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MIT Center for Transportation & Logistics

**Logistics Clusters:**
**Economic Growth and Jobs**

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## Outline

LOGISTICS CLUSTERS

DELIVERING VALUE AND DRIVING GROWTH

YOSSI SHEFFI

- Industrial clusters
- Why cluster?
- Logistics clusters
- Logistics clusters' growth
- Jobs
  - Direct
  - Value added
  - Industrial development
- Government's role
- Environmental issues

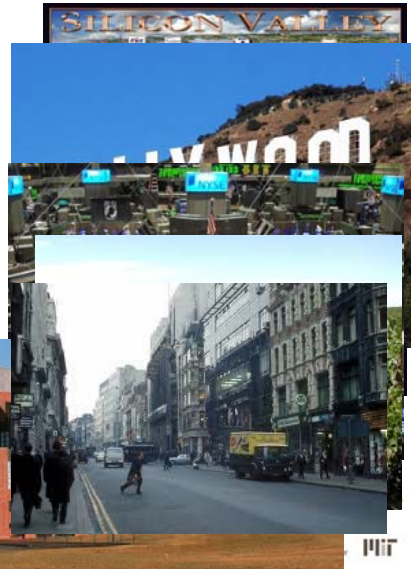MIT Center for Transportation & Logistics

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## Industrial Clusters

- Silicon Valley
- Hollywood
- Wall Street
- Napa and Sonoma Valleys
- Fleet Street
- "Bio-Cambridge"

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## Literature

- Alfred Marshal, **Principles of Economics** (1920): "Positive externalities of co-location."
  1. Knowledge sharing
  2. Supply base
  3. Labor pool
- Michael Porter, *Eco... ... Competition*, **Har... review** (1998)
  1. Increased produc...
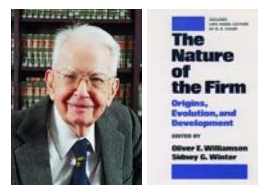  2. Increased pace o...
  3. High pace of new business formation
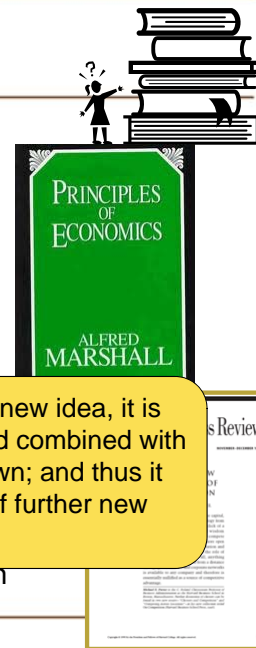
> "…if one man starts a new idea, it is taken up by others and combined with suggestions of their own; and thus it becomes the source of further new ideas."

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# Why Clusters?



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# Economists are Asking:

1. Why cluster? Isn't EDI, video-conferencing, visibility software, etc, enough for communications? (remember Tom Friedman?)

2. If this is not enough, why don't companies in a cluster acquire each other more than we see? (remember Coase?)

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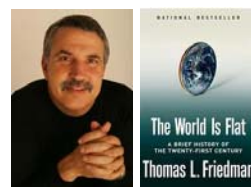
## Why Clusters?

- Natural resources (coal field, weather, a harbor)
- A pool of specialized labor
- Suppliers and subsidiary services including Research and education
- Trust/Collaboration tacit knowledge exchange
- Government lobbying

Are clusters an optimal point between slow behemoths with scale and nimble competitors with not enough resources?

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## Logistics Clusters

- Singapore
- Holland
- Zaragoza
- Memphis
- Panama
- Jolliet

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## East Los Angeles



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## Logistics clusters development

Why are governments all over the world developing logistics clusters?



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## The Elixir of Self-Development

**For any industrial cluster:**

- The larger it is **=>** the more attractive it is **=>** the larger it grows.

**For logistics clusters:**

- Even <u>more</u> so.

**Result: a self-reinforcing <u>positive feedback loop</u>**

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## As Logistics Clusters Grow

- Transporta
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- Liqu
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  - C

Also:

Better transportation service
Lower transportation costs

More logistics operations
move into the park

More carriers move in;
more services are offered

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## Horizontal Collaboration (SC Johnson & Energizer)

**Pre-Project:**
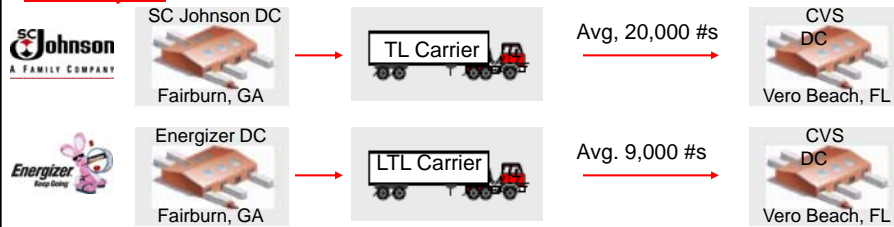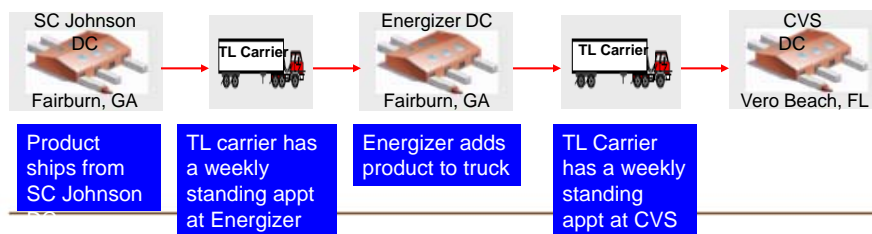
| | SC Johnson DC | | | |
|---|---|---|---|---|
| **SC Johnson** A FAMILY COMPANY | Fairburn, GA | TL Carrier → | Avg, 20,000 #s → | CVS DC, Vero Beach, FL |
| **Energizer** | Energizer DC, Fairburn, GA | LTL Carrier → | Avg. 9,000 #s → | CVS DC, Vero Beach, FL |

**Project:**

SC Johnson DC, Fairburn, GA → TL Carrier → Energizer DC, Fairburn, GA → TL Carrier → CVS DC, Vero Beach, FL

| Product ships from SC Johnson | TL carrier has a weekly standing appt at Energizer | Energizer adds product to truck | TL Carrier has a weekly standing appt at CVS |
|---|---|---|---|

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## Logistics Clusters: A Jobs Engine

- The port of Rotterdam
  - 55,000/>90,000 jobs
- Louisville Airport:
  - 55,000 jobs
  - $2 billion payroll
  - $277 million in local taxes
- Memphis International Airport
  - 220,000 jobs (95% in cargo operations)
  - More than 1 out of 3 jobs in metro Memphis
- AllianceTexas
  - > 265 companies
  - 30,000/63,000 jobs

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## Logistics Cluster Jobs

**Logistics**
- Blue collar
  - Warehouse, transportation
- White collar
  - Information technology, CSR, executive

**Value added**
  - Repair technicians
  - Light manufacturing; tagging, retail displays

**Attracted manufacturers**
  - Sub-clusters

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## Value Added Activities

- Postponement/customization
- Return and repair
- Video Producers
- Second Hand Heavies

Zappos.com

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## Economic Benefits of Logistics Clusters - jobs find yo

- Most logistics jobs are not "offshoreable."
  - High service in a JIT economy requires local distribution
  - Late stage customization is best performed locally
- Employment and social justice
  - Logistics clusters offer employment opportunities to a full range of workers including low-skilled
  - Logistics services value "on the floor" experience and thus promote from within leading to middle class and higher workers income.
- logistics services feed multiple industries, making the region (and the jobs) less vulnerable to specific industry downturns
- Additional jobs
  - Logistics clusters lead to value added operations requiring high level skills and high salaries
  - Logistics clusters attract manufacturing which requires the low cost and high service transportation offerings ("sub clusters")

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## Role of Government

- Creating assets
  - Public investment – shared infrastructure
  - Permitting land use & asset development
  - Attracting private investment
    - Incentives, subsidies, taxes
- Logistics-friendly government
  - Dutch vs. Italian VAT; Alliance*Texas Triple Inv tax Exemption (city, county, school district)
  - Bonded warehouses, free trade zones
  - Government efficiency
    - Container export: Sweden 6 days vs. Kazakhstan 93 days
    - Import trade transaction: Germany $800 vs. Namibia $3,000
    - Warehouse set up: Finland & Korea 60 days vs. Russia 528 days

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## Role of Government

- Collaboration and Mediation
  - Institutions for collaboration (chambers, logistics associations,...)
  - Preferential trade agreements
  - Marketing (Dutch, German, Belgian, Logistics promotions)

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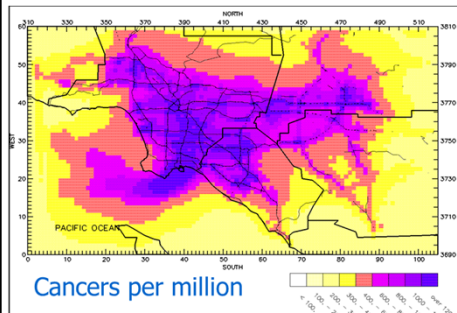
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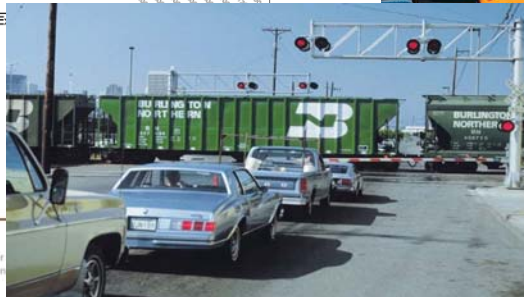
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## The Downside

- Clusters may overly encourage group-think (Akron and bias tires vs. radials; the Big Three vs. foreign manufacturers. They're also vulnerable if production goes overseas.
- Clusters may cause an increase in land values and labor shortage

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## Environmental Impacts of Logistics Clusters



Cancers per million

Source: SCAQMD, Multiple Air Toxics E...

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## The Real Sustainability calculus

- Globally logistics clusters <u>reduce</u> transportation carbon footprint
  - Hub-to-hub flows use larger conveyances at higher utilization -> lower global carbon footprint
  - Clustering increases opportunities for collaboration through increasing utilization -> lower local carbon footprint
  - Clustering enables intermodal transportation -> lower global carbon footprint
- In addition: local pressure creates impetus for environmental improvements

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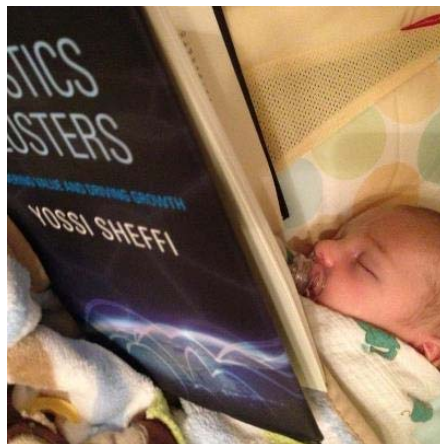MASSACHUSETTS INSTITUTE OF TECHNOLOGY

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## Environmental Innovation Hubs

- LA Port:
  - Truck regulations
  - Alternative fuel trucks (electric, hybrid, LNG, CNG...)
- FedEx
  - Alternative fuels delivery trucks
  - "Hushkit"
- Singapore
  - Docking ships on electricity
  - Largest biodiesel plans (with Rotterdam
- Chicago
- Intermodal
  - Core of inland logistics clusters
  - Rail GHG emissions/TM $\cong \frac{1}{3}$ Truck GHG emission/TM

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## Questions?

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