

Introduction to innovation

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Format of Module

- Day 1: Background Information (Preparing the mind!)
- Day 2 & 3: Examples of Innovation with wool.

Desired Outcome:

(Your Creativity) + (Your Experiences and knowledge) = New Innovation Potential

NB There is no simple recipe for innovation!

Introduction to innovation

We will examine the nature of innovation and the latest in the transformation of wool from fibre to product.

At the completion of the Innovation module you will have:

- an increased understanding of innovation and its importance to commercial success
- an appreciation of the properties of the wool fibre that underpin the invention, development and commercialisation of wool innovations
- a wider knowledge of current and future wool-based innovations
- a better appreciation of how AWI and CSIRO can assist you in the pursuit of innovation with wool.

Introduction to innovation

- Just what is innovation?
- What are the benefits of innovation?
- How does an innovation evolve?
- How do innovations compete?
- What triggers an innovation?
- How can innovation be encouraged?

Just what is innovation and what are the rewards?

What do you think?

Just what is innovation?

‘But for me innovation was and still is ... a battle in the marketplace between innovators and attackers trying to make money by changing the order of things, and defenders trying to protect their existing cash flows.’

Richard N. Foster

Innovation: The Attacker's Advantage

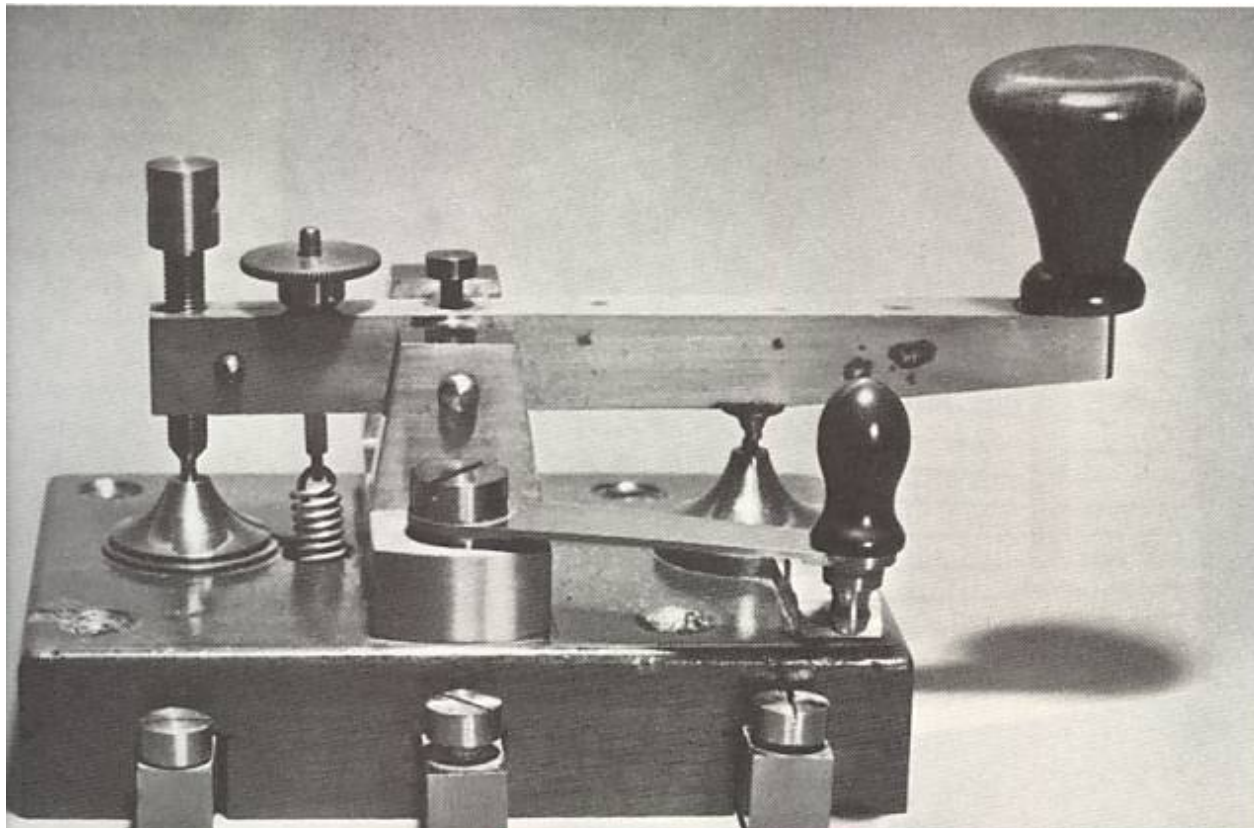
'Innovation is a battle'

The Luddite uprising (1811-1816) was ultimately quelled by force of arms, and men were killed, imprisoned, hanged, or even transported to Australia.

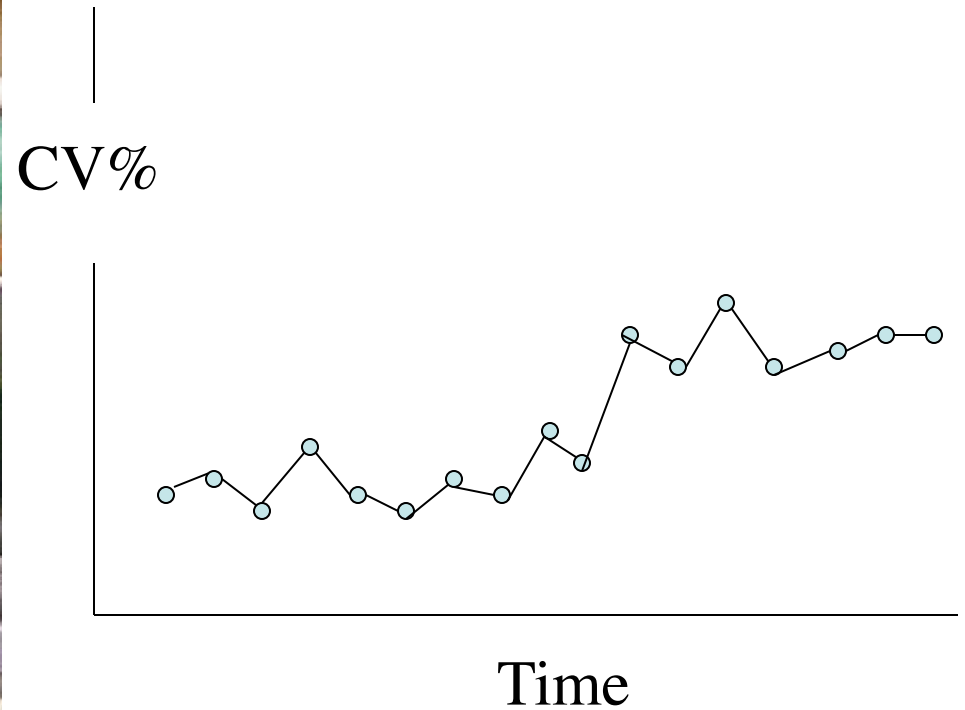
The Pony Express



The attacker: the telegraph

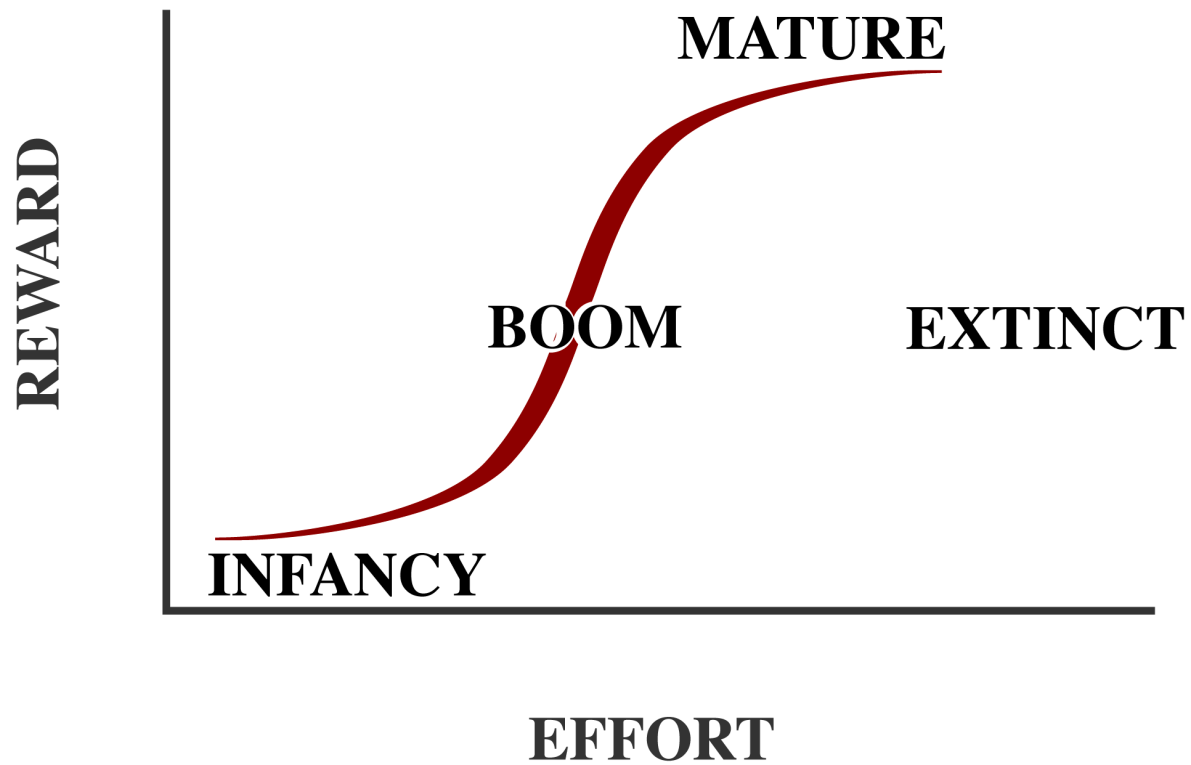


Innovation in process improvement

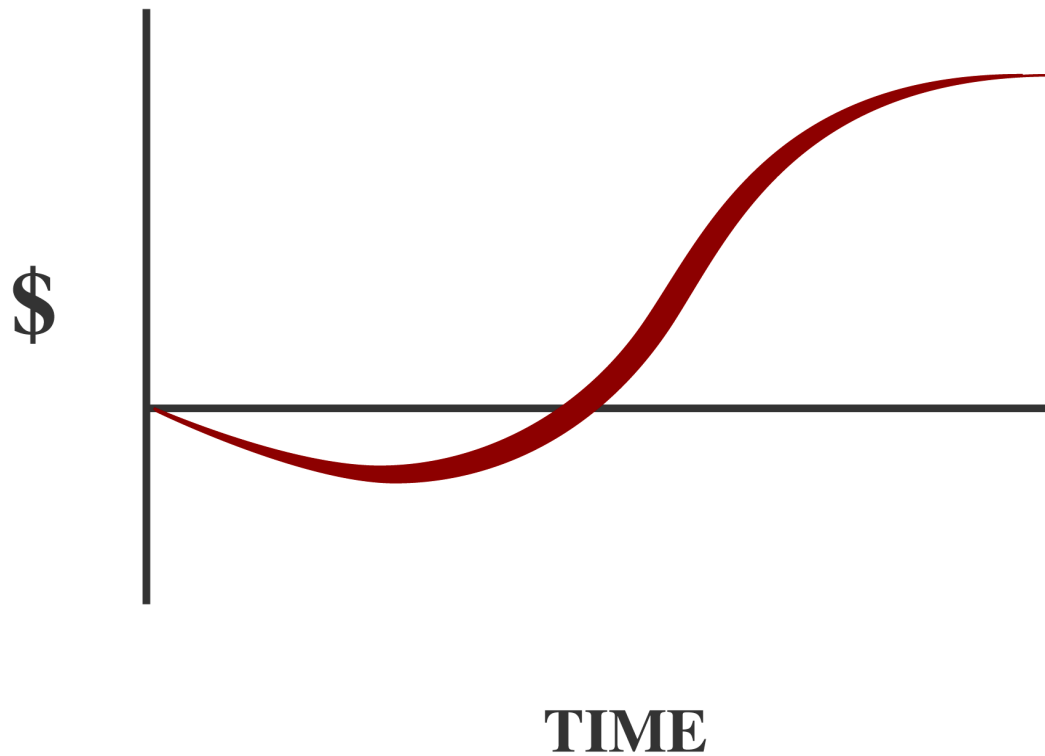


How does an innovation evolve?

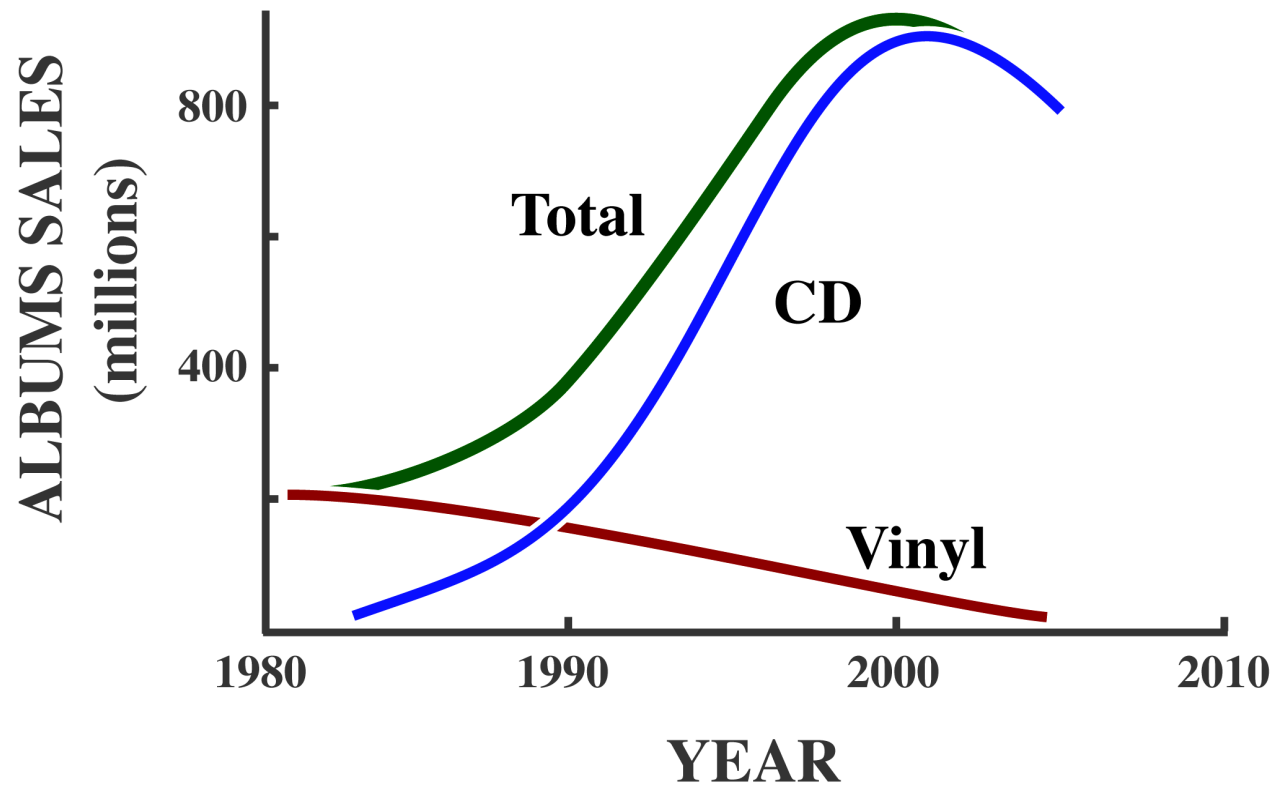
The 'S' Curve



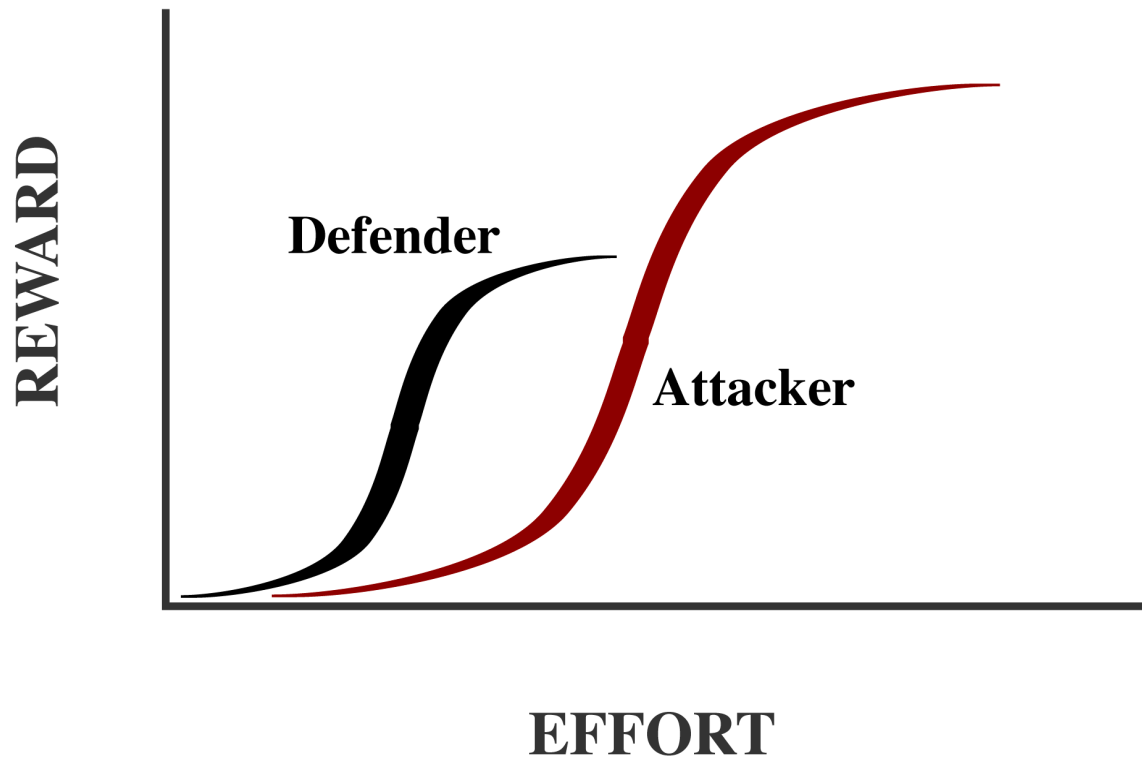
The Cash-Flow 'S' Curve



Music Album Sales



The Discontinuity



Discontinuities

Defenders

- Sword and shield
- Bow and arrow
- Wind power
- Horse power
-
-

Attackers

- Bow and arrow
- Firearms
- Steam power
- Automobile
-
-

Monumental

- Major paradigm shift in technology.
- Can be triggered by a major attack.
- Initial high risk of failure.
- Technology based on, and continues to require, fundamental science.
- Significant R&D costs before product launch. Prone to cost overruns.
- Major negative cash flow due to R&D and marketing in infancy phase.
- Costly technical support well into the boom stage and beyond.
- Potentially very high returns if successful.
- Lifespan of years, even decades.
- Leads to many spin-off innovations.

Incremental

- Novel use or combination of existing technologies.
- Usually in support of a mature phase.
- Low risk of failure.
- Little or no new fundamental science needed.
- Relatively small development costs.
- Marketing costs likely to be the major cause of negative cash-flow in infancy.
- Minor technical support beyond product launch.
- Smaller short-term returns.
- Short lifespan, often within a fashion cycle.
- Generally directed at a single product range.

How do innovations compete?

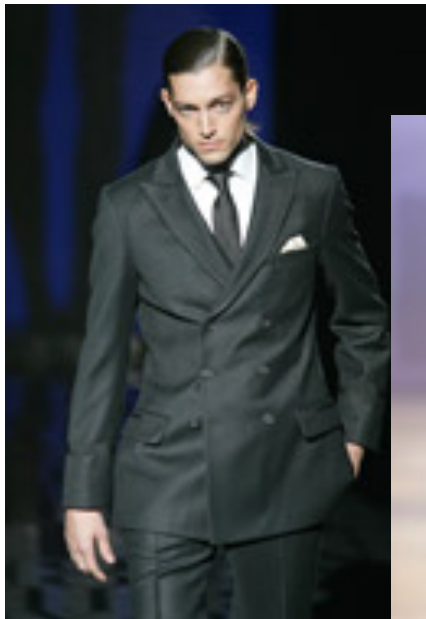
The defender's response: deny

'The silent picture is a universal means of expression. Talking pictures necessarily have a limited field; they are held down to particular tongues of particular races.'

Charlie Chaplin



The eternal business suit: a defender in denial



Valentino



Prada

Photographs courtesy AWI

But now there is competition coming from a more relaxed, casual, business environment.

The defender's response:

‘If you can't beat them, join them.’

Move over Detroit

1958 Chevy Impala convertible



1965 Datsun Sunny

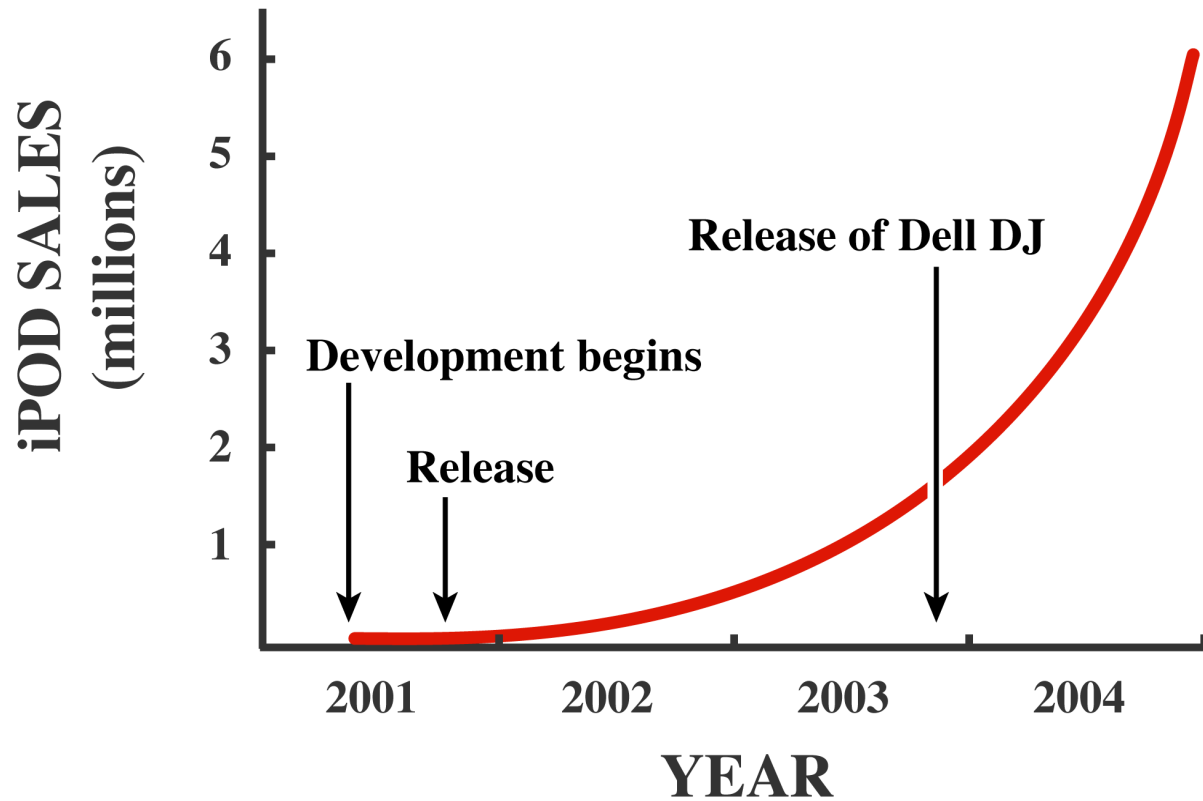
Joining the digital revolution: the digital camera

Of the 100 billion commercial prints made in 2005, 60% were from digital cameras.



The best method of defence is attack

ipod-First and Fast



Technical development and support has to be first-rate throughout the evolution of an innovation.



POLARTEC

The spark of an innovation: the Aha! experience

Innovation: the integrated circuit



‘I was sitting at a desk, probably stayed a little longer than usual.’

Most of it formed pretty clearly during the course of that day.’

Jack Kilby

Photos courtesy of Texas Instruments

Mozart the innovator



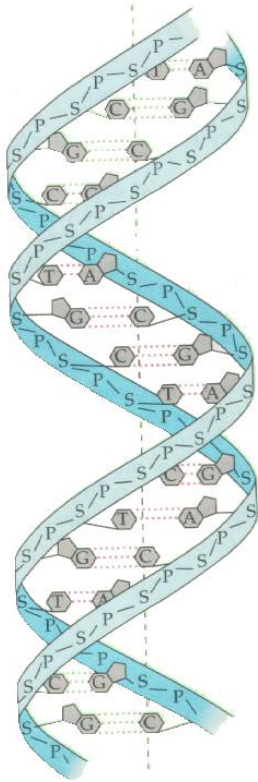
‘Thoughts crowd into my mind as easily as you could wish. Whence and how do they come? **I do not know and I have nothing to do with it** ... Then my soul is on fire with inspiration ... The work grows ... until I have the entire composition finished in my head though it may be long ...’

Bill Bowerman: Nike and the waffle sole

While at breakfast Bowerman was watching his wife prepare waffles. The waffle sole was born!

In 1964 Bowerman and Knight formed a partnership with a capital investment of \$1000. In 2005, Nike reported revenue of \$18.3 billion.

James Watson: the structure of DNA



‘Suddenly I became aware that an A-T pair ... was identical in shape to a G-C pair ...’

The FORD Territory



Territory Ghia AWD shown in Lightning Strike with optional 2300kg rated heavy duty towpack.

**So, what triggers or encourages an
Aha! experience?**

Let's talk it over

Some questions

- What triggered the innovation?
- What is known about the Aha! experience?
- How well prepared were the minds involved?
- Is the innovation monumental or incremental?
- Where is the innovation now on its S curve?
- Has technical support been needed?
- What is its likely lifetime?
- What has been the reward and who has reaped it?
- Are there threats on the horizon and how can they be countered?