Tutorial 3 Business Plan and Marketing Plan (A)

1) Answer the questions based on the case study given.

CASE STUDY: BOB NOYCE, THE POD-FATHER

Robert (Bob) Noyce was one of the pioneers of microelectronics, whose contribution can be traced all

the way forward to current entrepreneurs such as Steve Jobs of Apple fame. He has been referred to

as the Thomas Edison and the Henry Ford of Silicon Valley: Edison for his invention and

technological innovations, including the co-invention of the integrated circuit; and Ford for his process

and corporate innovations, degree including the creation of Fairchild Semiconductor and Intel.

A first in Physics and Maths, followed by a PhD in Physics from MIT, upon graduation in 1953 he

gained three years' experience as a research engineer, and then at age 29 he joined the then newly

established but prestigious Shockley Semiconductor Laboratory in California. William Shockley had

won the Nobel Prize for his co-development of the transistor. However, Noyce was very unhappy with

the management style at Shockley, and left in 1957 with the so-called "Traitorous Eight" to form

Fairchild Semiconductor, a new division of Fairchild Camera and Instruments.

Sherman Fairchild agreed to fund the "Traitorous Eight's' new venture on the basis of Noyce's

reputation and vision. Noyce convinced Fairchild that the key was the manufacturing process, and

that silicon-based components could become low-cost and widely used in a range of electronic

devices. At Fairchild, Noyce created a climate in which talent thrived; it was much less structured,

more relaxed, team-based and less hierarchical than at Shockley. Arguably this was the archetype for

the future culture of Silicon Valley.

In 1958 the new venture developed the key planar technology that made higher-performance

transistors easier and cheaper to manufacture. In July 1959 he filed for the patent for the Integrated

Circuit, essentially multiple transistors on a single wafer of silicon, which was the next significant

technological breakthrough. Between 1954 and 1967 he accumulated 16 patents. The first sales were

to IBM, and sales of Fairchild's semiconductor division doubled each year until the mid-1960s by

which time the company had grown from 12 to 12,000 employees, and was earning $130 million a

year. By 1966, the sales of Fairchild were second to Texas Instrument's, followed in third place by

Motorola. Noyce was rewarded with the position of corporate vice-president, and de facto head of the

semiconductor division.

These devices were analogue, but Fairchild was less successful with its digital devices. Some of its

early digital circuits were used in the Apollo Space Guidance computer, but generally these were not

suited to other military applications and were not a commercial success. Texas Instruments and a

number of new start-up companies offered superior designs, and in 1967 Fairchild suffered its first

loss, of US$7.6 million. When the CEO resigned, the board did not promote Noyce. As a

consequence, in 1968 Noyce left Fairchild to form a new venture with Gordon Moore (also one of the

original 'Traitorous Eight' from Shockley, and originator of 'Moore's Law'). Five of the original founders

of Fairchild Semiconductor funded the creation of Intel (INTegrated Electronics). Intel's third employee

was Andy Grove, a chemical engineer and credited as its key business strategic leader.

For the first few years, Intel's business was based on the low-cost manufacture of Random Access

Memory (RAM) devices. Noyce oversaw the development of the next major milestone in the industry,

the microprocessor, invented by Ted Hoff in 1971. The processor was developed to replace a number

of components for an electronic calculator developed for a Japanese client. However, the

microprocessor did not become central to Intel's business until much later. Increasing competition

from Japan reduced the profitability of memory devices, and Intel changed strategy to pursue the

development microprocessor which would be critical to the growth of the nascent OC industry. In July

UECS3393 Software Entrepreneurship Tutorial 3

UECS3393 Software Entrepreneurship Page 2 of 2

1979 Intel launched its 8088 processor, a new variant of its 8086, accompanied by a major marketing

and sales campaign 'Operation Crush', to promote widespread adoption and application. An early win

was a supplier to IBM. In August 1981 IBM launched its PC based upon the Intel processor. In 1982,

Intel introduced the 80286 processor, and subsequently the 80386 in 1985, first used by Compaq in

its PC-clones and later by IBM. The 386 was also a milestone as it was the first processor to be

single-sourced from Intel. Before this, customer would source critical components from several

competing manufacturers to ensure deliveries and reduce risk, but for the 386 Intel refused to license

its design and instead manufactured the chips at three separate sites. This strategy established Intel

at the heart of the PC industry.

Noyce's charisma and powers of persuasion made him an inspiring leader, but he was a less effective

manager. He was criticised by Grove and others for his indecisiveness and dislike of confrontation, a

trait that kept him from making difficult decisions and taking tough actions. He resigned as President

in 1975, transferring the role to Moore. However, Noyce maintained a mentoring role at Intel and more

broadly, and provided advice and seed capital to promising entrepreneurs.

One of these aspiring entrepreneurs was Steve Jobs, who Noyce met during the first year of Apple

Computer, in 1977. Jobs deliberately sought out Noyce as a mentor. 'Steve would regularly appear at

our house on his motorcycle...he and Bob were disappearing into the basement, talking about

projects.' Noyce answered Job's phone calls- which invariably began with, 'I've been thinking about

what you said' or 'I have an idea' - even when they came at midnight. This relationship continued for

over a decade.

Clearly then, Bob Noyce has contributed to almost all aspects of innvoation in Silicon Valley -

technological, process, product, corporate and cultural. As Noyce advised budding entrepreneurs:

'Optimism is an essential ingredient for innovation...go off and do something wonderful'.

a) What were the key characteristics that contributed to the success of Bob Noyce?

**Academic background; degree in physics and maths, helps in developing semiconductor**

**Work experience; 3 years as engineer**

**Reputation to encourage investor for funds;**

b) What other individual contributed, and in what ways?

c) Identify the types of innovation and their impact on the development of the new ventures and

industry.

2) List the key components of a process for identifying, developing and assessing new ideas, and

suggest a tool or technique to support each stage.

3) Where and how might you organize search for innovation opportunities for the following

business?

• A fast food restaurant chain

• An electronic test equipment maker

• A hospital

• An insurance company

• A new entrant biotechnology firm