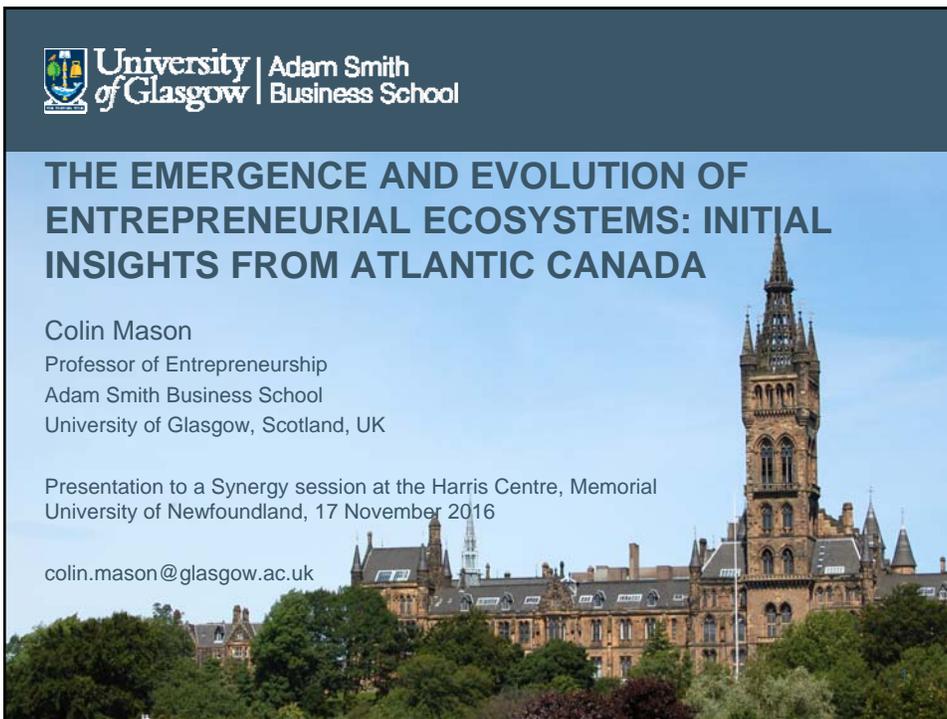


THE EMERGENCE AND EVOLUTION OF ENTREPRENEURIAL ECOSYSTEMS: INITIAL INSIGHTS FROM ATLANTIC CANADA

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1. Introduction

- Entrepreneurial activity is ‘spikey’
- How do we explain geographical variations in entrepreneurial activity?
 - Traditional approach: structural factors (industry, establishment size, occupation, ownership, etc)
 - **Better at explaining business start-up rates than high growth firm (Gazelles)**
 - New perspective –entrepreneurial ecosystems
 - **Stam: “a set of interdependent actors and factors coordinated in such a way that they enable productive entrepreneurship”**

Isenberg



- Conducive culture
- Enabling policies and leadership
- Availability of appropriate finance
- Quality of human capital
- Venture-friendly markets for products
- Range of institutional support

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A longer definition

- Mason and Brown (2014) “a set **of interconnected entrepreneurial actors** (both potential and existing), **entrepreneurial organisations** (e.g. firms, venture capitalists, business angels, banks), **institutions** (universities, public sector agencies, financial bodies) and **entrepreneurial processes** (e.g. business birth rate, number of high growth firms, levels of ‘blockbuster’ entrepreneurship, number of serial entrepreneurs, level of entrepreneurial ambition) which formally and informally coalesce to connect, mediate and govern the performance within the local entrepreneurial environment.”

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Entrepreneurial ecosystems are inherently geographical

- Entrepreneurial ecosystems are geographically bounded
- But they are not confined to a specific scale
- They may be nested
 - National entrepreneurial ecosystem
 - Regional entrepreneurial ecosystem
 - City entrepreneurial ecosystem
 - Neighbourhood entrepreneurial ecosystem
- There are industry specific entrepreneurial ecosystems

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2. When, where and how do EEs emerge?

- EEs are dynamic – they emerge and evolve
 - Why do they emerge where and when they do?
 - **Place-specific assets: e.g. strategic location, existence of 'talent magnets'; high residential desirability; knowledge-based economy; prior industrial tradition (in some cases)**
 - Trigger factors?
 - Why do some EEs fail to build on their early momentum?
 - Why do some EEs go into decline?
- These questions require the investigation of emerging entrepreneurial ecosystems and their ongoing tracking

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3. What the literature says: I

1. Entrepreneurial activity is the key driver of EE growth
2. The spin-off process is critical – incubator organisations are essential
 - Case studies of EEs highlight the importance of specific organisations that account for a disproportionate share of start-up activity - cluster maps (e.g. Acorn in Cambridge)
 - Talent magnets
 - Have significant management functions
 - Strong internal labour markets – enable engineers to become technology managers
 - Customers for local firms – can take these firms into global markets
 - “You simply cannot have a flourishing entrepreneurial ecosystem without large companies to cultivate it, intentionally or otherwise”⁷ (Isenberg, 2013)

What the literature says: II

3. Blockbuster entrepreneurship: ‘Law of small numbers’ – successful EEs are driven by a handful of successes
 - Entrepreneurial firms which grow to exceptional size and created significant wealth for its founders, investors, senior management, employees who reinvest their wealth and learning in the ecosystem as serial entrepreneurs, investors, mentors, institution builders. Examples:
 - Microsoft in Seattle
 - Nokia in Finland
 - Acorn in Cambridge
 - Newbridge Networks in Ottawa

What the literature says: III

4. Growth is driven by 'entrepreneurial recycling'

- Entrepreneurs who have built up successful companies which they sell to global businesses, may work with these businesses for a while, but leave to reinvest their wealth and expertise in the cluster – serial entrepreneurs, investors, mentors, institutional builders.
- May be multiple examples of recycling from the same company
- But entrepreneurial recycling does not always happen (e.g. Ottawa examples)
- Implication: Need periodic big exits – harvest events
- Small exits (e.g. premature) will not have the same effect

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What the literature says: IV

4. Failure is often the spark that starts the spin-off process

- Releasing talented workers, often recently attracted to the area, who lose their jobs, fear they will lose their jobs, like the area so start their own businesses rather than moving away to another area. Examples
 - **Decline of RIM in Kitchener-Waterloo**
 - **Decline of Nokia in various cities in Finland**
 - **Decline of IBM in Boulder**
 - **Ottawa example**

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What the literature says: V

5. Culture matters (Brad Feld)

- Philosophy of inclusiveness
- Attitude of give-before-you-get
- Knowledge sharing
- Positive attitude to failure: “entrepreneurs aren’t shamed when they fail; it’s quite the opposite reaction. They are immediately welcomed as advisers for other companies, entrepreneurs in residence for VC firms, and as mentors or executives for accelerators. That’s what entrepreneurs do” (Feld)
- Porous boundaries: “when someone leaves one company for another, they aren’t shunned”
- Experienced entrepreneurs play the leadership role in the EE, driving its development: “when a start-up community starts relying on government on be a leader, bad things happen”

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What the literature says: VI

6. Universities are important – but less so than commonly thought

- Not every successful EE has a leading research based university
- Number of spin-offs is small and high growth USOs are rare
- TTOs are often seen as barriers to commercialisation of university research
- Entrepreneurship education is not effective because it is in Business Schools –needs to be in Engineering Faculties.
- Key roles of universities are:
 - Attraction of students to the area with new ideas
 - Student/alumni start-ups

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4. Dynamics of Entrepreneurial Ecosystems

As entrepreneurial ecosystems evolve we see

- The emergence of local finance providers – especially angel and venture capital
- Local successes attract interest from non-local investors
- Emergence of connectors – *liaison-animators* (Sweeney) - who connect, often informally, people, ideas, resources
- Deal-makers: well-connected and experienced business people with skills, know-how, connections to people and resources to support young companies – mentoring, connections, fiduciary roles (e.g., board members)
- Emergence of entrepreneurial service providers
- Institutional emergence: e.g. accelerators, networking organisations (e.g. CONNECT in San Diego)

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- All of this enables the spin-off process to gather momentum in a virtuous, self-reinforcing process
 - Successful role models create legitimacy for further entrepreneurial activity
 - Spin-offs diffuse high level expertise and competences within the region when individuals take the ideas they have acquired in other organisations and move to other organisations as a key employee or part of the founding team
 - Critical mass of spin-offs nourishes the creation and growth of entrepreneurial service providers: law, marketing, executive search, accountancy, consultants, technical services, finance
 - All of this attracts skilled labour to the region
 - Successful EEs may go into reverse (e.g. Ottawa)

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5. The Atlantic Canada Entrepreneurial Ecosystem

- Data sources
- Secondary sources
 - Entrevestor data
 - Entrevestor reports
 - Other media coverage and reports
- Telephone interviews (5) for a study of evolving approaches of government to venture capital in Nova Scotia
- 27 face to face interviews in Halifax and attendance at several events and 4 interviews in St John's – but the followin discussion is based only on NS interviews.

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5.1. Pre-existing conditions

- Unfavourable
 - Peripheral location – distance to markets
 - Geographically dispersed population – low density
 - No major urban centre – lack of agglomeration economies
 - Politically fragmented – 4 provinces
 - Long term economically depressed region, reliant on equalisation payments, creating 'learned helplessness'
 - Economy dominated by resource based industries
 - Lack of head offices, technology intensive firms, private R&D – so lack of talent magnets – dominated by branches and back offices
 - Demographics: Ageing population, loss of people in young adult demographic (especially loss to Alberta)
 - Wages relatively low, marginal tax rate marginally high

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- Favourable
 - Quality of life
 - Universities – 10 in the region
 - **Research**
 - **High numbers and proportions of students, especially international students**
 - **(Nova Scotia) More graduates per capita in engineering, applied science, mathematics, physical sciences than any other Canadian provide**
 - NBTel research
 - Culture off 'giving back'
 - International airport
 - Within each of the cities everyone is connected, creating many different points of contact

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5.2. Growth in Entrepreneurial activity is recent

- Growth in number of independent tech firms:
 - 368 in 2015 compared with 260 in 2013
 - Date of start of 2015 population:
 - **104: 2015**
 - **50: 2014**
 - **52: 2013**
 - **40: 2012**
 - **23: 2011**
 - **21: 2010**
 - **78: Before 2010**

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Growth continued

- “we’re moving from a community of small experimental companies to a group that includes several high-growth corporations with international reach.” Entrevestor
 - 130 with over \$100k in sales
 - 30 with more than \$2m in sales
- Attracting venture capital from outside the region
- Attracting acquirers from outside the region
- But the tech community is concentrated sectorally and geographically
 - 70% of firms are in IT (but IT spills into other sectors, so definitional issues)
 - 53% of firms are in Nova Scotia (38% in Halifax)

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5.3. Enablers – macro trends

- ACOA been promoting entrepreneurship since 1988
- Digitisation, platforms, lean programming etc further reducing barriers to entry to IT.
- Millennial – different attitudes to work, attracted to the ‘gig’ economy

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5.4. Why Atlantic Canada – place specific triggers

- Ownership change at NBTel
 - Technology team left to start their own businesses
- Mega exits c.2011
 - Q1 Labs (New Brunswick) to IBM
 - Radian6 (New Brunswick) to Salesforce
 - GoInstant (Nova Scotia) to Salesforce
 - Ocean Nutrition (Nova Scotia) to Royal DSM - \$540m.
 - Recycling of financial and human capital
 - Role models
 - Attention grabbing
- Launch of Dalhousie's Lean Start Up class (2012)
 - Source of potential entrepreneurs ('feeder')

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Place specific triggers: Continued

- The Report of the Nova Scotia Commission on Building Our New Economy (The Ivany Report) (Nova Scotia) 2014
- *“Major socioeconomic changes are making Nova Scotia weaker and more dependent. If we are to halt the slide, we must change — and quickly — the way we finance our standard of living. We are at a crossroads. The world is changing. We must change too or face the consequences. The only certainty is that the status quo is not an option.”*

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6. The Emerging Entrepreneurial Ecosystem

- Culture
 - Raising awareness of entrepreneurship
 - Entrepreneurship is visible, being talked about, being encouraged
 - “more sophisticated conversations are happening”
- Human capital –
 - entrepreneurs emerging: e.g. from universities, research institutes, etc.
 - Support and training for entrepreneurs – university courses on entrepreneurship accelerations, incubators, mentoring, events, etc
 - Co-op education and increasing university-industry engagement giving students domain knowledge to support their technical knowledge
 - But thin pool of skilled labour, mid and senior level management 23

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- Supports
 - Support for entrepreneurs:
 - **Accelerators and Incubators (Propel ICT, Mentor Camp, Volta, Planet Hatch, Common Grounds, etc) they “make people better entrepreneurs”**
 - **mentoring (e.g. Volta, Propel ICT, Mentorcamp, Starting Lean, Genesis), events, ‘collision spaces’ (e.g. Sandboxes)**
 - **Pitching and business plan competitions**
 - Match-ups and greet ‘n’ meets to help students connect with companies – creates awareness that there are jobs available
 - Mentoring of students to help them discover career paths
 - Springboard – to support technology transfer and industry liaison function in universities – supporting universities- business projects for u/g students, masters students, PhDs, post-docs

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- Availability of finance
 - Availability of non-dilutive finance: IRAP, SRED, BDF
 - Seed capital – angels, Innovacorp,
 - Follow-on finance: NBIF, Polaris Fund
 - Series A: Build Ventures
 - External investors
- Markets
 - No big local markets
 - Reluctance of big companies to be the first customer – but changing: McCain examples

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7. Key processes

- Entrepreneurial recycling from exits
 - Creating new infrastructure – Propel ICT (Gerry Pond), Volta (Jevon MacDonald)
 - Angel investors
 - Put the region on the map – gaining attention from VCs
 - Serial entrepreneurship
 - Role models: Cultural influence on new cohort of young people to start companies
 - Attracts multinational companies to the region (e.g. Salesforce)

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- Looking externally for models, expertise, resources
 - Examples: Volta modelled on Communitech, Sandboxes on MIT; for people (e.g. new CEO of Volta), expertise (e.g. mentoring) and resources (e.g. venture capital)
- Critical role of universities, especially Dalhousie and UNB
 - Recognised the need to embed entrepreneurship within their institutions – entrepreneurship curricula, experiential education involving engagement with industry. One of the new strategic objectives set out by the new Dal president is to “Contribute to cultural and economic vitality, locally and globally, by fostering creativity, innovation and entrepreneurship”

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- Policy
 - ACOA, other government agencies and provincial governments have been critical
 - **Funder of most of the infrastructure in the entrepreneurial ecosystem**
 - **But philosophy has been that Government support the EE by leveraging private sector people, private initiatives and private money (e.g. Volta) not running things**
 - “we set the table step back and see what happens”
 - Sought to develop pan-Atlantic initiatives
 - Have to resist pressure to rationalise the support mechanism

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Weaknesses

- Early days – still 1.0 – building 2.0
- Lack of scale-ups – need to create more valuable companies
 - “entrepreneurs want money in their jeans”
 - Lack of senior and middle management talent
 - Lack of growth capital
- The resource based economy has very little connection to the new tech economy
 - Lack of reinvestment by wealthy families (the ‘cod fathers’) – exception is John Risely (Clearwater Foods)
 - Very few family offices (Killick Ventures is an rare example of a family office in the region)

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- Not as much reinvestment as might have been hoped for.
- Limited entrepreneurial spin-offs from ocean-tech, life science, bio science and clean tech research base
 - New government-led investment incubators and accelerators (e.g.COVE)
 - Will this change things?

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8. Implications for policy-makers

- Have to think long term
 - Actions today may not show benefit for several years
 - Creating entrepreneurial cultures takes a generation to show positive impacts
- Have built the strengths of the economy
 - Build/attract talent and knowledge – human capital is critical
 - Make the key players in the economy more 'sticky'
 - Take lots of small bets
 - Back entrepreneurial people in and outside government
 - Encourage greater mobility between government (including crown corporations) and the private sector.

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- The economy is interconnected – government can't just intervene in one part of the system because this will have implications elsewhere in the system
 - For example, increasing the supply of seed capital will create demand for later stage finance which the market may not provide
- A lot of things that make a difference appear to be serendipitous – e.g. the mega-exits in 2011-12
- But these can often be traced back to developments in the past (e.g. NBTel – Radian6 and Q1 Labs – acquisitions – Gerry Pond and Propel-ICT and East Valley Ventures)
- i.e. the past influences the present and the future.

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