

An Inventor's Perspective on Invention

Colin Harrison

IBM Distinguished Engineer Emeritus

IBM Corporate Strategy

colinh@us.ibm.com

Perspective no. 1 – Origins of Creativity

- Inventions usually begin as a single idea – followed by a lot of work
- I have no idea where ideas come from!
- Ideas are cheap – inventions may be expensive
- Every invention has its moment, sometimes several

Perspective no. 2 - Scenarios for Invention

- Problem Seeks Solution
 - CERN SPS – distributed control system (1972)
 - MRI – non-linear gradient field pulses (1977)
- Solution Seeks Problem
 - Laser (ca. 1960)
 - Magnetic bubble sensing by phonon-scattering (1979)
- Incumbent Enables Innovation
 - BBS to WWW (1988-1994)
- Scale Drives Invention
 - Oil industry (1880-present)
 - Moore's Law (1965-present)
- I Can See The Future
 - Double/Triple Play Subscriber Directories (1993)
 - Energy Supply Clearing House for PHEVs (2008)
- Counter-Examples
 - Atomic Engines (1946-1961)
 - Potty Patent (2001)

engineer

What made me a successful (?) ~~inventor~~?

- Watching the world (childhood, mainly)
 - What makes the news? What interests me? What is accessible? How would I do that?
- Tinkering & Learning (adolescence, mainly)
 - Repairing/building/playing with Meccano/models/bicycles/electronics/cameras
 - Reading scientific/technical literature
 - Go to a great school
- Study science and engineering
 - Go to a great university
 - Absorb and learn to apply principles (details become obsolete)
 - Keep up with the field, ability to connect ideas to specialists
- Specialise in being a generalist
 - Systems view of the world
 - Keep reading and watching the world, The Economist
- Sense of humour
 - Arthur Koestler, The Act of Creation – collision of ideas
 - Willingness to ask the stupid question and to look stupid
- Fishing in the Pond
 - Lots of subconscious ideas can be surfaced in the right circumstances
- Networks and Friends
 - Specialist skills, people who can answer questions, independent criticism, sharing/propagation of ideas
- Friends/Colleagues/Organizations with Money
 - Selling the idea/invention, articulate a plausible business model
 - Storytelling, narrative synthesis
- Lack of Ambition
 - Generosity, sharing of ideas and recognition, openness
 - Billionaires are not inventors
 - Prefer friends who will share to ownership (selfish motives)
 - Build the next generation of engineers