Climate Careers

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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

Jobs (organizations) that directly address climate change
- Carbon sequestration
- New energy systems, etc.

Jobs (organizations) whose mission enables / promotes addressing climate change
- Parts makers for electric vehicles
- Advocacy groups, teaching

Jobs (organizations) that adhere to “green” principles
- Commitments to becoming carbon neutral
- Other ESG commitments

Other jobs that give you the (financial) resources to contribute to climate preservation / improvement
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

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

*Big companies* will develop major new technologies or businesses for their existing markets. Example: Early electric cars by big car companies.

Most innovation at *big companies*: incremental development of new products, services for existing markets. Example: New model automobiles each year.

Big companies: will develop new business around low-risk tech- and product development. Example: Big car companies shift to leasing business model.

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<th>Execution Risk</th>
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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

90% of successful startups in U.S. exit by being acquired by large firm
• ~ 10% by IPO

Idea in start-up company

POC, licensing, acquisition

Market risk High

Execution Risk High

Low
Open innovation: allows big firms to join in disruptive innovation

- **Co. internal idea incubation (R&D)**
  - Idea D
- **Company-external ideas**
  - Idea E

**Basic Research**
- Idea A
- Idea B

**Applied Research**
- Idea C

**Development**
- **Buy license, POC, joint development, acquire startup**

**Target market**
- **Spin out a startup company**
- **License out technology**
- **Corporate VC investing**
- **University collaboration, multi-firm research consortia**
- **Buy / merge with large company**

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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
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

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Make your career a climate action career

If you have an idea / opportunity, make a direct contribution to climate action

If you have an idea / opportunity, enable or promote climate action as part of the mission of your organization

Commit your organization to adhere to “green” principles

Commit your financial resources, influence, knowledge, human network to contribute to climate preservation / improvement