

**Business Incubation – *Maturity, Variety, and  
Integration with the Ecosystem***

***Sarfraz A. Mian***

**Distinguished Professor**

**Entrepreneurship & Management Policy**

**State University of New York (SUNY), Oswego, NY, USA**

**Presentation to the Helix Conference, Power of Change for Sustainable Development  
*Linköping University, Sweden, 15-16 November 2022***

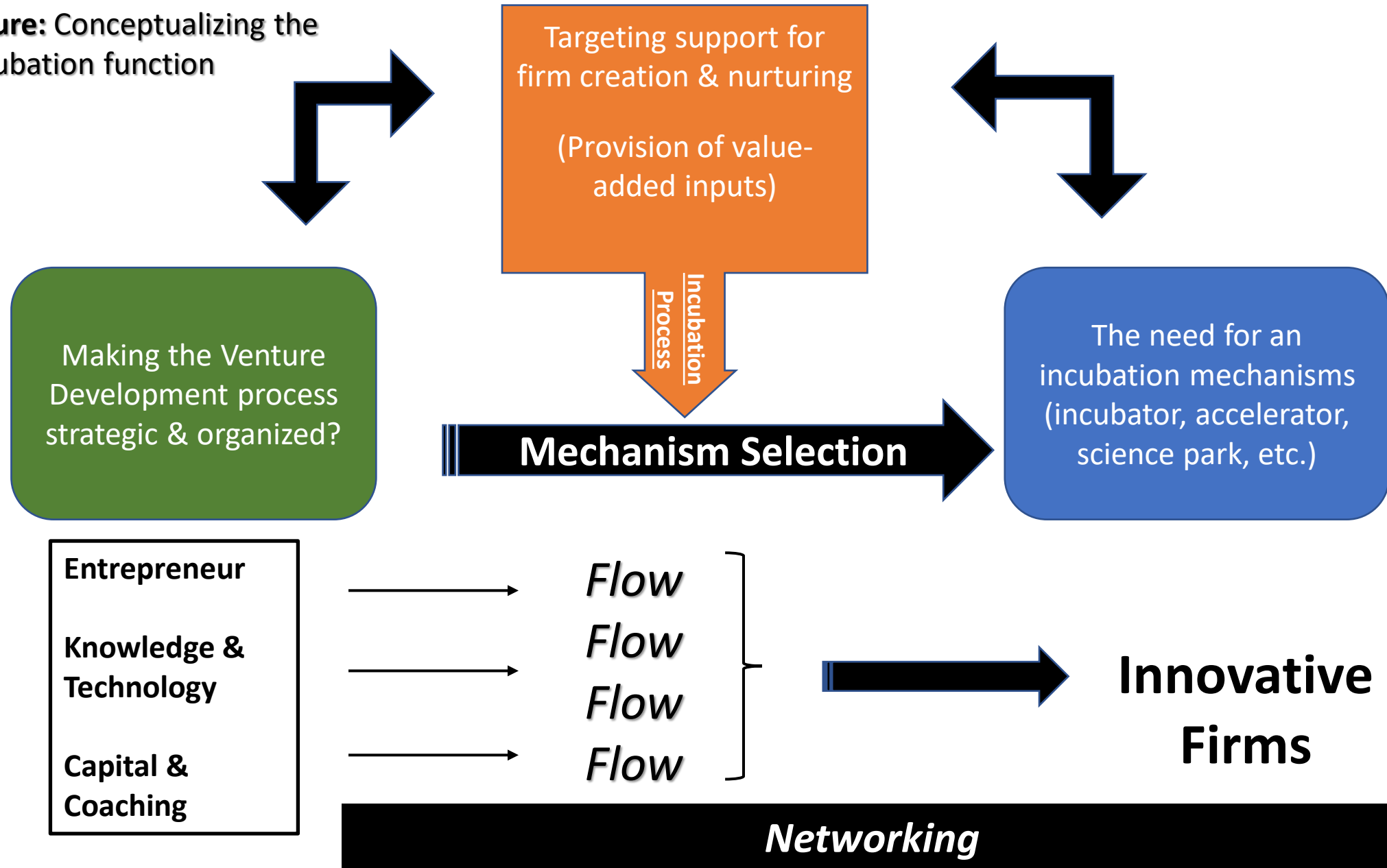
# Presentation Outline

- **The Handbook\*** – 4 Themes:
  - Understanding incubation
  - Incubation and ecosystem development
  - National/regional Incubation policies
  - Incubation practice & assessment
- **US Incubation Scenario**
  - The historic emergence of incubation
  - Mainstream incubation models
  - Newer and emerging models
  - Digitization and the impact of Covid-19

# Understanding Business Incubation

- Over the past six decades, **BUSINESS INCUBATION** has emerged as an established concept for new venture creation & development support.
- An array of incubation models exist with traditional models maturing and new models are emerging.
- Multiple theoretical lenses have been used to justify business incubation, however, search for a unified theory continues.
- The research shows the use of *open innovation* and *social capital theory* complement the *resource-based view* as framework to understand incubation.

**Figure:** Conceptualizing the incubation function

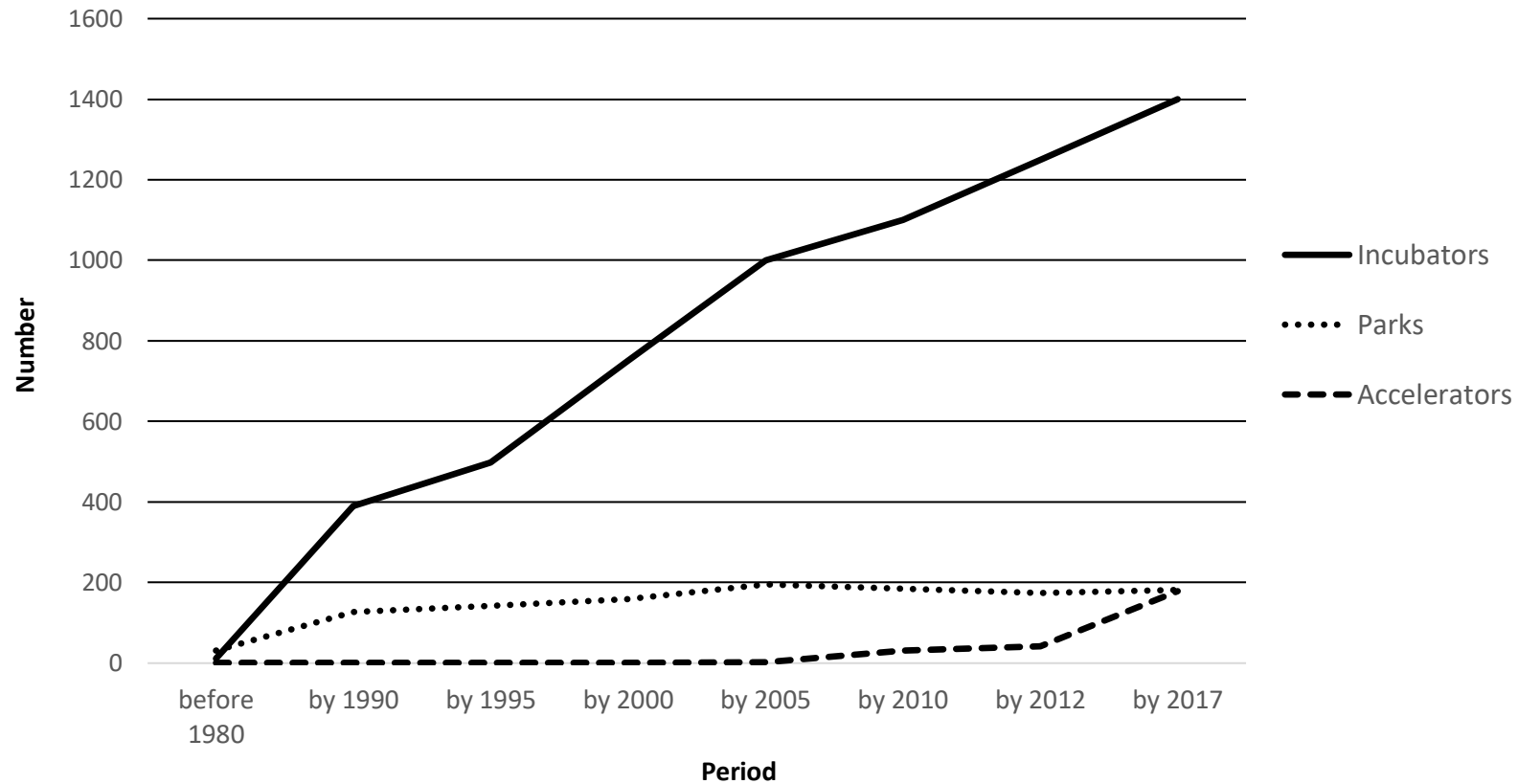


(Source: Handbook of Research on Business & Technology Incubation & Acceleration , Edited by Mian et al, 2021)

# Mainstream incubation models

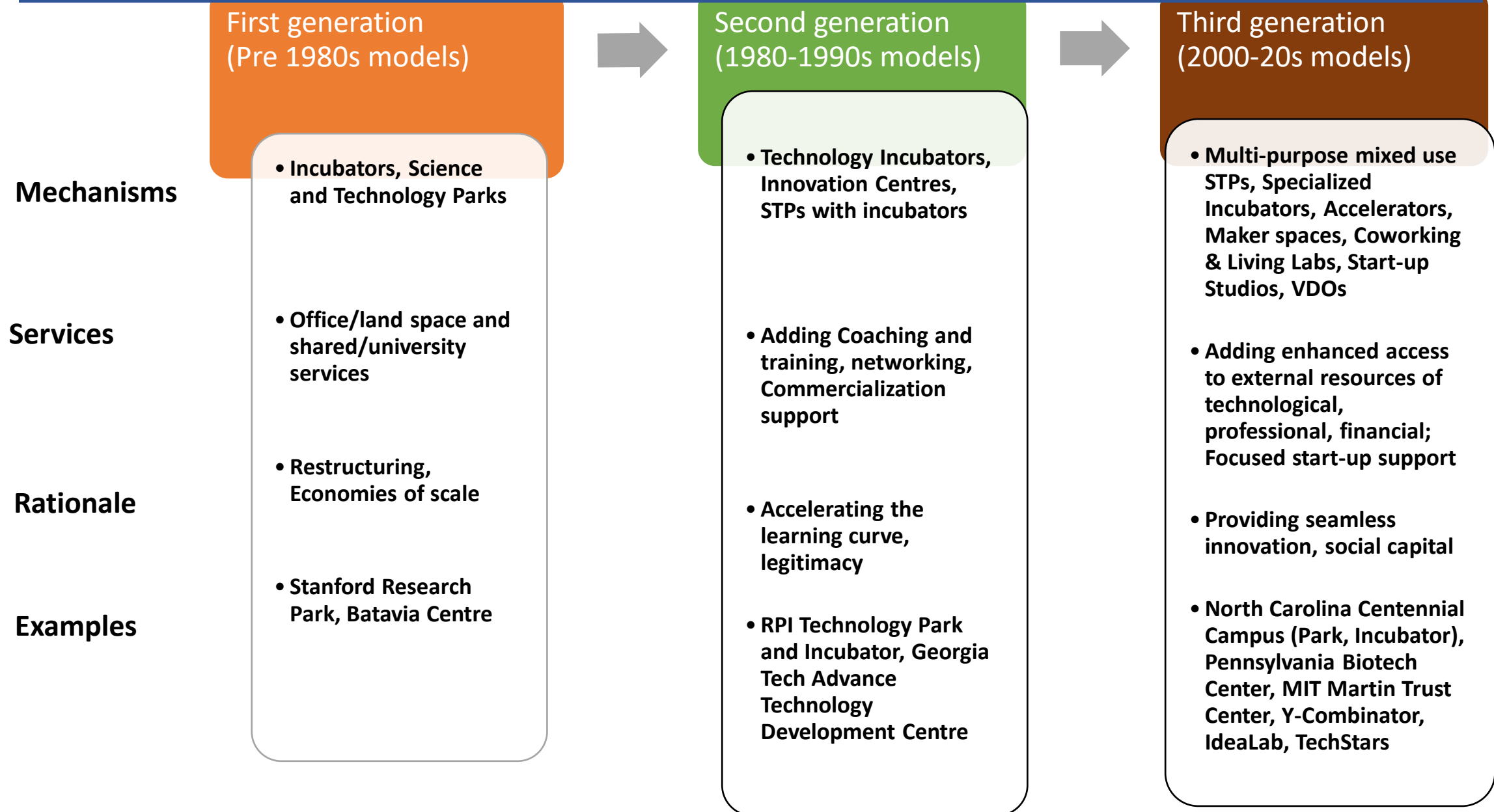
- A variety of **incubators** continue to be popular, including general purpose incubators, technology incubators, sustainable incubators, clean technology incubators, space incubators and other specialized models.
- **Science parks** are attractive to knowledge-based startups due to their proximity to talent and research (university), high value-added services and the perceived image. Successful STPs are drivers of regional innovation through technology transfer
- **Accelerator** is the newer incubation model popular among fast moving digital and mobile startups. Their design need to be adapted based on tenant types such as deep tech ventures (biotech, engineering) which require flexibility in opportunity selection while minimizing the risks in opportunity execution. Y-Combinator, TechStars are considered accelerators

# Incubation Mechanisms' Growth in the United States



(Source: Handbook of Research on Business & Technology Incubation & Acceleration , Edited by Mian et al, 2021)

# The Historic Emergence of Incubation Mechanisms



# Popular Incubation Mechanisms: *Value Added Inputs*

<b>Incubation Mechanism Type</b>	<b>Venture Location</b>	<b>Shared Services</b>	<b>Business Services</b>	<b>R&amp;D, Tech Facilities</b>	<b>University /Res Lab Connection</b>	<b>Mentoring /Coaching</b>	<b>Access to Venture Funds</b>
<b>Business Incubator</b>	on-site, around 3 yrs.	Yes	Limited	No	No	Possible	Limited
<b>Mixed-use /general purpose Incubator</b>	on-site, around 3 yrs.	Yes	Yes	Limited	Possible	Possible	Limited
<b>Technology Incubator/ Innovation Center</b>	on-site, 3-5 years	Yes	Yes	Yes	Yes	Yes	Yes
<b>Science/Technology Research Park/ Technopolis</b>	on-site, longer-term /ongoing	Possible via incubators	Yes	Yes	Yes	No	Yes
<b>Accelerator</b>	usually on-site, 3 months	Yes, using cohorts	yes	yes	possible	Intense mentoring	Yes
<b>Pépinières and Hatcheries</b>	on-site around 3 yrs.	Yes	Limited	No	Possible	limited	Possible
<b>Virtual Incubator</b>	No	Limited	Limited	No	No	no	Possible
<b>Co-Working Space</b>	On-site	Limited	Limited	No	No	No	No

*(Sources: Mian, 2016)*



# Incubation mechanisms & venture development phases

<b>PHASE 1: Pre-Incubation/Idea development</b>	<b>PHASE 2: Incubation and acceleration</b>	<b>PHASE 3: Post-Incubation consolidation and Growth</b>
	<i>Development Incubator / Mixed Use Incubator</i>	
<i>German Innovation Center/Technology Incubator</i>		
	<i>Science Park / Research Park</i>	
<i>French Research/Academic Incubator</i>	<i>Pépinières and Hatcheries</i>	<i>Technopolis</i>
<i>Virtual Incubator/ Accelerator</i>		

(Adapted from EU 2002)

# Pre-incubation Idea development Models

- Popular *pre-incubation programs* such as *coworking spaces, startup cafes, startup weekends, startup campuses, innovation boot camps/challenges, idea competitions* and *hackathons*, generally do not add much value in terms of entrepreneurial skills development and remain undertheorized. Such well-organized short-term programs are conduits of ideas and serve as feeders to incubation programs (Nair et al, 2020).
- ***Coworking model's*** adoption by some incubators as a component of their program has enhanced reputation of incubators among angel and VC investors, who now see the incubator-housed or incubator-coordinated co-work as a center of entrepreneurial energy for the entire community (Hochman, 2020).

# Other Modern Venture Development Models

## Startup Studios:

Known by different names (*startup factory, startup foundry, venture studio*), is a studio-like platform that aims at building several companies in succession from internal as well as external ideas. The **IdeaLab** established in 1996 presented the first startup studio model, which started getting popular around 2008. Today there are well over 100 known startup studios across the world (about half are in Europe) They focus on providing human capital, business and financial support and access to networking.

## Venture Development Organizations (VDOs):

VDOs provide **investment capital** as well as **business mentor network** without the existence of a physical incubator space during the high-risk seed and early stages. Building on the framework and track record of well-established VDOs, the U.S. Department of Commerce Economic Development Administration (EDA) introduced the Regional Innovation Accelerator Network (RIAN) in 2010 to map and promote VDOs nationwide. <https://regionalinnovation.org/>

# Incubation and ecosystem development

The recent emphasis on ecosystem building approach merges the National Innovation System (NIS) literature (focusing on structures, institutions) with entrepreneurship literature (studying entrepreneur, opportunities, and start-ups), and highlights the role of context such as social, temporal, spatial platforms, and other open innovation initiatives. In this scenario of building dynamic entrepreneurial ecosystems, we will more generally benefit from a variety of intermediate organizations with a key role of incubation mechanisms (Mian, 2021).

Given that elements of an entrepreneurship ecosystem are interconnected and over-lapping, it is difficult to isolate any component and find directionality of inputs. The ecosystem is a dynamic mega-incubator comprising of individuals, ventures, institutions, and resources (Rice & Noyes 2021).

# Impact of Digitization & Remote Work

- The incubator model may be changing significantly with regards to remote work. Many incubators are already using digital technologies (e.g., SMAC) for recruiting, business support and networking.
- One of the key barrier to the widespread use of digital services to start-ups was on the part of the entrepreneurs being unable or unfamiliar with virtual technology. The pandemic has certainly changed that across communities, as more incubator managers and client entrepreneurs were forced to learn the use and see the benefits of virtual communication.
- However, the space-based incubation industry is most likely to shift toward digitally supported remote work and develop an optimal mix of service modes after we get out of the pandemic effects.

# Conclusion

- Incubators today serve as the **focal points for innovation and entrepreneurship** in their communities. They emerged as a popular and widely used approach of targeted support for technology & knowledge based entrepreneurial development. It is **broadly-tested and relatively low-cost approach** for a strategic and well-informed economic development policy.
- The traditional incubation models of incubators and science parks are maturing and an array of new models such as accelerators, start-up studios, and pre-incubation idea generation platforms are emerging. This pose challenges of overlapping objectives and functions and make definitions and assessment challenging.
- Multiple theoretical lenses have been used to understand incubation and the search for a unified theory continues. There is however a convergence of scholars to use **open innovation** and **social capital theory**, complemented by the **resource-based view** as framework to understand modern incubation.
- Business incubators are taking on a greater role in entrepreneurship ecosystem development, but debate continues over whether, how and in what situations they work. **Adaptation to the local context emerges as the key to success.**
- New entrepreneurs often underestimate the importance of intangible resources, such as business knowledge and social capital, which are provided by incubation support.
- In response to the COVID-19 pandemic, many business incubators have pivoted to digitally supported virtual programming in order to continue to serve their entrepreneurs. The trend on the diminishing use of space and shift to remote delivery of services with digital technology is expected to continue.

LATEST PUBLICATION – April 2021

### HANDBOOK OF RESEARCH ON Business and Technology Incubation and Acceleration

This pioneering work explores both the theory and practice of business and technology incubation and acceleration over the past six decades as an approach to new venture creation and development. With a global scope, the *Handbook* examines incubation concepts, models, and mechanisms, providing a research-based analytical foundation from which to understand the emerging role of modern incubators, accelerators, science parks, and related support tools in building modern entrepreneurship ecosystems for promoting targeted economic development.

Featuring contributions from internationally renowned scholars and practitioners, the *Handbook* covers four major themes: understanding incubation and acceleration; incubation mechanisms and entrepreneurship ecosystem development; national and regional incubation policy studies; and incubation practice and assessment. Chapters investigate the expanding importance of newer models and novel modes of new venture support such as smart launching through focused training, mentoring, and financing.

This *Handbook* will help to equip policy makers, facility and program managers, investors, and entrepreneurs with the knowledge to handle support for future business and technology ventures more confidently and effectively. It also provides a deeper understanding of the incubation approach for researchers and scholars of entrepreneurship, innovation, and economic development.

**Sarfraz A. Mian** is Professor of Entrepreneurship and Management Policy and Chair of Management and Marketing Areas in the School of Business at the State University of New York, Oswego, USA, **Magnus Klofsten** is Professor of Innovation and Entrepreneurship in the Department of Management and Engineering at Linköping University, Sweden and **Wadid Lamine** is Associate Professor of Entrepreneurship in the Telfer School of Management at the University of Ottawa, Canada.

**Edward Elgar**  
PUBLISHING

The Lyptatts, 15 Lansdown Road, Cheltenham, Glos GL50 2JA, UK  
Tel: + 44 (0) 1242 228934 Email: info@e-elgar.co.uk  
William Pratt House, 9 Dewey Court, Northampton, MA 01080, USA  
Tel: +1 413 584 5551 Email: elgarinfo@e-elgar.com  
www.e-elgar.com www.elgaronline.com

ISBN 978-1-78897-477-6



HANDBOOK OF RESEARCH ON  
Business and Technology  
Incubation and Acceleration

Sarfraz A. Mian  
Magnus Klofsten  
Wadid Lamine



# HANDBOOK OF RESEARCH ON Business and Technology Incubation and Acceleration



A Global Perspective

Edited by  
**Sarfraz A. Mian • Magnus Klofsten • Wadid Lamine**



11/15/2022

Sarfraz A. Mian, 15 November 2022

ombdesign

CONTACT: Andy Omer JOB NO: 3355 DATE SENT: 15.10.2020 TITLE: Handbook of Research on Business and Technology Incubation and Acceleration EDITOR: Caroline Cornish  
TEL: 01242 643030 PRODUCTION: Caroline Rose Williams JOB ID: 70320 COVER: Silvia Zeman JOB ID: 611 REFERENCE: PRC 2444www.elgaronline.com CMTX  
EMAIL: andy@ombdesign.com PLEASE NOTE: Colours on printed laser proofs may differ slightly to those viewed on PDFs due to the nature of laser printing compared to the colour values seen on screen.



# Science and Technology Based Regional Entrepreneurship

## Global Experience in Policy and Program Development



Edited by Sarfraz A. Mian

Science and Technology Based Regional Entrepreneurship

Sarfraz A. Mian



### Science and Technology Based Regional Entrepreneurship

Providing a global survey of public policies and programs for building national and regional ecosystems of science and technology based entrepreneurial development, this book provides a unique analysis of the advances, over the last several decades and in light of the experiential knowledge gained in various parts of the world, in the understanding of innovation systems in the pursuit of developing these economies. Presenting nineteen case studies of diverse developed and emerging economy nations and their regions, more than thirty expert authors describe an array of policy and program mechanisms that have been implemented over the years.

The in-depth analyses of the worldwide efforts featured in this volume provide the reader with several valuable lessons. There are clear indications of a trend toward better cohesion and coordination of national efforts to improve innovation but also a trend toward the broadening of regional agendas to address technology, talent, capital, innovation infrastructure and entrepreneurship culture issues – considered essential for knowledge based entrepreneurial growth. The book also offers a unique treatment of grassroots level programmatic aspects of these efforts, including some novel entrepreneurial mechanisms employed for policy implementation.

The book's blend of theory and practice provides valuable insights to the reader, particularly government, academic and private sector policymakers and scholars researching or involved directly with efforts to build and support the development of science and technology based entrepreneurial regions.

Sarfraz A. Mian is Professor of Strategic Management and Entrepreneurship in the School of Business at the State University of New York, Oswego, USA.

EDWARD ELGAR: A FAMILY BUSINESS IN INTERNATIONAL PUBLISHING

The Lyptatts, 15 Lansdown Road  
Cheltenham, Glos, GL50 2JA, UK  
Tel: +44 (0) 1242 226904 Fax: +44 (0) 1242 282111  
Email: info@elgar.co.uk

William Pratt House, 9 Dewey Court  
Northampton, MA 01060, USA  
Tel: +1 413 584 5561 Fax: +1 413 584 9983  
Email: elgarinfo@elgar.com  
www.e-elgar.com

ISBN 978-1-84720-390-8



9 781847 203908



## TECHNOLOGY ENTREPRENEURSHIP AND BUSINESS INCUBATION

Theory • Practice • Lessons Learned

*Technology Entrepreneurship and Business Incubation* analyzes business incubators worldwide through a series of empirical and theoretical papers. The authors examine the extent to which business incubators are influential in situations such as nurturing young technology firms, increasing success of new firms, and in developing an ecosystem around these successes. Also examined is the relationship between business incubators and their resource providers, including venture capitalist firms and government agencies.

Edited by Phillip Phan (Johns Hopkins Carey Business School), Sarfraz Mian (State University of New York at Oswego), and Wadid Lamine (Toulouse Business School), all leading figures in the field, this book provides both a theoretical framework to conceptualise ideas and a practical guide to influence best practices and innovation in business incubators.

TECHNOLOGY ENTREPRENEURSHIP AND BUSINESS INCUBATION

Phan  
Mian  
Lamine

## TECHNOLOGY ENTREPRENEURSHIP AND BUSINESS INCUBATION

Theory • Practice • Lessons Learned



Editors

Phillip H Phan • Sarfraz A Mian • Wadid Lamine

Imperial College Press

[www.icpress.co.uk](http://www.icpress.co.uk)



Imperial College Press



### Building Knowledge Regions in North America

Focusing on emerging technology regions of the US, Canada and Mexico, the authors provide an analysis of firms' innovative activities in three contexts: national systems of innovation, knowledge regions and incubator mechanisms. An overview of the evolution of each region over the past quarter century is presented, along with an evaluation of the effectiveness of science parks and technology incubators in various regional and national environments.

Though the three countries studied share the same continent and have well-developed trade relations, the significant differences between them in level of development, industrial infrastructure, education, and systems of innovation provide insight into the successes and failures of select knowledge regions. The authors find that areas with a solid industrial base benefit least, but do not necessarily require formal technology incubator mechanisms to evolve into successful innovation poles. In contrast, remote regions with good research capacity, and those with an average industrial research base, must develop an entrepreneurial culture and close cooperation between universities, industry and government with formal incubator mechanisms serving as focal points.

Scholars of innovation systems, technology policy, entrepreneurship and regional development will find this fascinating study of great interest, as will science and technology policymakers, university officials and regional leaders.

Leonel Corona is Professor of Economics of Innovation at the National University of Mexico. Jérôme Doutriaux is Professor of Management in the School of Management of the University of Ottawa, Canada and Sarfraz A. Mian is Professor of Strategic Management and Entrepreneurship in the School of Business at the State University of New York, Oswego, USA.

**BOWEN & BOWEN PUBLISHING**  
Oxford House, Bedford Park  
Oxford, Ox. OX4 1JA, UK  
Tel: +44 (0) 1865 206000 Fax: +44 (0) 1865 206011  
Email: [info@bowenpub.com](mailto:info@bowenpub.com)  
100 River Street, Suite 202, Southampton, SO9 1BB, USA  
Tel: +1 (703) 881-8881 Fax: +1 (703) 881-8882  
Email: [info@bowenpub.com](mailto:info@bowenpub.com)  
[www.bowenpub.com](http://www.bowenpub.com)



# Building Knowledge Regions in North America

## Emerging Technology Innovation Poles



Building Knowledge Regions in North America

Leonel Corona,  
Jérôme Doutriaux,  
Sarfraz A. Mian



Leonel Corona, Jérôme Doutriaux, Sarfraz A. Mian

**Additional Journal References:**  
*Special Issues on Technology Business Incubation*

**Technovation (2016)**



**International J Entrepreneurship & Innovation Management (2011)**





Special Issue Section on  
**Incubators and Regions**  
Volume 43, issue 5, October 2018

**Issue editors:**

Sarfraz Mian, Wadid Lamine,  
Alain Fayolle, Mike Wright

*There are 12 articles in this issue*



*Thank You!*

Questions?