The epidemiology of innovation

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Procedure

• Innovation – definitions and usage
• How diseases spread
• How innovation spreads
• The UK diagnosis
• The CAB diagnosis
• Treatment
• Prognosis
Definition (basic)

Innovation (noun)

1. origination – the act or process of inventing or introducing something new
2. new idea or method – a new invention or way of doing something
Innovation (applied)

Innovation (noun)

1. the action or process of innovating.

**synonyms**: change, alteration, revolution, upheaval, transformation, metamorphosis, reorganization, restructuring, rearrangement, recasting, remodelling, renovation, restyling, variation; new measures, new methods, new devices, novelty, newness, unconventionality, modernization, modernism; a break with tradition, a shift of emphasis, a departure, a change of direction
Innovation (practical)

• Invention refers to new concepts or products that derive from an individual’s ideas or from scientific research. Innovation, on the other hand, is the commercialization of that invention.

• Invention is turning money into ideas; innovation is turning ideas into money.

• Change that creates a new dimension of performance.

• The ability to deliver new value to a customer.

• The act of introducing something new to a business or market.
Innovation (politics)

- Innovation is widely regarded as a prerequisite for economic growth – and therefore a good thing!
- Attempts to foster innovation by governments and companies have had mixed success
- Without a plan, people tend to start lots of sub-optimal activities with little overall impact
- We need a different way to look at the challenge of spreading innovation
"This really is an innovative approach, but I'm afraid we can't consider it. It's never been done before."
How Diseases Spread

• Hereditary Diseases
  – Parent to offspring/dominant and recessive genes

• Exchange Diseases
  – Direct exchange of bodily fluids or ingestion of food

• Contact Diseases
  – External contact and/or time dependent mediated contact

• Airborne Diseases
  – Pathogen carried by air, in water droplets, on dust or by insects
And...

• Diseases tend to only use one method for spread
• Diseases spread fastest, and with most impact, when the conditions are favourable
• Populations are often stratified with respect to their susceptibility to a disease
• Diseases can move between species and cause real disruption! (Zoonosis)
So, how does how diseases spread map onto how innovation spreads?
Hereditary Innovation

• Clusters – Localised communities of innovation
• Unsuccessful companies lead to experienced people starting up new companies, successful companies breed confidence and make money
• Over time, the growing capability of the community increases the success rate
• But it takes time – Silicon Valley goes back 70 years
Exchange Innovation

• Use of equity, grants or loans to support companies develop faster
  – Both private and government
• It’s an agreement, so is dependent on having similar goals and culture
• Spreads slowly because direct and intentional interaction is required – and resources may be limited
Contact Innovation

• Use of networking or knowledge transfer to give new potential innovators the skills they need
• Dependent on “good” contact between those who know and those who want to know – weak contact or not enough of it stops spread
• Spreads faster but easier to slow or stop
Airborne Innovation

• Stories capture the essence of innovation and present it in a usable format
• Readers can take all or part of the story as their learning
• Stories need to be written with the intention of communicating – not showing off!
• They can be distributed by non-standard routes
The UK Diagnosis

- There are clusters (possibly too many), but we seem impatient for them to deliver
- Episodically, the UK coordinates government funding – but change too often when it doesn't deliver immediately
- There is networking at different levels – but it’s uncoordinated
- We’re British and don’t like telling stories!
The CAB Diagnosis

• What is the geographical distribution of companies in the field? Are there clusters you can build on?
• Do you routinely apply for government support? Do banks understand the value of your innovations?
• This meeting is a good first step, but does it result in collaborations?
• Where are the stories of success?
The CAB Diagnosis

• Zoonosis – the advantage of lateral innovation
  – Do you take ideas from automotive, rail, maritime and aerospace industries?
  – Do you watch how other materials address the challenges and opportunities of the construction industry?
Treatment

• Although diseases use only one method to spread, innovation can be spread by several methods at the same time
• The conditions must be right to favour spread
• We have to realise that uptake will not be uniform or immediate
• To ensure effectiveness, consistency and alignment are important – especially if we use a combination of methods!
Prognosis

• Many systems are not designed within an overarching strategy
  – They are disjointed geographically and organisationally
  – They vary over time as understanding develops and “fashion” turn politician’s heads

• Both nationally and locally, an honest appraisal of capability would help us address achievable challenges
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