How government policy can improve innovation performance

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INSTITUT DE RECHERCHE SUR LA SCIENCE, LA SOCIÉTÉ ET LA POLITIQUE PUBLIQUE
INSTITUTE FOR SCIENCE, SOCIETY AND POLICY

DISCUSSION PAPER
INNOVATION
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Looking at Innovation from a Uniquely Canadian Perspective

The Case for a New Alliance of Practice, Policy and Scholarship

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Today's talk

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INNOVATION
DECALOGUE
October 2013

Canada's Future as an Innovative Society

A Decalogue of Policy Criteria

~ Endorsement Edition ~

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The conventional wisdom…

- Innovation is about technology
- More science yields more technology
- More R&D yields more innovation
- More innovation yields higher growth, productivity and employment

Therefore:

- **The policy problem *must* be how to stimulate innovation and entrepreneurship. *Right??***

The approved route to the “Holy Grail”

- Subsidize industry R&D
- Import more knowledge producers
- Invest in research infrastructure
- Commercialize more university research
- Start more hi-tech companies
- Induce more venture capital
- Protect more IP
- Etc. etc.

The embarrassing result…

None of the measures we adopt appear to be having any effect

The root of the problem…

Our policies and measures have become completely detached from what is known about innovation and how it creates wealth

The policy issue is not how to stimulate innovation and entrepreneurship

The policy issue is how to create prosperity from innovation and entrepreneurship

Some mental arithmetic

Try thinking about innovation by ***eliminating*** the following concepts:

- Commercialization
- Start-ups
- Venture capital
- Intellectual property

No theory of how innovation creates wealth requires any of them

What is innovation?

A ***socio-economic outcome***, not an input or artifact

A ***new combination*** of factors that creates a new source of public welfare

A ***qualitative*** change: not in how much is produced, but in what is produced and how

Generates growth by ***displacing*** existing sources of value with new sources of value – "creative destruction"

R&D is not innovation

- ***More firms innovate*** than perform R&D
- R&D can also be a ***disincentive*** to investment
- R&D is highly ***concentrated***
  - Fewer than a dozen sectors are R&D intensive (re-investing > 3% of revenues in R&D)
  - About 800 ***large*** firms worldwide perform roughly 80% of global R&D (by investment)
  - In Canada ca 75 companies perform ca 50% of R&D
- Translating R&D successfully depends ***entirely*** upon the ***existing*** infrastructure of receptors

R&D is not just technology

Market knowledge:

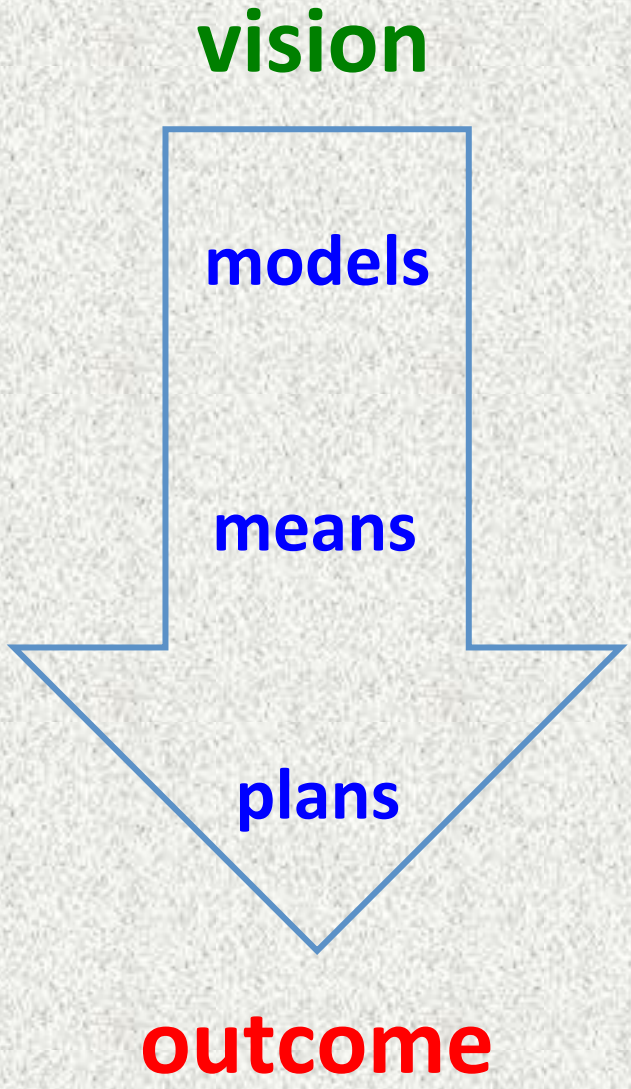
- customers
- competitors
- suppliers
- networks
- social, political and economic trends

Technical knowledge:

- engineering
- science
- production

Organizational knowledge:

- finance
- management
- procurement
- regulation and legislation



What is wrong with technology-led innovation policy?

- The ***market is not failing*** to produce technology
  - Confines public resources to strategies based on ***Merit Goods*** *(technology products)*
- Fails to pick winners but ***succeeds in picking losers***
- ***Deflects public resources from genuine and urgent innovation opportunities***

Three essential concepts from the science on innovation:

1. Learning
2. System
3. History

1. Learning

FOUR BASIC TRUTHS ABOUT ENTREPRENEURSHIP AND INNOVATION:

They are *norms*, not exceptions

They *do not* create prosperity automatically and can *just as easily destroy it*

Societies become prosperous only if they *learn how to transform* them into public welfare

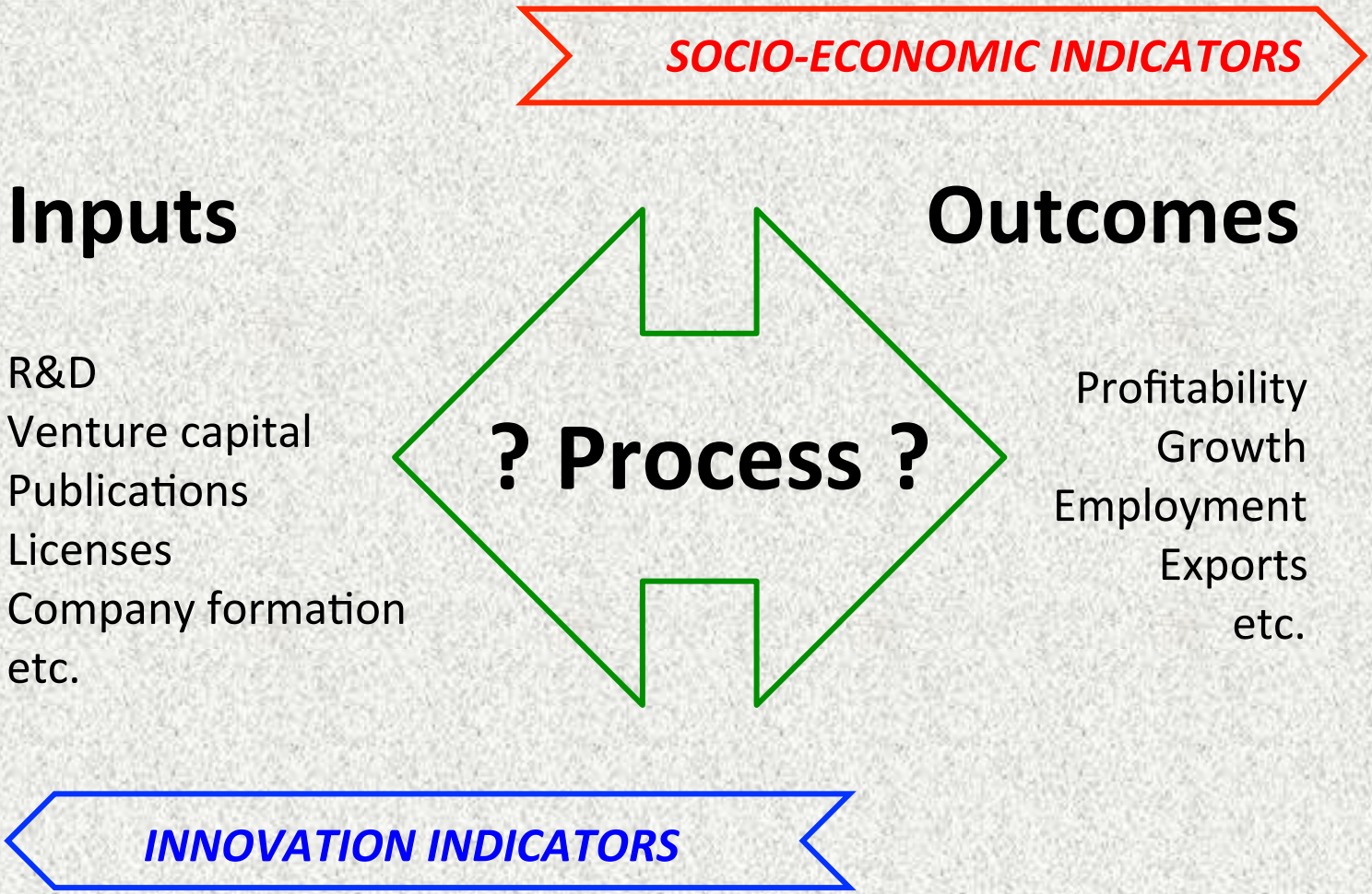
Societies sustain and increase prosperity only if they *continue* to learn as circumstances evolve

Ground zero for learning about innovation in Canada

- Our economy is driven by ***capital-intensive*** industries (resources and services)
- We are both a ***resource-based*** economy **and** a ***knowledge-based*** economy
- Our ***resource sectors*** are also among our most ***S&T intensive*** sectors

Very little of this is reflected in conventional approaches to assessing national or regional innovation performance

The knowledge gap

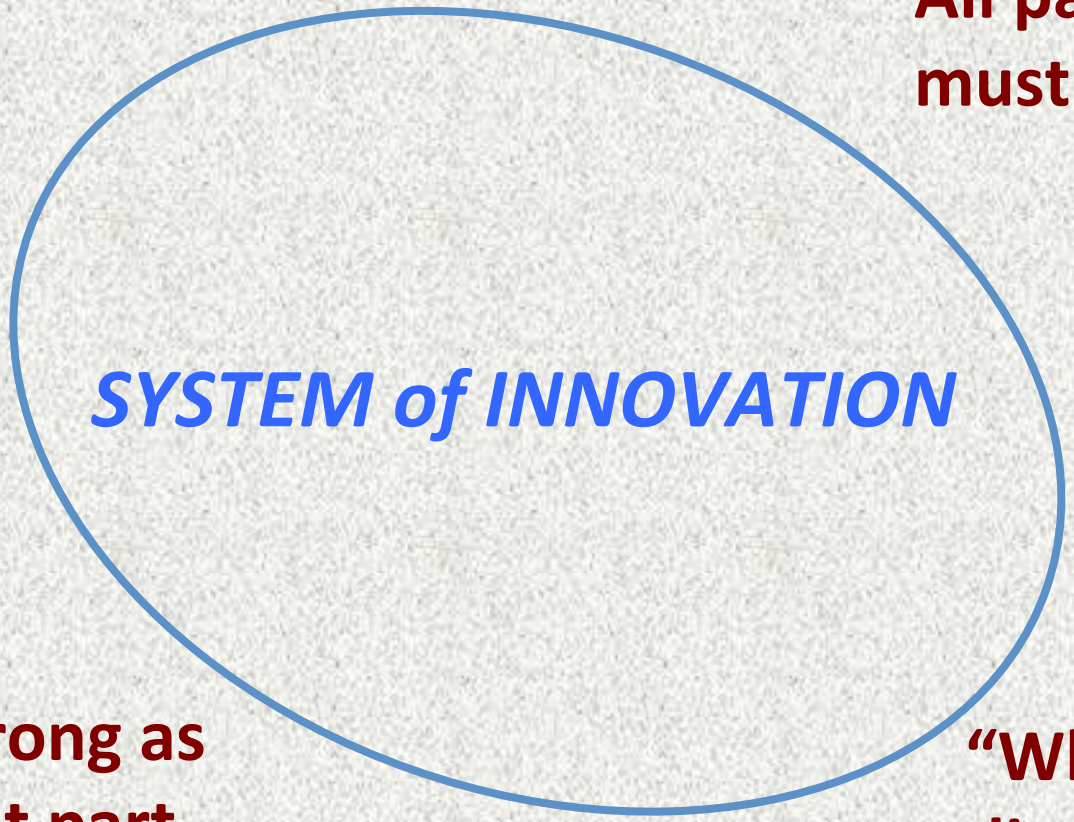


2. System

Innovation is a process not an artifact

All parts are important

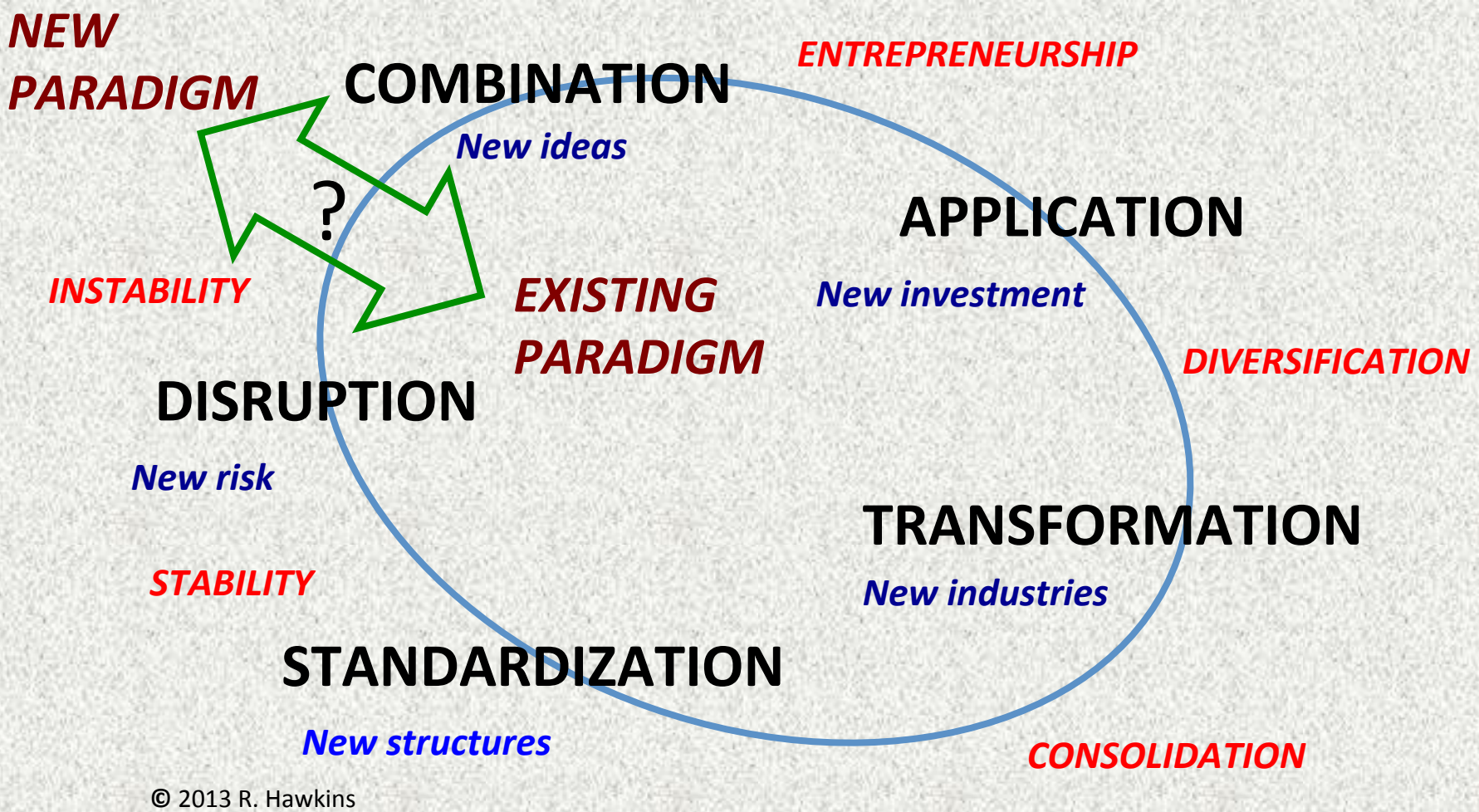
All parts must function



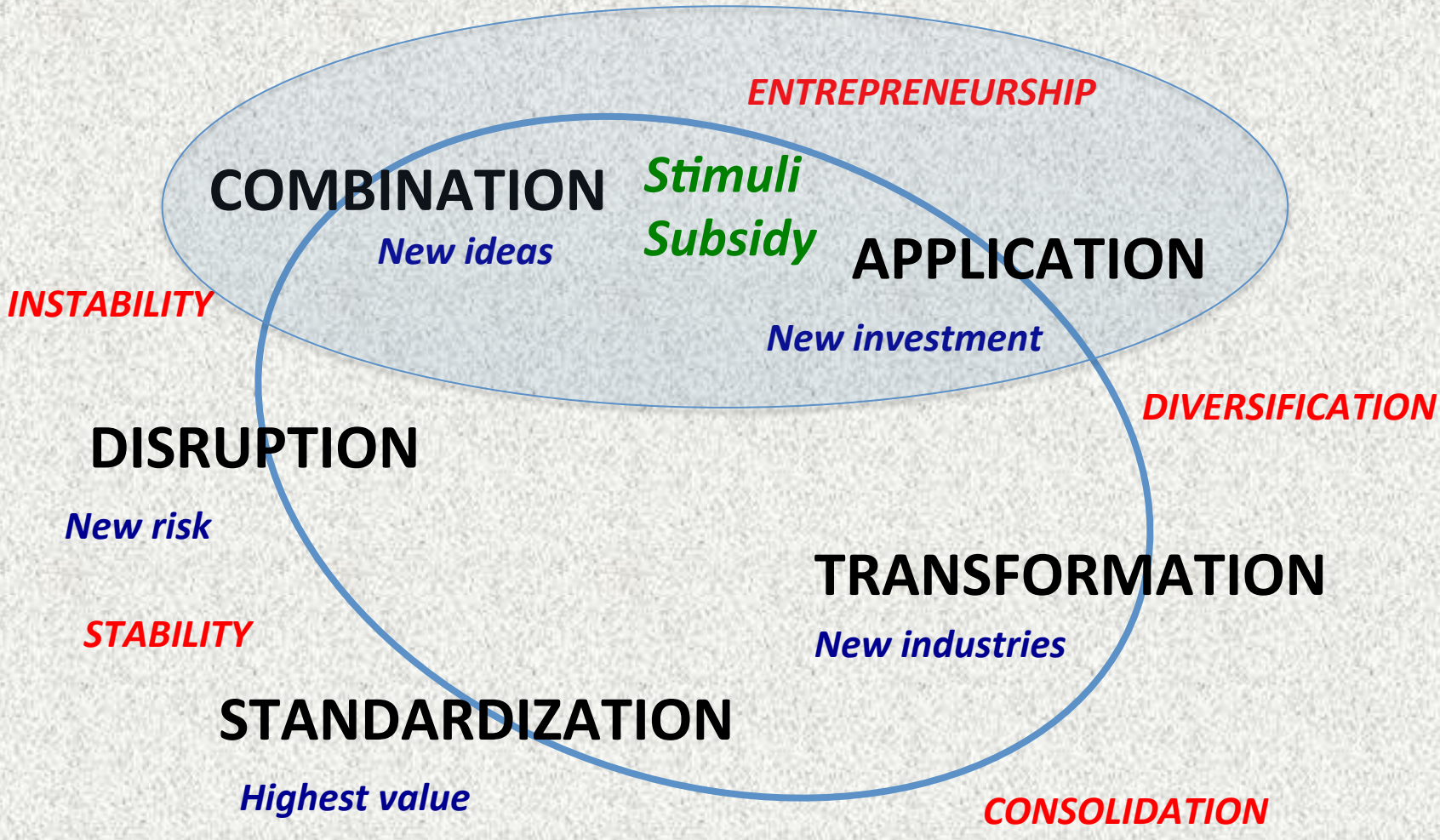
Only as strong as its weakest part

"Whole system" diagnostics

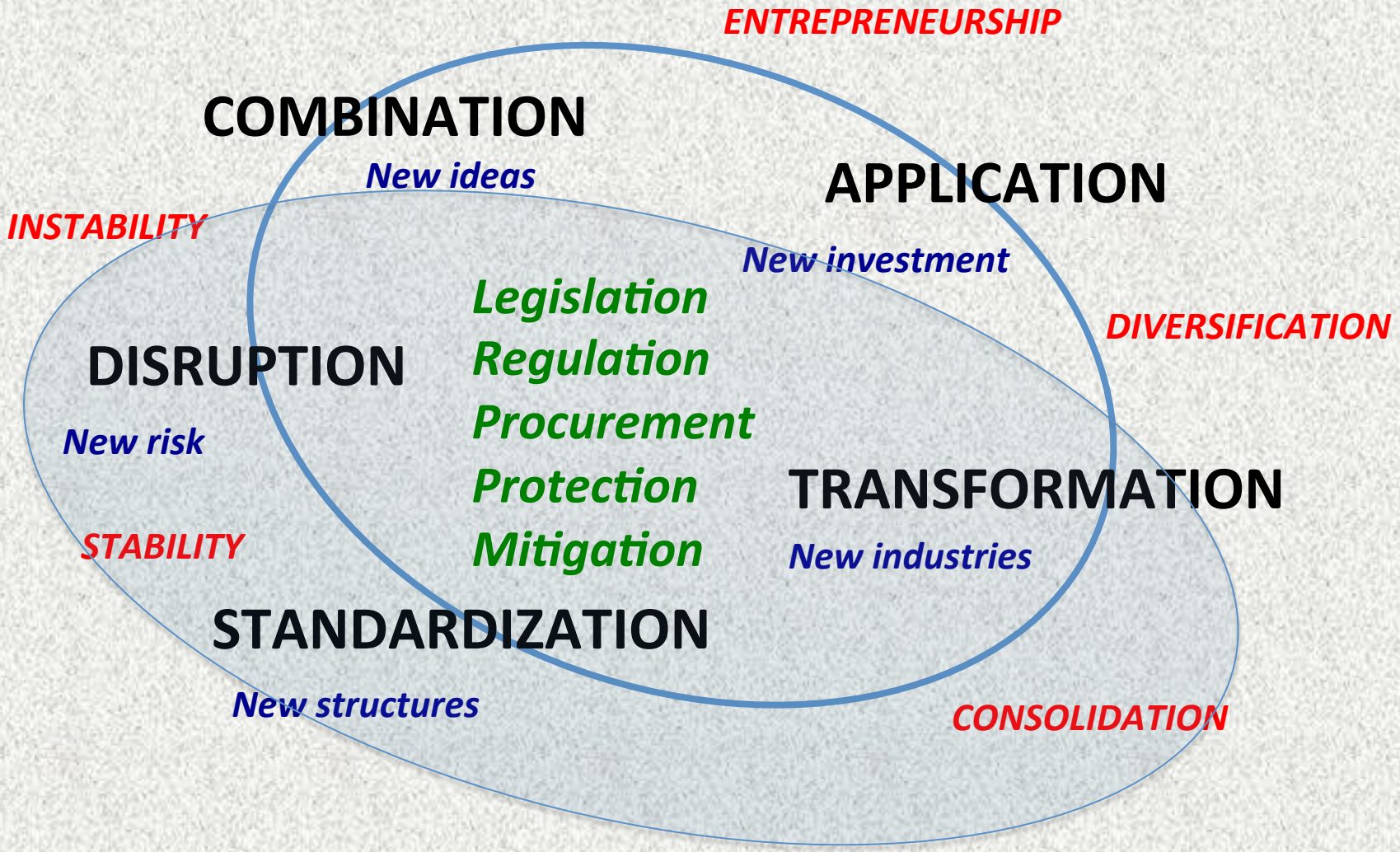
Innovation is a complex system



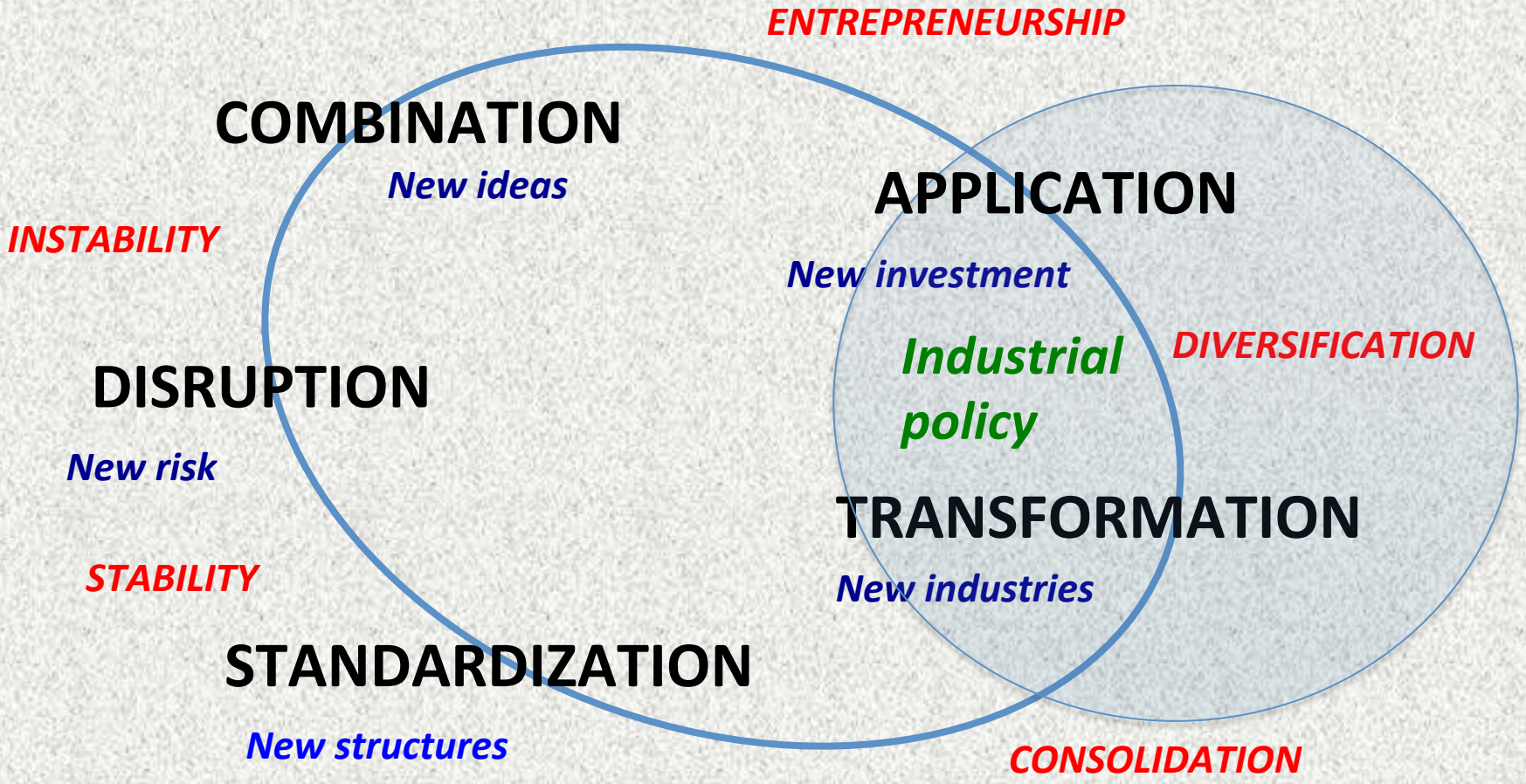
Current focus of “innovation” policy



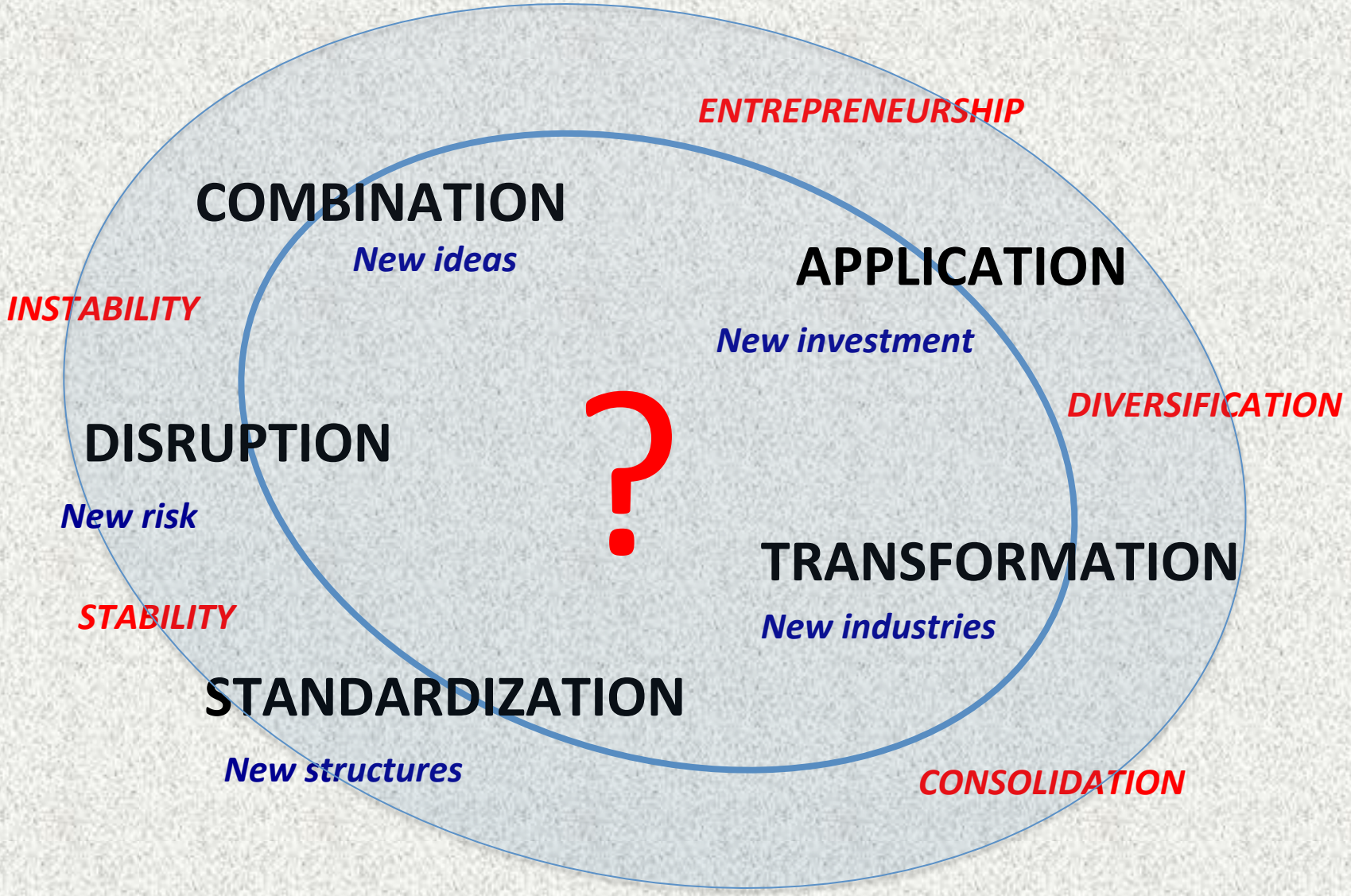
Natural habitat for public policy



The critical ("missing?") link



The challenge for Canadian innovation policy



3. History

History matters in innovation

Where you start plays a huge role in where you can go
and how you can get there

Critical importance of

- ***transferrable assets***
- ***positional assets***
- ***"transitional" assets***

The "Richter Scale" of innovation impacts - FREQUENCY

10 Once in a century

5 Once in a generation

3 Every few months or years

1 All the time

The "Richter Scale" of innovation impacts - INTENSITY

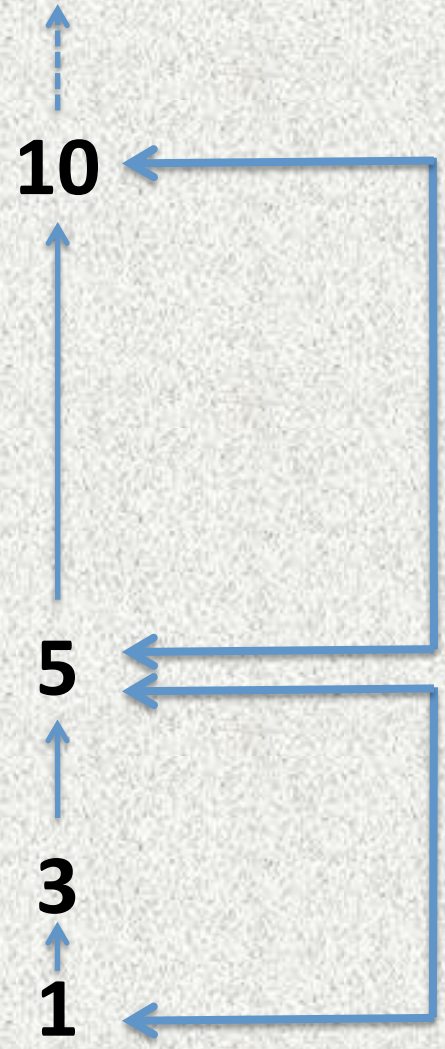
10 Structural realignment of national political, social, and economic factors

5 New social, economic or industrial paradigms

3 New products or processes

1 Incremental changes in products or processes

The “Richter Scale” of innovation impacts - OPPORTUNITY



HIGHEST OPPORTUNITY FOR ECONOMIC AND INDUSTRIAL REORIENTATION

STEADY GROWTH BUT GREATEST RISK OF STAGNATION AND DEPENDENCY

Canada on the innovation "Richter Scale"

10 **Manufacturing oil from sand**

- Political orientation – internal and external
- Trade orientation
- Human capital orientation
- Demographics
- Investment orientation
- Currency
- etc.

5 **NORTEL/MITEL telecom cluster**

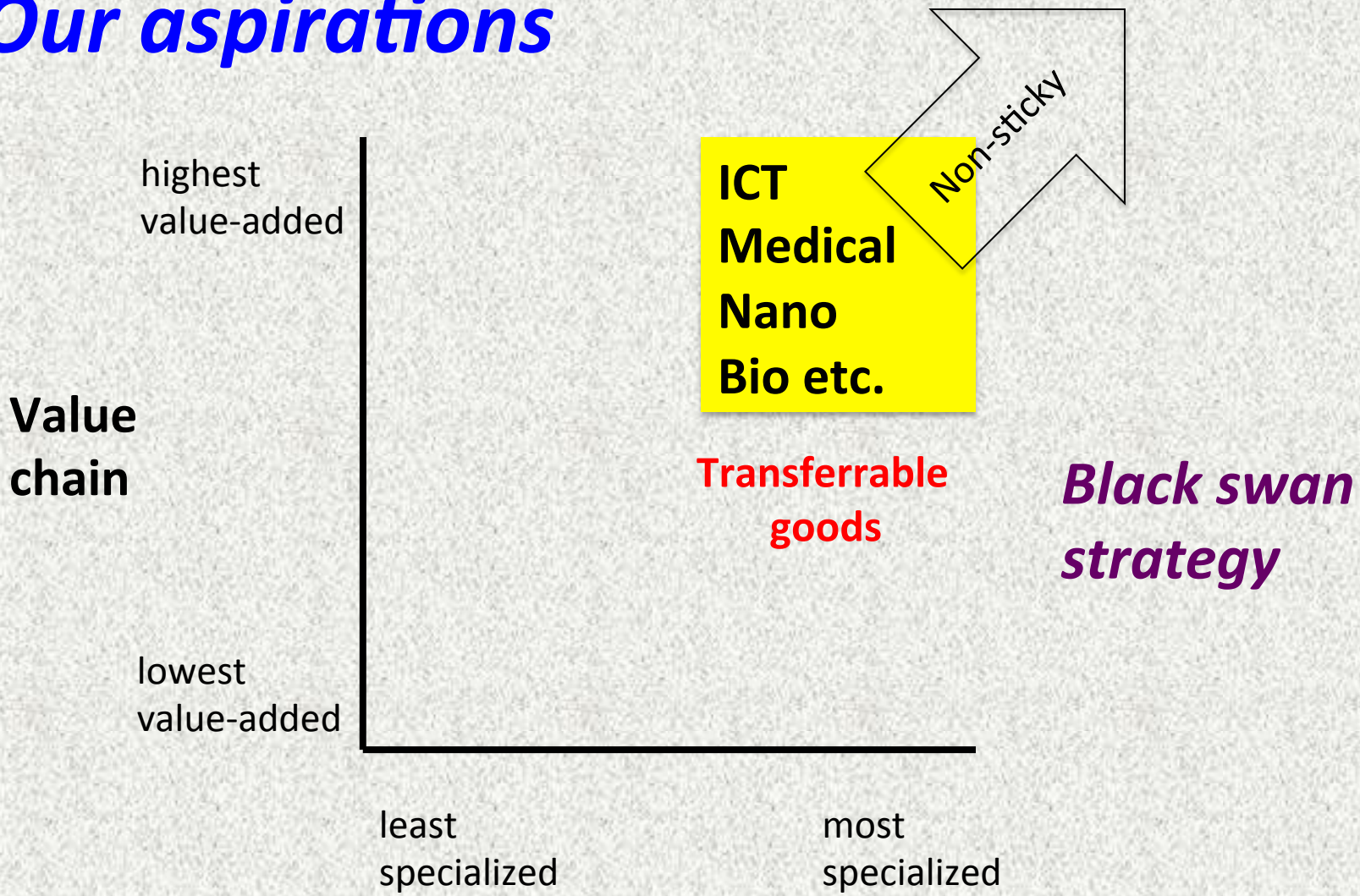
3 **(RIM)**

1 **Oshawa automotive R&D center**

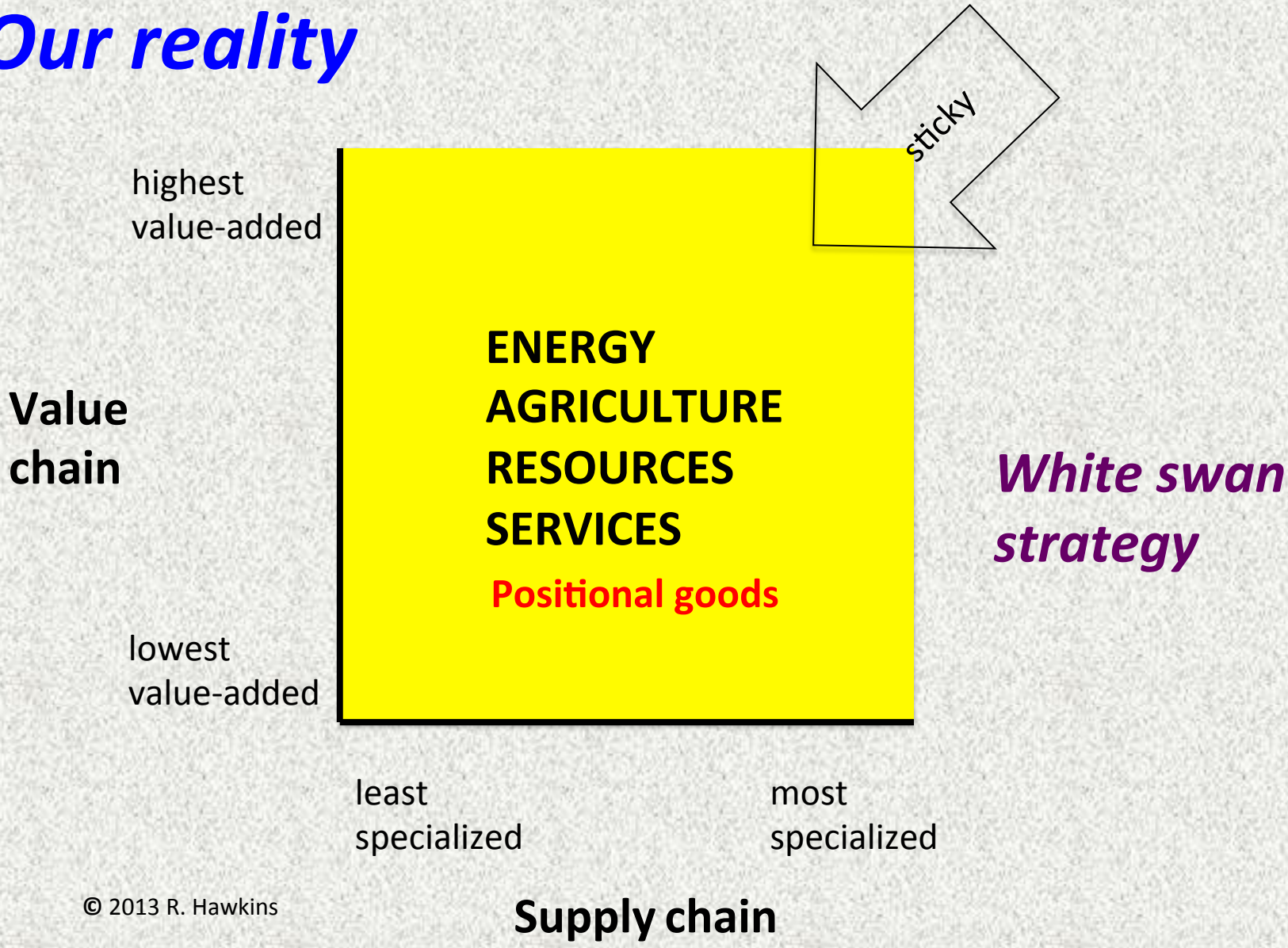
What do all "10s" have in common?

- Public sector moves first – private sector follows
- Long-term strategic planning
- Large-scale transformative projects
- Large enterprise focus from inception
- Massive public investments and/or risk guarantees

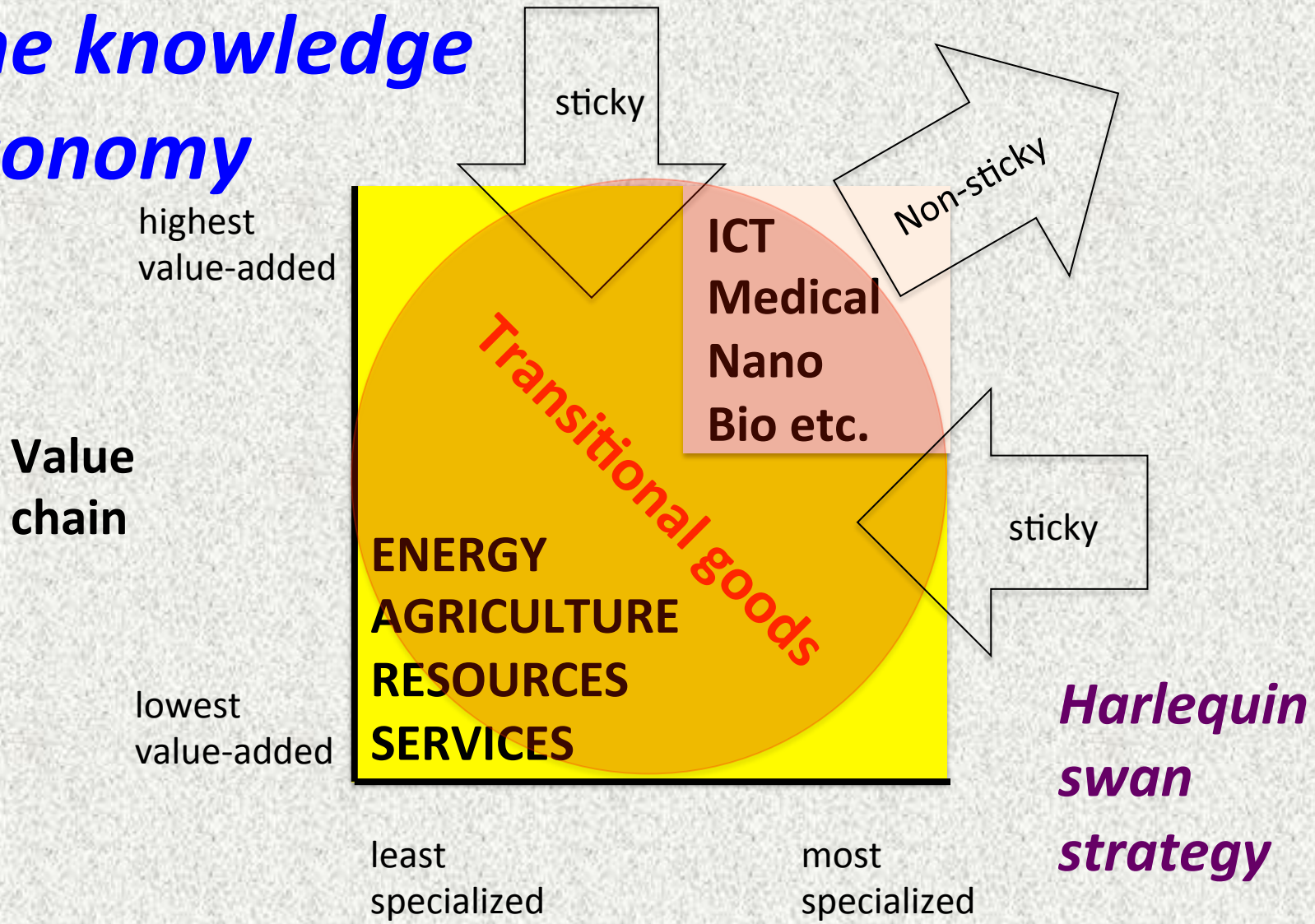
Our aspirations



Our reality



The knowledge economy



Harlequin swan strategy

10 evidence - based principles

Non –prescriptive

Guides for policy making

Benchmarks for policy evaluation

Open-ended, but sufficient to move forward

Thank you for joining us today

Now,

join the conversation

tell us what you think

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