

Progress ●

Class 4 - What's Possible: Are Cities Necessary?

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Michael Wolf, *Architecture of Density*, photograph of Hong Kong. This picture (it's real!) of a skyscraper complex in Hong Kong is what many imagine when they think about dense cities - knowledge moving quickly among people due to their geographic proximity.



But see this wasteland. Where is this?

3/30

This is literally Sand Hill Road, the center of Silicon Valley and venture capital. It's scrubland next to one story buildings! There are millions of places like this - it's clearly not beautiful urbanism. Could this possibly be a "cities matter" situation? There's no city!



The Wagon Wheel

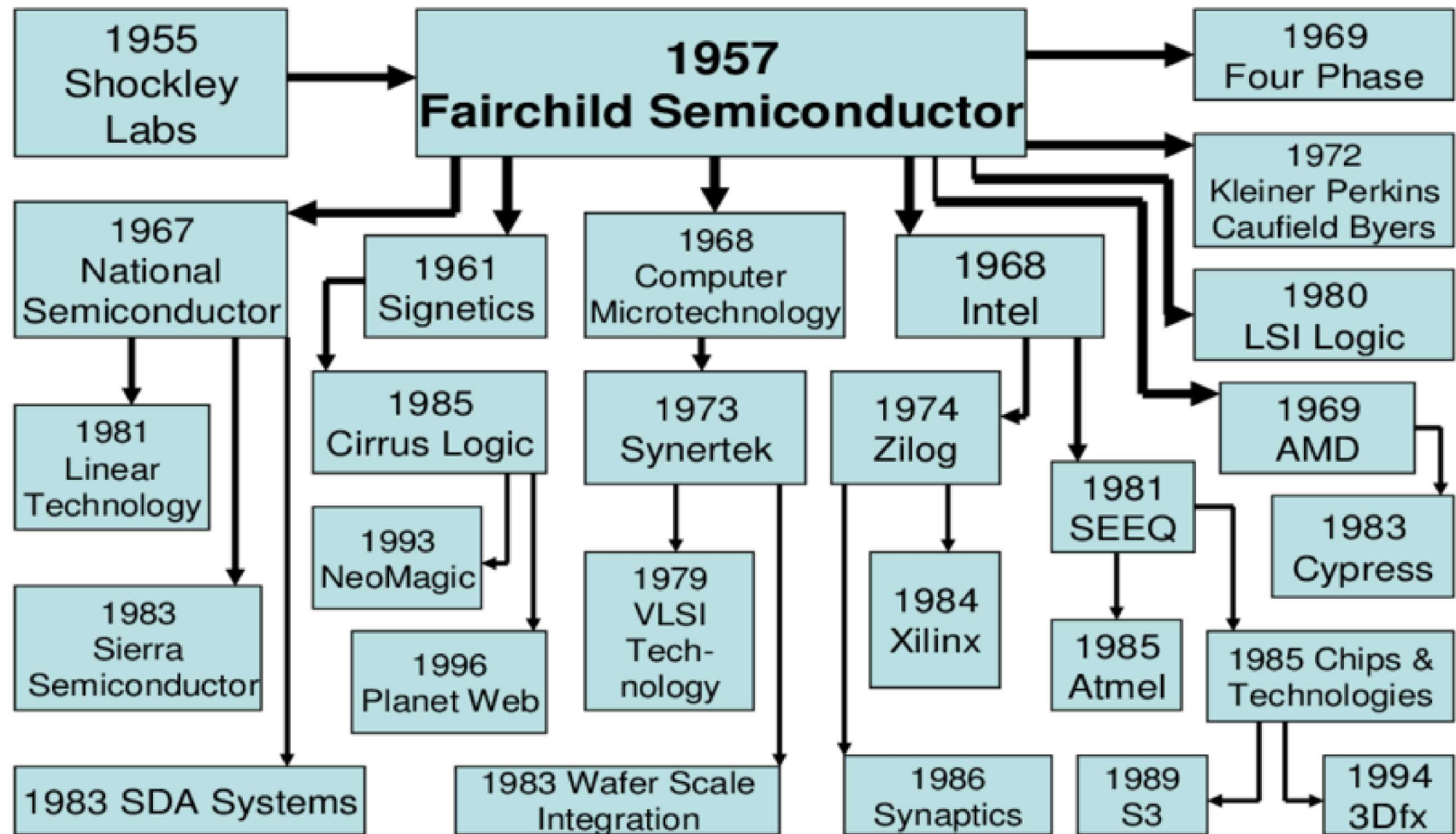


The Traitorous Eight

Why did all this happen in one place?

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Consider Tom Wolfe's story of Bob Noyce. Small-town kid from Iowa. Why did he make Fairchild and Intel happen in Silicon Valley? Thick labor markets, thick input markets, shared geographical sources, knowledge spillovers at the bar, local customer demand, local culture affecting people? Which mattered the most? Which can be controlled by policy? Even folks like Arthur Rock, one of the initial VCs, who handled Fairchild, Intel, Teledyne AND Apple! Still alive btw. And one of the traitorous eight was Kleiner of Kleiner Perkins fame.



"The defectors" as Tom Wolfe puts it make the "Fairchildren". Cities may really help when it lets you hire good people - and SV culture was that people move to new jobs. We'll return to the role of spinoffs later, but strong early strength in an industry + easy labor mobility = spinoffs + existing base of complements = more likely to succeed.

Three steps

1) What is an
agglomeration?

2) Can you make an
agglomeration?

3) Does that cause
progress?



7/30

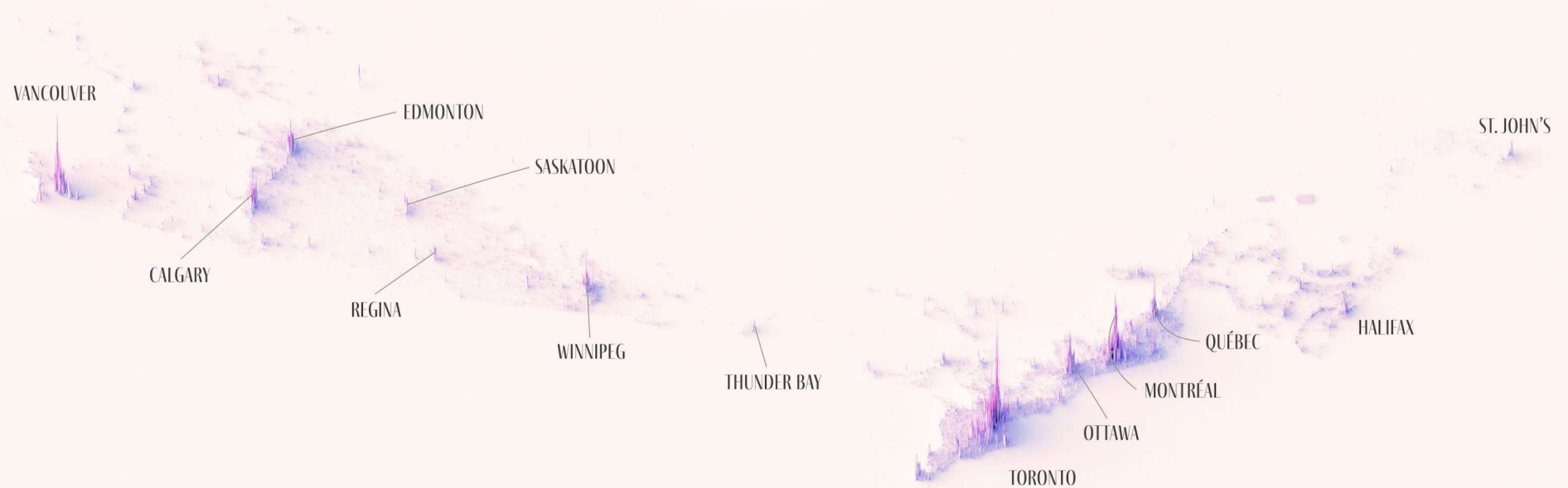
Humans are not at all distributed uniformly across space; economic activity even less uniformly distributed; economic activity within an industry even less so; innovation within an industry less yet!

POPULATION DENSITY MAP

CANADA

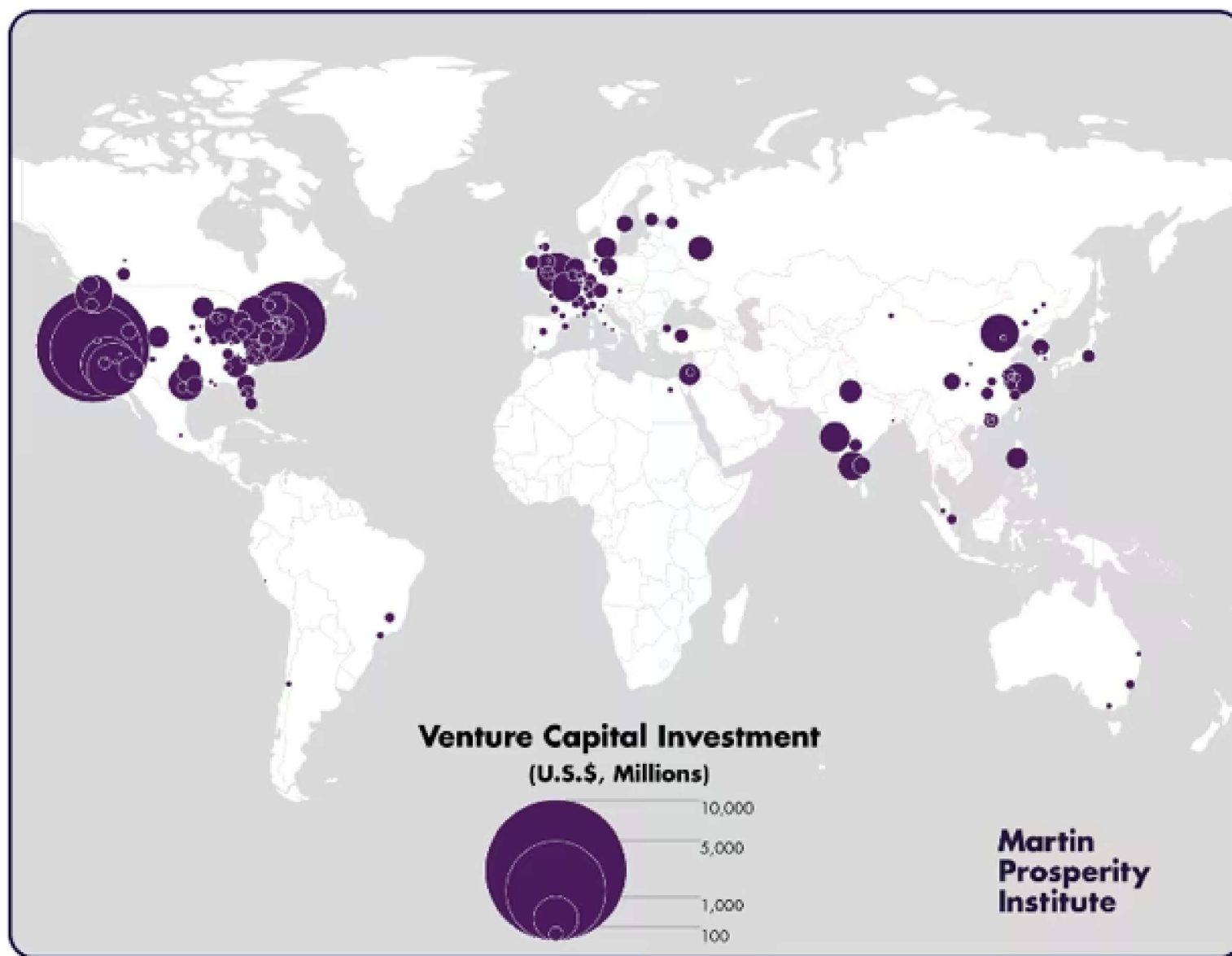
VISUALISED BY @TERENCE@FOSSDODON.ORG/@RESEARCHREMORA
IN #RSTATS WITH RAYSHADER (@TYLERMORGANWALL)

KONTUR POPULATION 2022



8/30

Audretsch and Feldman (1996), among others, show that production of any good is more concentrated than population, and innovation is more concentrated yet.

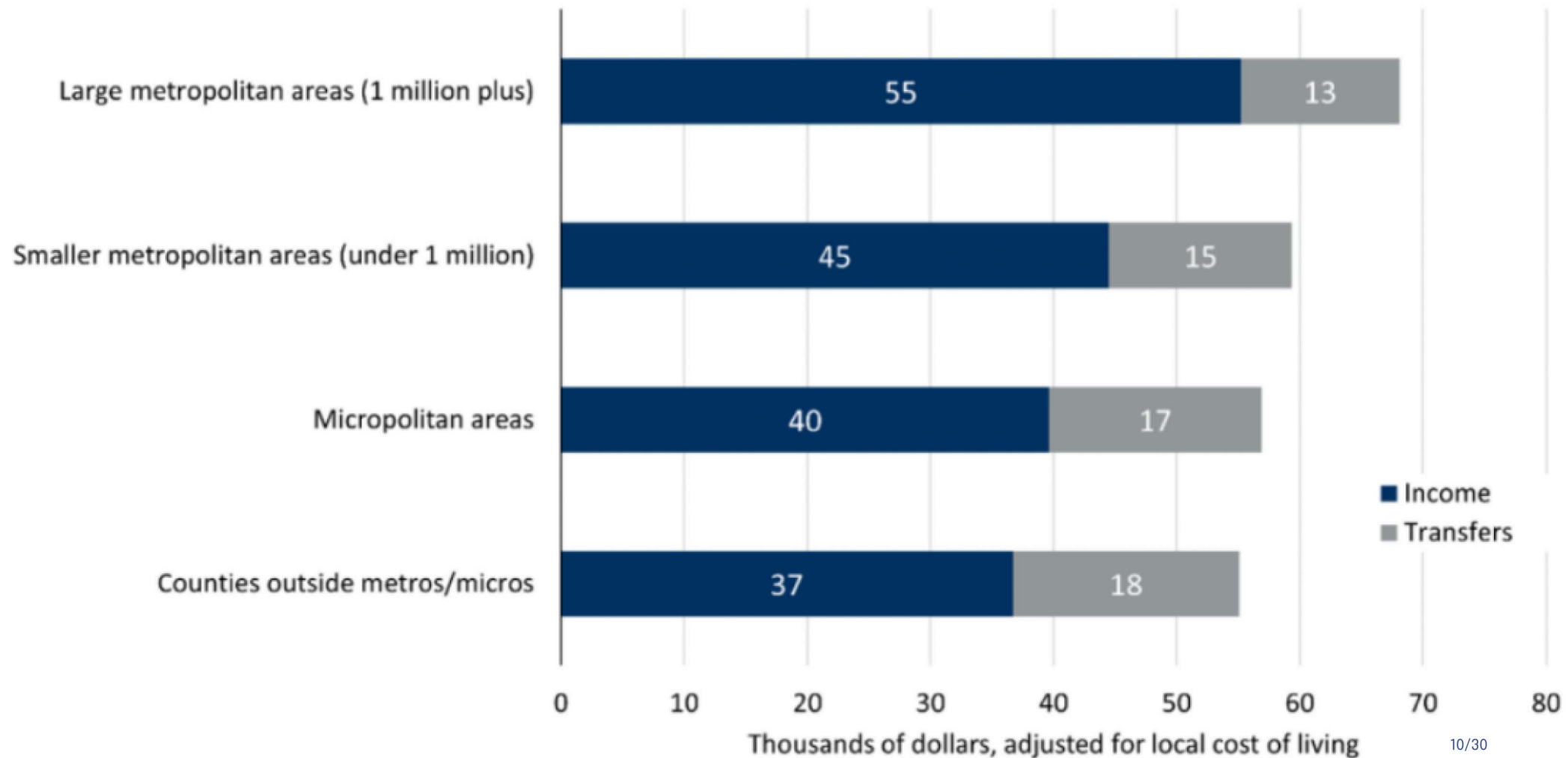


9/30

2016 early stage venture capital, AI VC in 2025 EVEN MORE concentrated. Same is true of industries. By 2015, the San Francisco Bay Area accounted for more than 17% of all patented inventions (and over half of all venture capital investment), despite being about 2% of the U.S. population.

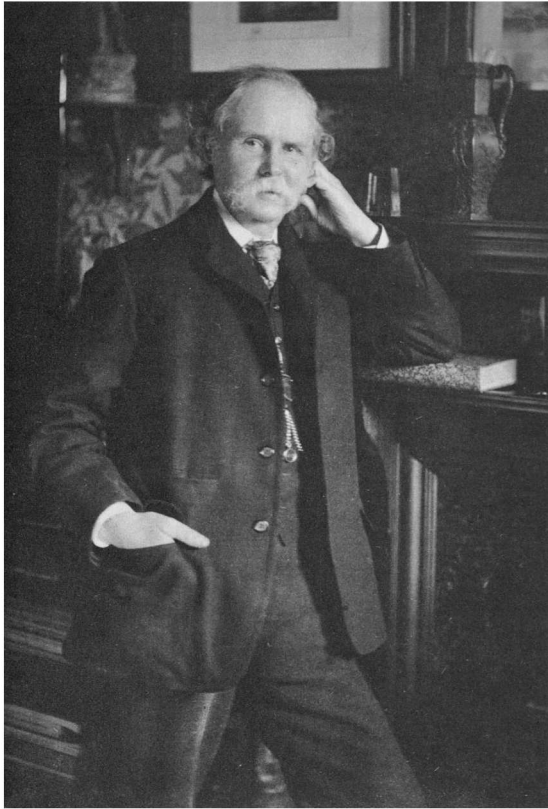
Incomes Highest in Large Metro Areas

Average market income and transfers, adjusted for local cost of living, 2021



10/30

And one reason people live in cities is that they get paid more - not everywhere (e.g., it is not true for Toronto or NY after cost of living), but it is true in general.



Two theories of why cities might matter

11/30

Alfred Marshall and Jane Jacobs. Marshall (1890), three reasons: large, specialized labor pool that companies can draw from; specialized suppliers and customers that are located nearby, which reduces costs; and knowledge spillovers, where firms learn from the innovations and practices of their competitors located in close proximity. Jacobs argues for benefits of running into people in OTHER industries and hence informal knowledge spillovers - that is, moving people, goods, and ideas more cheaply. Jacobs' idea seem to require CITIES. Third places. Impromptu interactions. Ellison et al AER 2010 finds evidence for each of the Marshall effects, and Duranton Puga "Nursery Cities" for Jacobs effects for young firms.

Even if no externalities:
Economies of scale in production +
Low transport cost to sell locally +
Most work in areas with 'linkages' =
Bigger cities get bigger (Krugman)

Caveat: until congestion gets too bad, so different
industries spread out, and perhaps 'nursery cities'
specialize in Jacobs

Krugman is interested not just in why cities *specialize*, but why they *exist at all*. So the existence of cities is not just that cities come from positive externalities (e.g., I do research and some of the benefits spill over to nearby firms, though of course this is real also!). Krugman's famous result is that economic activity happens in cities when we produce things that are expensive to transport and which have economies of scale and where most people work in industries where upstream and downstream transport of goods matters.

In that case, bigness is self-reinforcing for city. Of course, if you add multiple industries to Krugman, you can get them specializing in different cities and if you take Jacobs "do interesting new things" as an industry, you can cities that specialize in startups (see my "Entrepreneurial Migration" paper for some empirical data on this)



But how important is **this**?

13/30

This is "CAForever" plan for a new good urbanism city near SF. Beautiful. Would love to live here. Not really sure how important any of these urban design features are - even for Jacobs, where impromptu meetings between people in different industries generate ideas: are we sure this can't happen at the Wagon Wheel bar in Silicon Valley just as easily?



14/30

This is Heilbronn, an attempt to build a new agglomeration in Germany. Very well funded, tons of science....but literally an office park in a field!

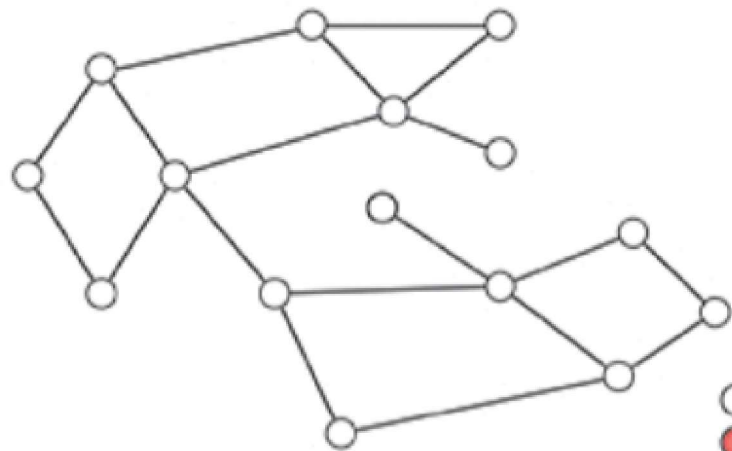
Three steps

1) What is an
agglomeration?

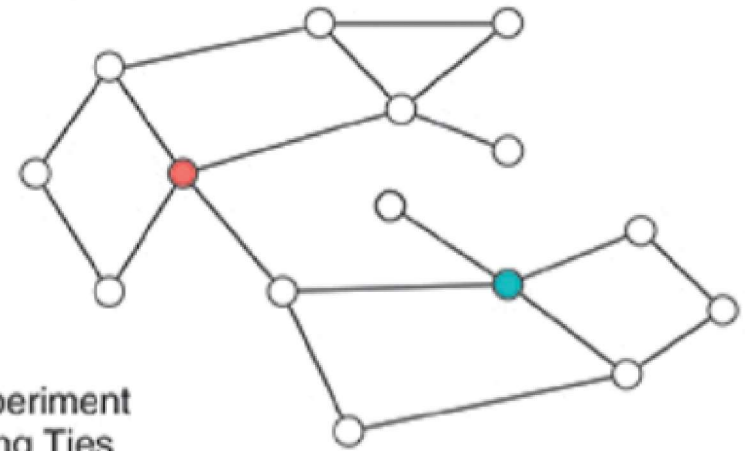
**2) Can you make an
agglomeration?**

3) Does that cause
progress?

A Pre-treatment network



Intervention

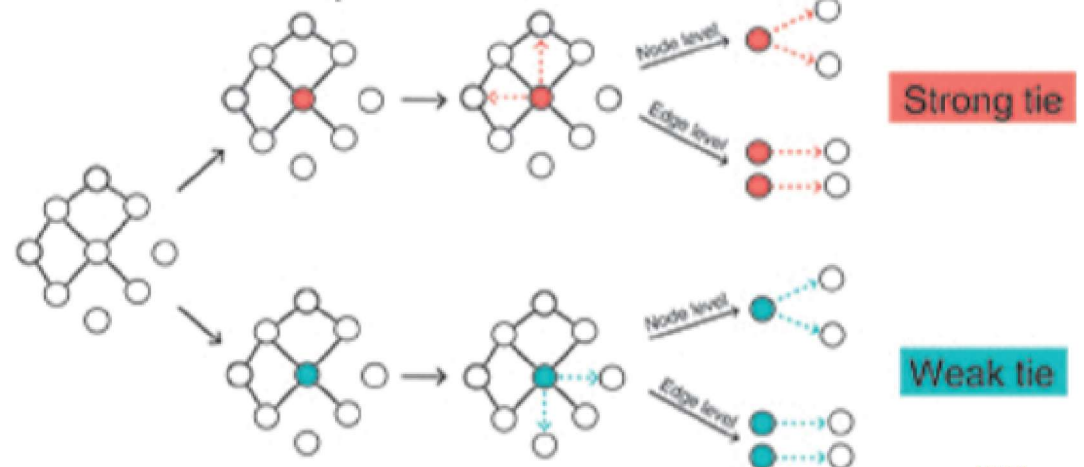


- Did Not Trigger Into Experiment
- Recommend More Strong Ties
- Recommend More Weak Ties

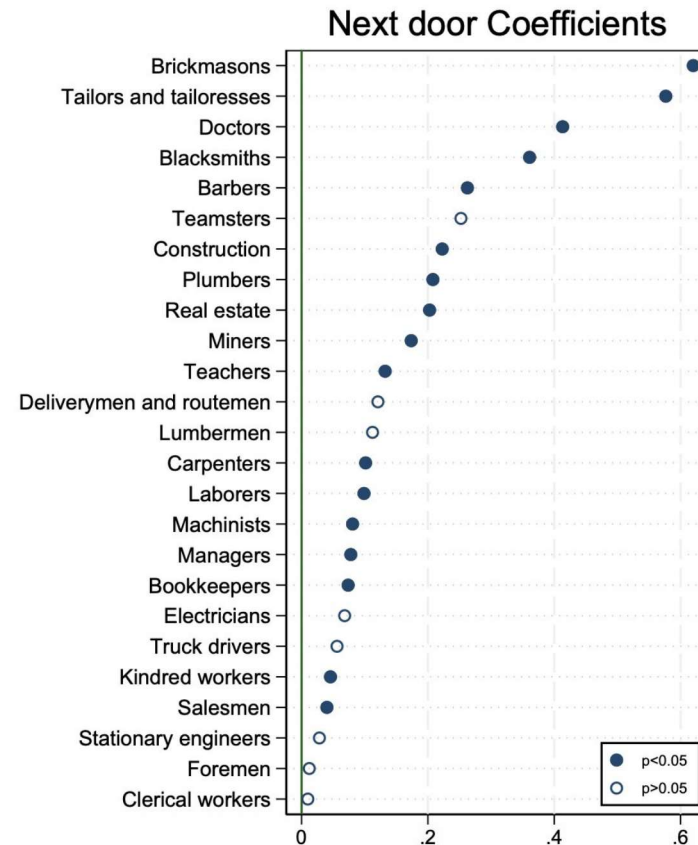
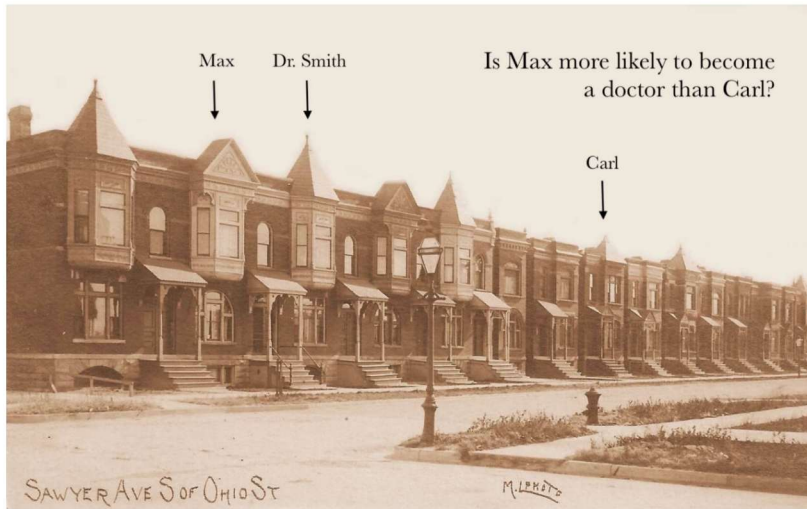
Creation of different types of ties



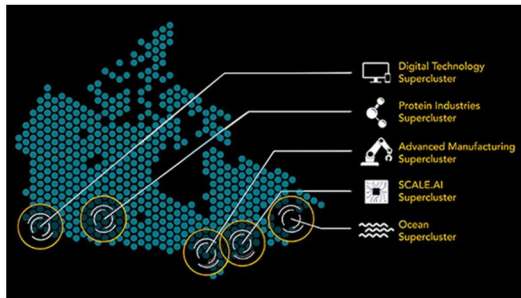
Representation of data



LinkedIn experiment, randomly suggest two folks as friends, vary how far they are from each other's current network, look at whether they become coworkers. This is based on Granovetter - weak ties let you access new parts of a network that you tightly clustered friends do not help you access. And we see this in data: suggest a new friend that is a moderately weak tie, marginal change in probability the two now-tied people work together in the future goes up. Wild study!



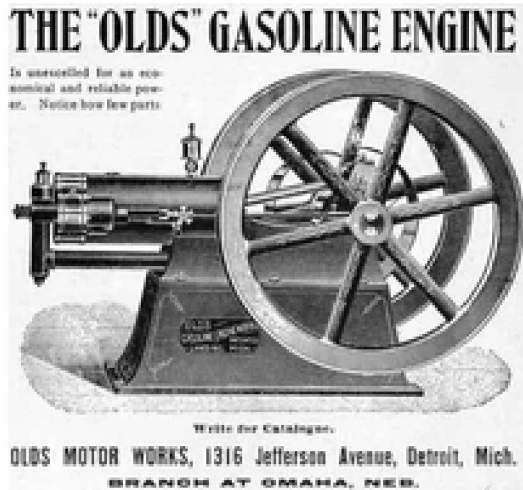
And a recent study by Ryan Hill and friends compares where you grew up in the 1910 census to what you did in 1940. Live next door rather than a few doors down from a doctor? You're much likely to also be a doctor. Same for women entering the workforce if they lived next door to a working woman. These types of connections do seem quite important.



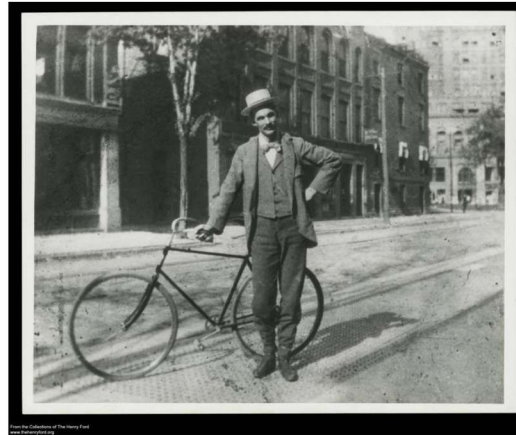
Regional clusters instead of subsidize best R&D proposal

18/30

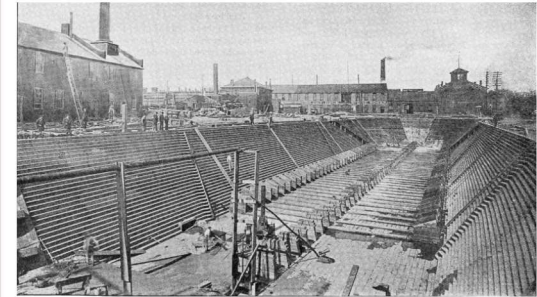
Instead of just giving grants to the best idea (an academic project, a startup you are subsidizing in the tax code, etc.), subsidize ideas/new firms that help kickstart an agglomeration. But can you do this? US, UK, Canada, China, EU etc all trying policies like this. Lerner's Boulevard of Broken Dreams suggests the problem!



Ransom Olds



Leland (Cadillac)



Henry Ford

Small engines, bicycle parts, ship engines. All in Detroit!

Any surprise you get an automobile agglomeration when you have major industries in carriage production, small engines, boat engines, and bicycles in the late 1800s in Detroit? We see the Oldsmobile, Cadillac and Ford founders, three of the big early auto companies, in those fields! There were car companies all over in early 1900s. Detroit got the industry because of the labor inputs and complementary goods already there...

Where things go wrong 1: Does government know **what** to do?



20/30

Ok, you want to try to create an agglomeration. Do you know what you should do? French "dirigisme" policies in 1981 under Mitterand have govt take control of a number of computer and technology companies like Bull, and have many smaller companies get merged in. This does not lead to a great success - Bull loses 3/4 of their employees over next few years! Why did French nuclear power plant policy, or even the creation of the Airbus-driven aerospace cluster in Toulouse, work, but not Bull? Invest lots of capital + use govt to help secure deals overseas is within government competence + France already had nuclear expertise (via Ecole des Mines type training on big energy projects) + Toulouse area already had an aerospace industry a la Detroit's pre-car industry. But in very experimental, quickly-changing industry like early computers, the task for government to "pick winners" suffers from some very severe Hayek/James Scott type problems!

Where things go wrong 2:

Does government get captured?



21/30

Consider the Google garage on the left to the MARS building on the right, an attempt to create a startup incubator. Latter was what Ontario govt chose. But perfectly competitive market for office rentals. Why spent 100s of millions on this when Google just needed a garage? Politicians cut ribbons, help incumbents, work with unions, etc. Their incentives are not always aligned with high-growth entrepreneurship - remember Mokyr, progress sometimes requires disrespecting the past! This may be a reason why you see NON cities do so well with new things - fewer incumbent sources of power constraining things. Dubai grows a ton - but it was a village in 1960! Note that center of Mideast economic progress is NOT Beirut or Baghdad or Muscat or Jeddah. The advantage those places had as "cities" were perhaps less important than what Dubai had as a "not city". See also Silicon Valley from earlier in these slides. See also BITS Australia program (incubators get the money, not startups). Lots and lots of so-called "public choice" problems even if the government picks the right industry and right location.

Where things go wrong 3:
Can government create the cluster even if competent and single-minded?



I pick the right location and industry. Can I make a cluster? Detroit is a good example. While it is true there are self-reinforcing loops when you have early traction in an industry, then suppliers and complementors pop up, then labor moves there and gets skilled, and so on. But most government programs are WAY too small and spread out to be able to create this. Imagine you wanted the car industry in 1910 in Dallas or Halifax instead of Detroit. To overcome Detroit's advantage would have required a TON of investment. Indeed, New Brunswick tried to kick off a car industry with the "Bricklin"...

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Note when Saxenian wrote, Boston/Route 128 was in trouble. Defense + mainframe computers were big industries!

Saxenian sees Route 128 as a failure of innovation when she was writing. But Boston is super rich now - the bottom picture is Moderna's HQ, GE's HQ, huge Vertex Pharma office, etc. Boston was first military tech like Raytheon -> minicomputers like Wang, DEC, Data General => Now, Vertex, GE, Moderna, etc. etc. - Route 128 is pharma capital of the world! Why? Less specialization was better. Just like a firm whose competitive advantage is based on going down a very steep learning curve, specialized cities cannot easily adapt to new things, to progress. Cities with high levels of education and industrial diversity adapt more easily - what you want for progress is a city that has few incumbent constraints on doing new things but enough talent to be able to generate a cluster on some new things. That's rare! Do any policies encourage this balance (maybe "well-funded deep science based universities?")

Are cities about **deepening** an industry a la Marshall?

Or about unconventional pairing of new ideas, a la Jacobs?

Which matters more for progress?

Cities allow specialization, the intersection of ideas, and the collision of ideas with capital and institutions needed to instantiate them.

But they also have incumbent norms, power centers, entrenched interests, status markets: all bad for new things

Let's brainstorm: what urban policy (from benches in the park up to billion dollar real estate) is most likely to create progress by our definition?

So, a survey. You are asked by a friend (or policymaker!) "how important are cities to progress?"

Let's vote: 1-5, where 1 is "not at all" and 5 is "I imagine the most important factor we'll discuss this term". We'll keep track of these votes as we go!

Due next week: term paper précis

Two pages, submitted on Quercus

Be **much more narrow** than you think you should be!

Only restriction: topic must be why some type of progress does or does not happen

Keep in mind: must generate at least **one fact** someone knowledgeable in the field would find interesting. How? Get on the phone and go in the library stacks.

I will give you brief feedback next week.

Next Week

Is Liberty Necessary?

Does more progress happen when individuals are free to do what they want, legally and culturally? We'll hear from the Chinese government, Hayek, Sen, James Scott, and some hippies.