But they will not profit until the NER investment has been covered.

According to Petritz, one of the main attractions of the NER is that it enables allowing the company to regain independence as a public company in the next year. It is increasingly difficult to find such venture capital backing in the UK.

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

Inmos results no particular technical tricks for its new range of devices. The founders argue quite simply that a new company is less embroiled in subsidy, investment, and an independent private, research and development program can take it off 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, Barrow has a second major development planned under the new company that will produce, it is hoped, the first, cheap British micro-computer to join Fairchild’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 NER released the details yesterday, fell awry.

The NER 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 micro plan in the world micro-electronics league. The plan is, now becoming high. To support a projected labour force of 4,500 in the UK and 1,000 in the US, a minimum of 220 million a year has to be exchanged.

Dick Petritz, who helped launch Bullseye, 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 Monod 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 $1 billion fifth generation project; founds ICOT
Simple 42

1983
Occam

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

1983: First occam 1 programming manual

1984: Drafts of occam 2 language definition

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

PHOTO: NORMAN SEEFF
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


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 1 billion sold

The origin of the microelectronics component of Bristol’s cluster

A very successful government intervention in growing new industry!
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 like to be part of this, let me know: dave@cs.bris.ac.uk