


3<sup>rd</sup> International Conference and POP Festival for Youth-Led Climate Action  
Day 6, Session 6, 10 June 2021, via Zoom

# Climate Careers

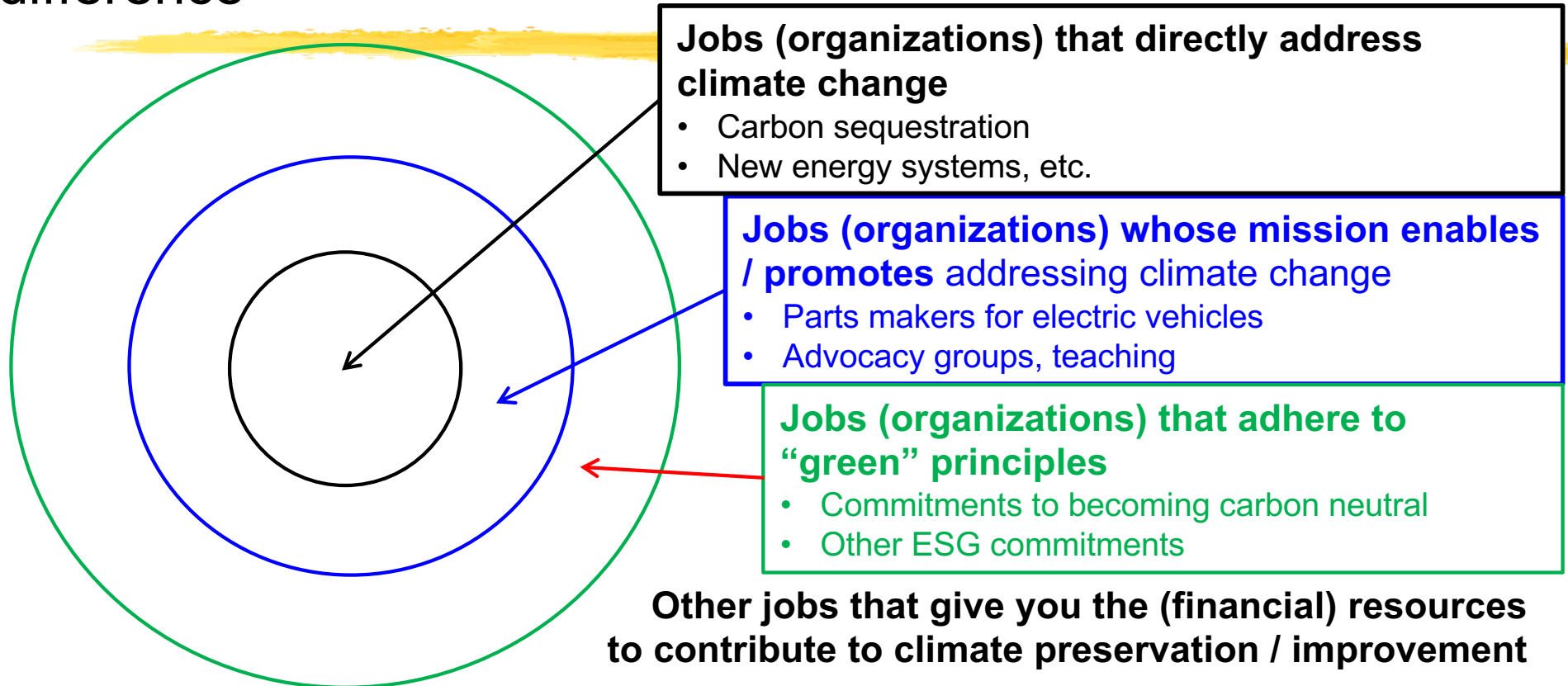
A photograph of a Stanford University building featuring a large mural of an angel holding a banner that says "HOPE". The building has a prominent tower with a red dome. The scene is set against a clear blue sky with green trees in the foreground.

Richard B. Dasher, Ph.D.  
Director, US-Asia Technology Management Center  
Adjunct Professor, Stanford University

# Outline

- ◆ **Every career is a climate career**
- ◆ **Climate action and disruptive innovation**
- ◆ **Disruptive innovation and entrepreneurship**
- ◆ **Be(coming) an agent of change**

# Every career will let you make a difference



# Sustainability requires disruptive change

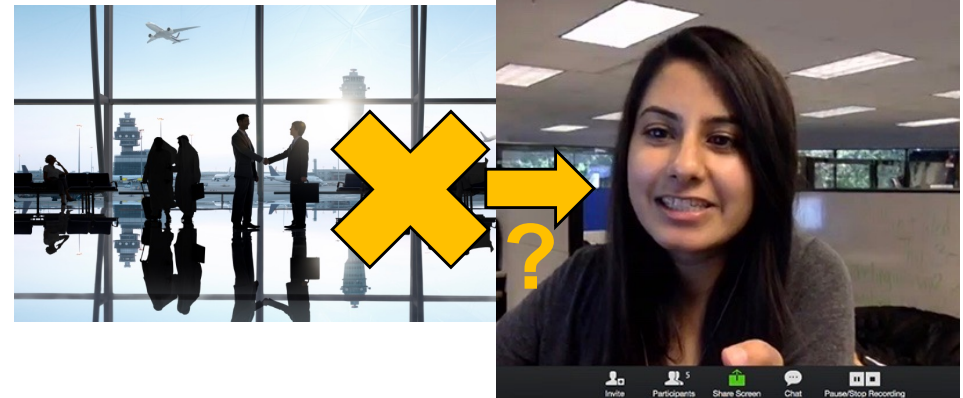
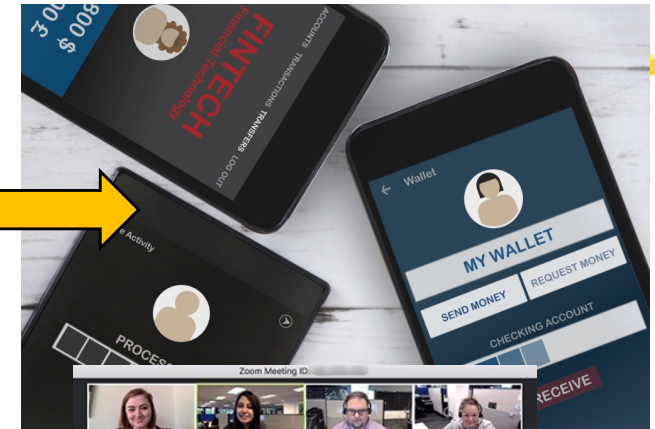
- ◆ **Unless we are unhappy with the present, we don't want to change**
  - ◆ Our lifestyles – old habits give us comfort
  - ◆ Our organizations – businesses create long-term value: their brand image, knowledge of products & markets, relationships with customers, suppliers, etc.
- ◆ **Sustainability requires major changes**
  - ◆ New lifestyles **now** to preserve the **future** of humanity
  - ◆ Re-thinking of fundamental economic models and organizational goals (add sustainability and inclusiveness to growth / profitability)
- ◆ **Climate career: enabling and motivating people & orgs. to change**
  - ◆ Process of **disruptive innovation, led by entrepreneurs**



# Climate action and disruptive innovation

- ◆ **Climate action requires giving up old ways as well as adopting new ones**
- ◆ **Most innovation (and other change) is incremental**
  - ◆ Innovation = creation of new value
- ◆ **Disruptive innovation**
  - ◆ People give up some old way in order to adopt an innovation
  - ◆ They do so because they prefer the new way (not because someone tells them to)

# Abundant recent examples of disruptive innovation



2021.06.10

Richard B. Dasher, Stanford University

## Young people, startup companies, and disruptive innovation

- ◆ **Young people, like startup companies, are great sources of disruptive change**
  - ◆ **Startup:** not burdened with supporting existing business
  - ◆ **Young person:** less tied to old habits
    - ◆ May be quicker to see fundamentally new possibilities
    - ◆ Can focus (with less distraction) on achieving a goal (for positive change)
    - ◆ Will take risks that an existing company (older person) will not take
- ◆ **To contribute to disruptive change requires the approach of an entrepreneur**
  - ◆ Entrepreneur = “agent of creative destruction” (Joseph Schumpeter)

# Profile of an entrepreneur

## Characteristics everyone talks about:

- ◆ Vision of an opportunity to create positive change
- ◆ Passion for the vision
- ◆ Willingness to take risk in order to achieve that goal
- ◆ Willingness to change existing institutions in order to achieve goal

## Less often discussed (but just as important)

- ◆ Ability to execute
  - ◆ Understanding of different stakeholders and how to motivate them
  - ◆ Team-building skills
  - ◆ Planning ability to bring the opportunity to reality
  - ◆ Ability to obtain necessary resources from “nothing”
- ◆ Flexibility without losing big vision (ability to pivot)

# Disruptive innovation often begins in a startup company

*Big companies will develop major new technologies or businesses for their existing markets*

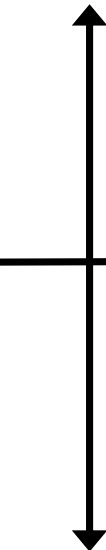
*Example: Early electric cars by big car companies*

**Low**

*Most innovation at big companies: incremental development of new products, services for existing markets*

*Example: New model automobiles each year*

**Execution Risk High**



**Low**

**Stanford** | US-Asia Technology Management Center

**Typically, only start-up companies will carry both risks**

*Example: Tesla Motors (in early days)*

**Market risk High**

*Big companies: will develop new business around low-risk tech- and product development*

*Example: Big car companies shift to leasing business model*

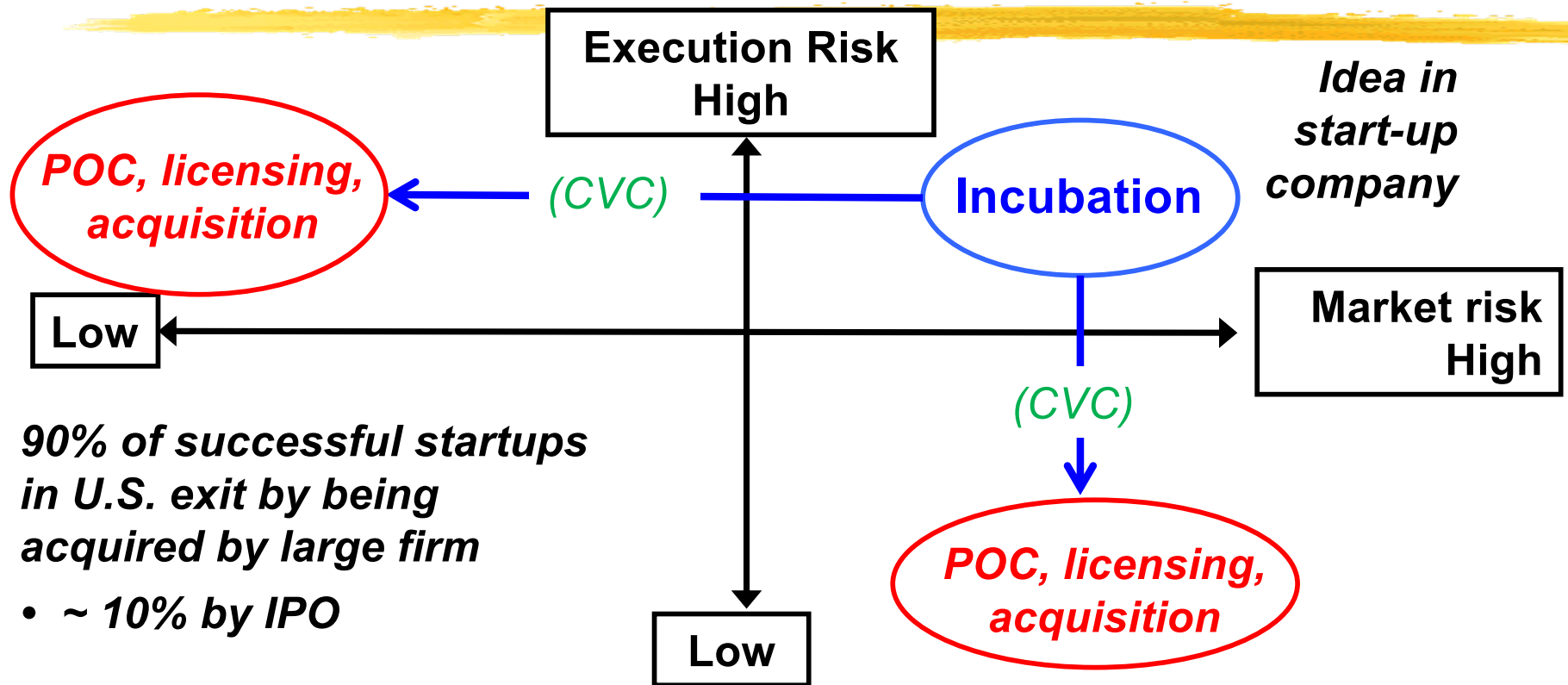
(idea for figure based on Christensen 1997)



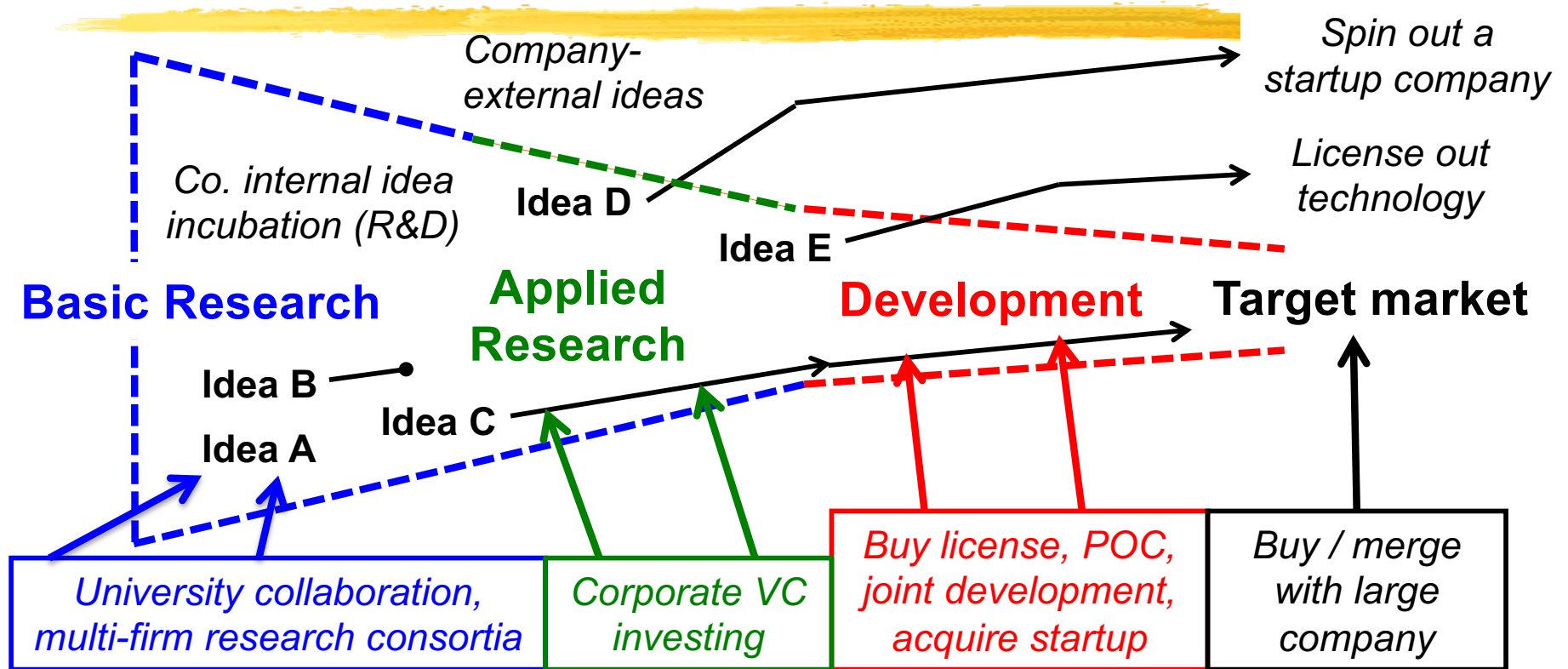
# How an innovation becomes disruptive

- ◆ **Startup may or may not start by intentionally targeting old industry**
  - ◆ **Google** probably did not intend to threaten newspaper, TV advertising
    - ◆ But, continued growth naturally took business from existing industry
  - ◆ **Uber** intended to disrupt taxicab business
    - ◆ Saw inefficiencies that were bad for consumers
- ◆ **Disruptive startups succeed by building new value networks**
  - ◆ **Begins with a new market** – end users who believe in the new vision
  - ◆ New partners, suppliers, processes ... – in contrast, existing big firms typically cannot abandon old networks
  - ◆ Create win-win solution for entire new value chain
  - ◆ **Keep improving** technology and customer experience
- ◆ **Gradually becomes attractive to existing mainstream market**

So, disruptive innovation often is completed in large firms



Open innovation: allows big firms to join in disruptive innovation



## Case study: Open innovation at Alphabet (Google)

- ◆ **Spent \$24.83 billion in FY 2019 for company- (group-) internal R&D**
  - ◆ = 16% of FY 2019 revenues
  - ◆ Active group-internal spin-off, acceleration of new independent businesses
- ◆ **Alphabet makes a big acquisition once every few years**
  - ◆ YouTube (2006) for \$1.65 billion – immediate entry into video content delivery
  - ◆ Nest (2014) for about \$3.2 billion – immediate entry into home IOT
  - ◆ FitBit (2019 – 21) for \$2.1 billion – immediate entry into networked wearables
- ◆ **Startup acquisitions: every year spends ~ \$1 billion**
  - ◆ Acquiring somewhere between 10 – 25 startups
- ◆ **CVC (corp. venture capital) investments of \$400M or \$500M / year**
- ◆ **Spends ~ \$ 100M / year to support university research**



# **Entrepreneurs are found in all sectors**

**Startup companies**

**Large firms**

**Public sector, education**



## Maintaining entrepreneurial approach in a large organization

- ◆ **Keep self-motivated by one's (personal) mission**
  - ◆ Mission must at least be compatible with the organization's mission
  - ◆ Keep the passion and vision
- ◆ **Understand your context**
  - ◆ Motivations & concerns of co-workers, boss, top leaders of organization, stakeholders
- ◆ **Use problem-solving skills**
  - ◆ Develop strategy for achieving your mission AND the organization's mission
- ◆ **Don't just communicate your vision, let others share ownership of it**
  - ◆ What others hear is more important than saying what you want to say
  - ◆ Otherwise, you may be cheering like a soccer fan ...  
... while you're at an opera concert

## Disruptive innovation is hard

- ◆ **Disruptive innovation often takes a long time**
  - ◆ Automobile was invented in 1886; it only became disruptive after 1908 introduction of Ford Model-T
  - ◆ Sustainability of the venture requires long-term approach (longer than most startups or young people have been involved with their idea)
- ◆ **Disruptive innovation only happens because people choose to adopt the new way and give up the old one**
  - ◆ Success requires deep understanding of human psychology and economic/social constraints that usually comes from lots of experience
  - ◆ Usually, an idea (or technology) will not just sell itself: one has to integrate the innovation (technology) with human awareness of need

# Summary: Entrepreneurship for climate action

- ◆ **The point is to be an agent for disruptive change**
  - ◆ Lead others to abandon old ways and adopt new, climate-friendly approaches
  - ◆ Not really about starting or growing a company
- ◆ **But, for disruptive change to be successful, one must achieve success for one's organization**
  - ◆ Must provide a win-win solution for all stakeholders
  - ◆ Must deliver an inclusive improvement to perceived quality of life
  - ◆ Provide a new way that people want to adopt
- ◆ **Educating about the need for change**
  - ◆ An essential part of the process, but not sufficient to create change
  - ◆ People (users, stakeholders) must own the change and be in control of it

# Make your career a climate action career

