Innovation As Behaviour Change

Implications for economic transformation in New Zealand

– work in progress

7 July 2006

Overview of Presentation

- The issue
- The method
- Model development
- Application to New Zealand
- Conclusions, policy implications

The Issue

- Productivity the key to growth
- Three sources of productivity
  - Scale
  - Technology frontier extension
  - Movement toward the frontier
- In New Zealand context all are innovations

The Method

- Define innovation as a behaviour change – to do something new/different
- Two types of new: incremental and radical
  - Different organisational demands
- Develop a model of how and why behaviour changes
  - Neoclassical v alternatives
- Apply alternative to New Zealand situation:
  - Firms that haven't innovated at all
  - Firms that have innovated incrementally
- Appreciative inquiry approach
- Prima facie evidence

Incremental versus Radical Innovation

- Incremental innovation
  - Within existing paradigms
  - Small enhancements to products, processes, markets
  - Task-oriented, controlled
- Radical innovation
  - Exploring/creating new knowledge
  - Significant development of products, processes etc
  - Generative, open, hard to control
- Radical innovators must manage in both forms (Janus-like)

New Zealand Firms (Assumptions)

- Very few innovate radically (and on only one dimension, eg technology, not scale)
- Many have innovated incrementally in recent years
- A substantial minority have not innovated at all
- Therefore, key challenge to grow more radical innovators and lift the tail

The Neoclassical Model: Description

- Stable, homogenous, exogenous, narrow preferences
- Perfectly rational calculation
- A simple social world: full information and property rights
- Equilibrium: as if by an invisible hand

The Neoclassical Model: Application

- New Zealanders will want material increase as much as anyone
- Individuals and firms will calculate that innovation is needed to lift income and act accordingly
- Individuals and firms have access to the information they need to innovate
- New Zealand will move to a new higher productivity equilibrium

The Alternative Model: Preferences

- Extended: status, cooperation, justice
- Heterogeneous: between people and peoples
- Changing: due to personal and social experience
- Endogenous: impact outcomes and impacted by outcomes

The Alternative Model: Calculation

- Bounded rationality due to cognitive capacity constraints:
  - heuristics, SOPs
- Competition between affective and cognitive systems
- Consequences
  - bias to present pleasure
  - loss aversion
  - uncertainty problematic
  - Reflective and learning capacity key – especially learning from others, imitation

The Alternative Model: Social World

- A world full of uncertainty
  - Too much or too little information
  - Who owns what
- Results in: strategic interaction, high transaction costs, externalities
- Results in a rule-rich world
  - Formal institutions (legal, organisational, exchange)
  - Informal institutions (social norms, eg trust)

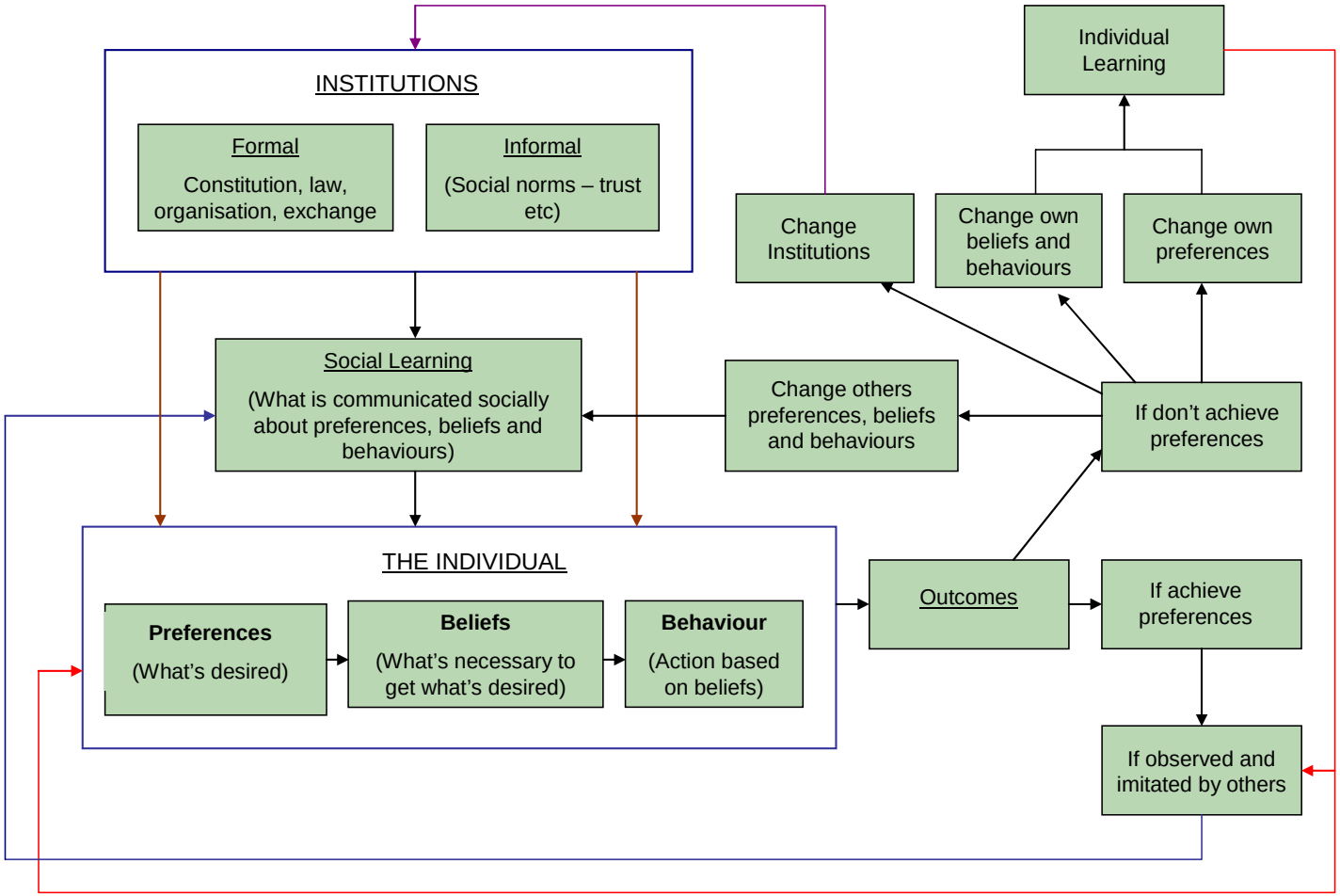
The Alternative Model: Equilibrium

- Disequilibrium to be expected due to
  - Technological evolution
  - Entrepreneurial alertness
    - Belief events are controllable
    - Belief I am capable of doing what is necessary
- Multiple equilibria to be expected
  - Many ways of devising institutions

The Alternative Model: Summary

- Preferences: extended, changing, heterogenous, endogenous
- Calculation: boundedly rational (SoPs) biased against change, learning from others key
- Social world: full of uncertainty, strategic interaction; formal and informal rules key
- Equilibrium: disequilibria or lock-in due to technology, entrepreneurship, different solutions to games

BEHAVIOUR CHANGE AS A SYSTEM



Implications of Alternative Model

- Cannot be taken as given innovation will arise:
  - Preferences, cognition, institutions and equilibrium all potentially problematic
- Extent to which innovation will take place dependent on understanding New Zealand specific:
  - Preferences: how worked out socially
  - Individual and social learning capacity for addressing uncertainty
  - Formal and informal institutions support for managing uncertainty
  - Degree of entrepreneurial alertness and equilibria lock-in

Application: New Zealand's Preferences

- Historically, high preference given to: lifestyle, the land, social conformity
- Historically, low status accorded to wealth through business success (especially international), non-conformity, failure
  - Heroes in Michael King
- May, therefore, be slow to change and have been reinforced by and limit institutional choice

Application: New Zealand's Learning Capacity

- If true that it is more radical innovation that is key, then
  - Can anticipate high levels of aversion and avoidance (individual learning)
  - Amplified in New Zealand context, due to the lack of role models (the "how to" being in the air)
- But isn't New Zealand's human capital as good as any?
  - Yes, but capital doesn't translate to social knowledge automatically
  - Will depend on quality of institutions to build transacting skill

Application: New Zealand's Formal Institutions

- Basic laws broadly ok, but contested and this doesn't reinforce new behaviours
- Organisational and exchange rules likely to be short of best practice
  - How "state of art" is NZTE?
  - How "bespoke" to New Zealand is necessary?
- Overall, likely to be supportive but not without importance; may excuse firms from changing own behaviours

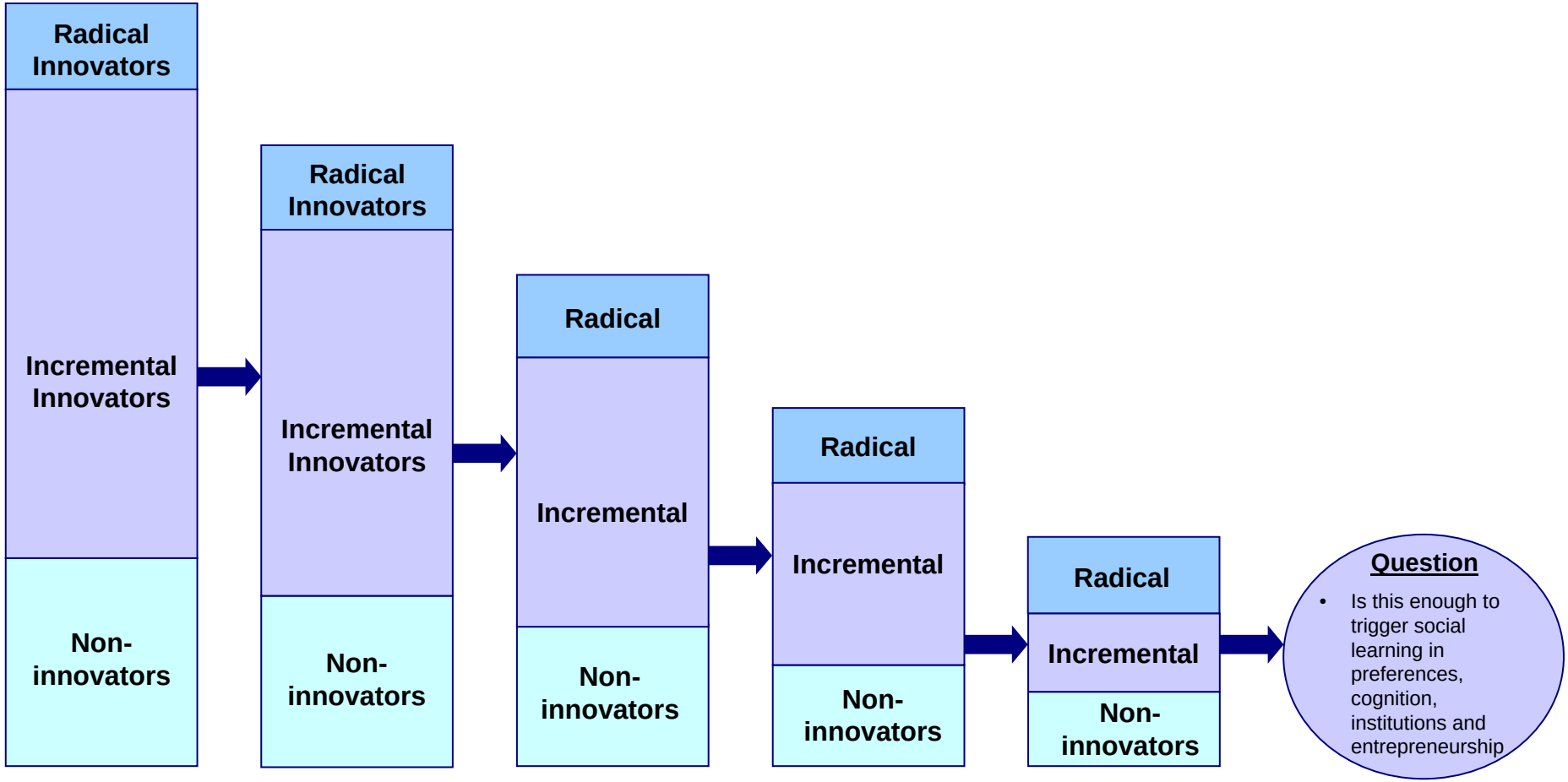
Application: New Zealand's Informal Institutions

- If radical innovation the priority, then higher levels of uncertainty in New Zealand context
  - High levels of trust required, therefore
- Popular wisdom: New Zealand is a high trust country – but is this true?
- Our type of trust is very specific:
  - Practical, well-defined tasks, within existing paradigm; equals incremental innovation
  - Not high levels of "shared trust" between firms (Perry)
  - Comparator countries mainly higher trust (NIS → WVS)

Application: New Zealand's Entrepreneurial Capacity

- Start ups and exits are no measure
- Size and distance are not obstacles for entrepreneurs
- New Zealand history suggests high priority placed on protecting ourselves from uncertainty
  - We were on our own: self sufficiency and improvisation to survive
  - We had to be better than Britain: agricultural efficiency, a fair go for all
  - And we had proved we were: self-satisfaction
- Need to be careful of our rhetoric: saying we are innovative and entrepreneurial can reinforce self satisfaction (the opposite of entrepreneurship)

Generating Social Learning



Conclusion? Lock-in?

- May be locked into a path of:
  - Low aspiration
  - Limited social learning
  - Limited shared trust and entrepreneurship
- Collective interest in others being more aspirational and risk taking to create social learning and growth; individually may not want to do so
- Addressing size and distance issues may be necessary, but not sufficient

Policy Implications

- Further work: is this a plausible story?
- Preferences: what do we give status to, aspire to?
- Calculation: how aware are we of cognitive biases and social learning processes?
- Institutional:
  - Quality of NZTE advice (external review)
  - Build Consensus around formal institutions
  - How trusting are we?
- Entrepreneurship: How alert are we?
- Common knowledge problems require collective reflection and communication solutions: national dialogue