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Agglomeration theory

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Theories on Innovative and Sustainable Regions

GEO2-7012

lecture 2

12 September 2022

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references for this week

- book Atzema et al. (2014), section 3.3 and 4.3, chapter 5, section 9.3
- Klepper, S. (2010) The origin and growth of industry clusters: The making of Silicon Valley and Detroit, *Journal of Urban Economics* 67, 15-32, https://doi.org/10.1016/j.jue.2009.09.004
- Harrison, B. (1992) Industrial districts: old wines in new bottles? *Regional Studies* 26 (5), 469-483, https://doi.org/10.1080/00343400701232264

additional readings

- Potter, A. and H.D. Watts (2011) Evolutionary agglomeration theory: Increasing returns, diminishing returns, and the industry life cycle, *Journal of Economic Geography* 11 (3), 417–455, https://doi.org/10.1093/jeg/lbq004
- Frenken, K. and R. Boschma (2014), Geographic clustering in evolutionary economic geography in: C. Karlsson, M. Andersson, and T. Norman (eds.), *Handbook of Research Methods and Applications in Economic Geography*, Chapter 14, https://doi-org.proxy.library.uu.nl/10.4337/9780857932679
- Boschma, R. A. (2004) Het industriele district-model van het Derde Italie. *Geografie* 8(okt), 28-31.
- Porter, M. & C. Ketels (2010), Clusters and industrial districts: Common roots, different perspectives, in G. Becattini, M. Bellandi & L. de Propis (eds.), *A handbook of industrial districts*, Cheltenham,Elgar, pp. 172-183, https://www.researchgate.net/publication/291006578_Clusters_and_industrial_districts_Common_roots_different_perspectives
- Martin, R. and P. Sunley (2003) Deconstructing clusters: chaotic concept or policy panacea?, *Journal of Economic Geography* 3 (1), 5–35, https://doi.org/10.1093/jeg/3.1.5

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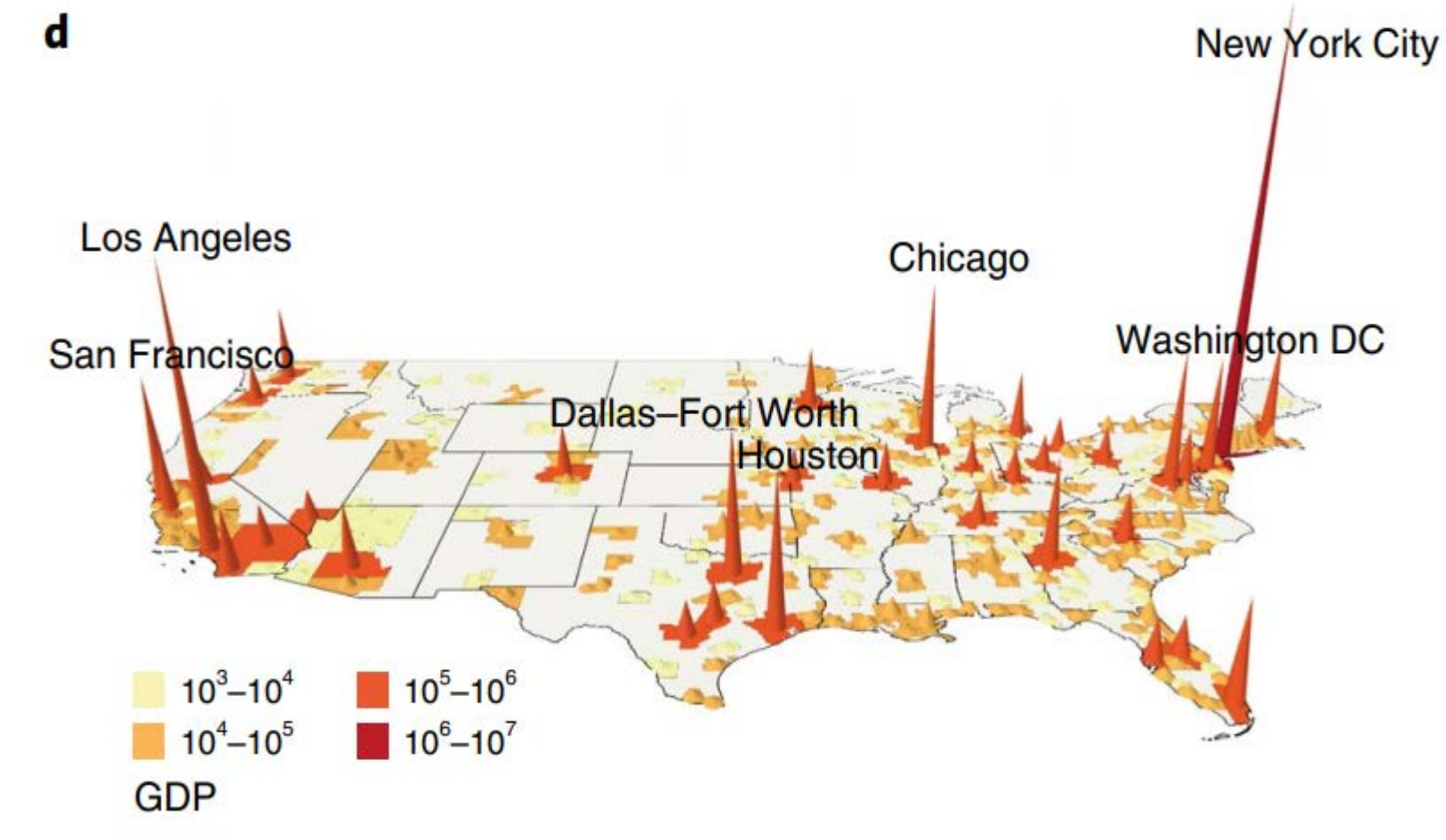
Spatial concentration of economic activities



Worldwide, Tokyo, San Jose, New York, Boston, Kanagawa, Shenzhen, Osaka, San Diego, Los Angeles, and Seoul account for 2 % of the population but 24 % of the world's patent applications

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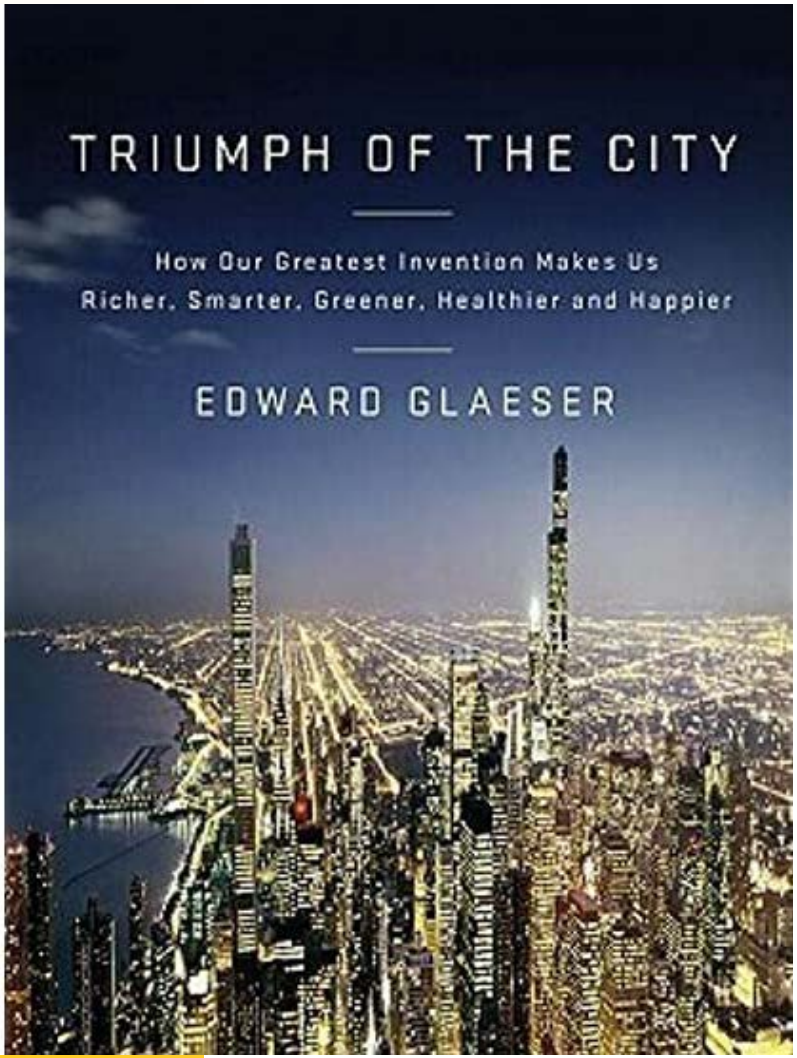
Agglomeration benefits (observed)



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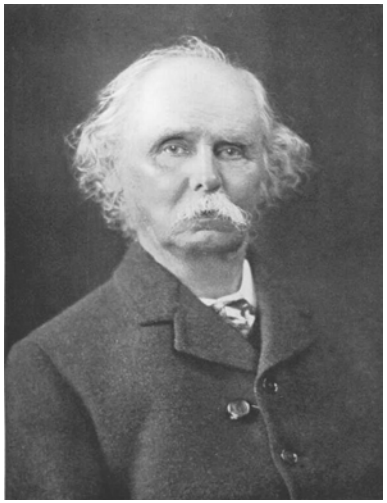
neo-classical approach on agglomerations

- why do cities grow?
- minimization costs and maximization benefits
- optimal size of cities: net effect of positive and negative agglomeration externalities

neo-classical approach on agglomerations

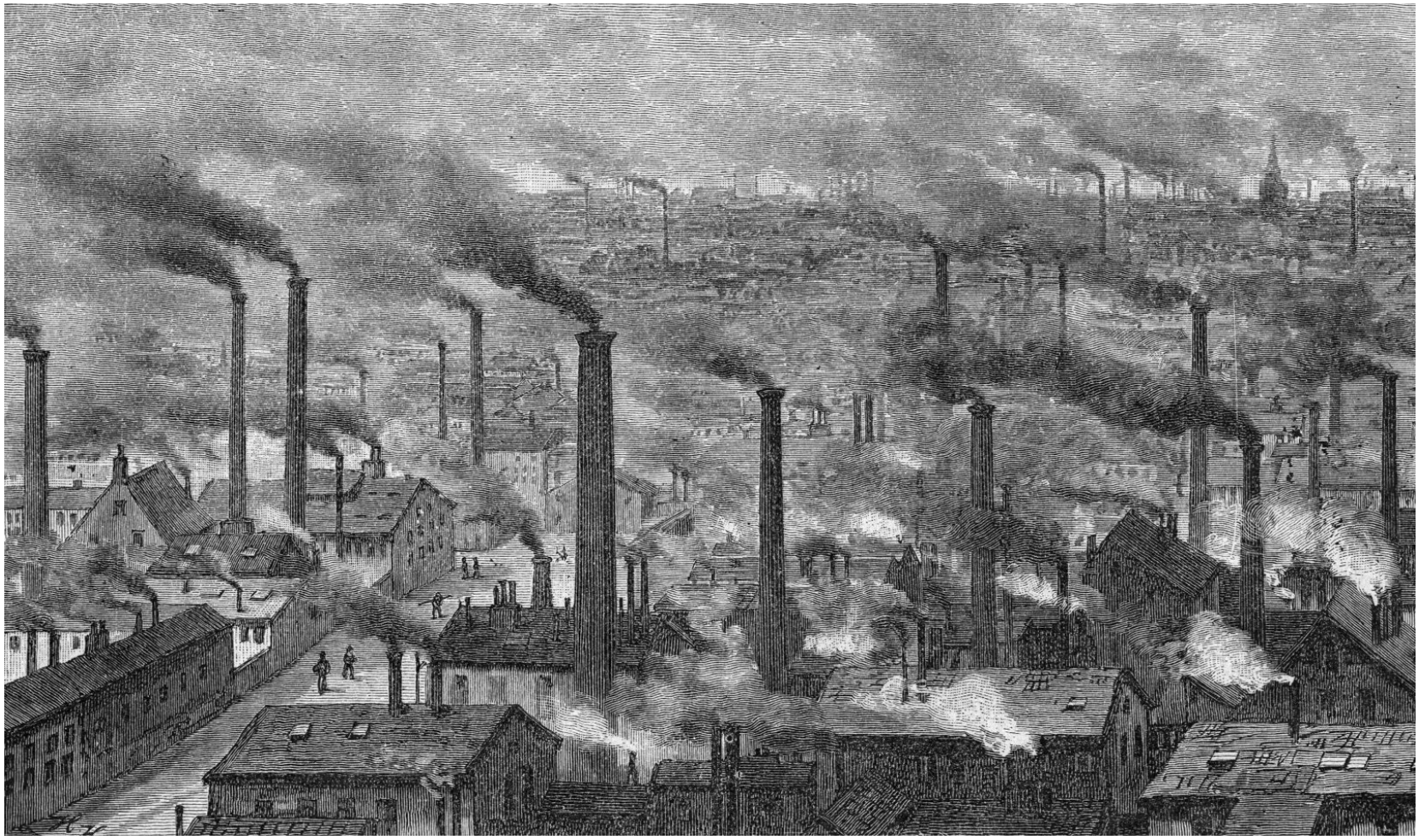
The argument of Optimal City Size Theory

neo-classical approach on clusters



- why do clusters exist and persist?
- Marshall: principles of economics (1890)
- example of British cotton industry in 19th century: why did it concentrate in the Lancashire region?
- localisation economies (or **Marshallian externalities**): advantages to firms in the same industry when located together in the same cluster: not available outside the cluster

cotton industry in Lancashire



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neo-classical approach on clusters

- 3 types of Marshallian externalities:
  - local specialized labour markets
  - local supply of specialized suppliers and buyers
  - local knowledge spillovers: knowledge is ‘in the air’

- cluster has a positive effect on all firms that belong to that industry

- positive effect on entry and survival of firms: that is why clusters exist and persist over time

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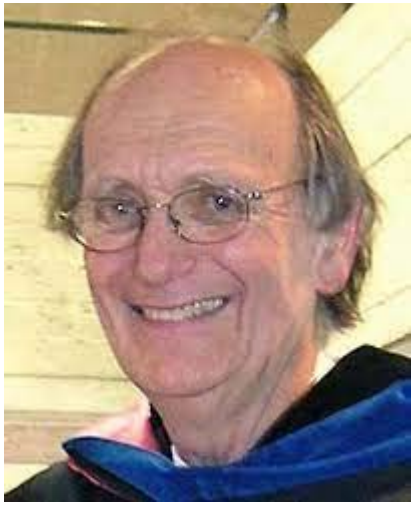
neo-classical approach on clusters

- Agglomeration as a **sharing** mechanism
- Agglomeration as a **matching** mechanism
- Agglomeration as a **learning** mechanism

Typology from Duranton and Puga, 2004

evolutionary approach on clusters

- bounded rationality: firms do not make optimal location choices (Pred 1967, 1969)

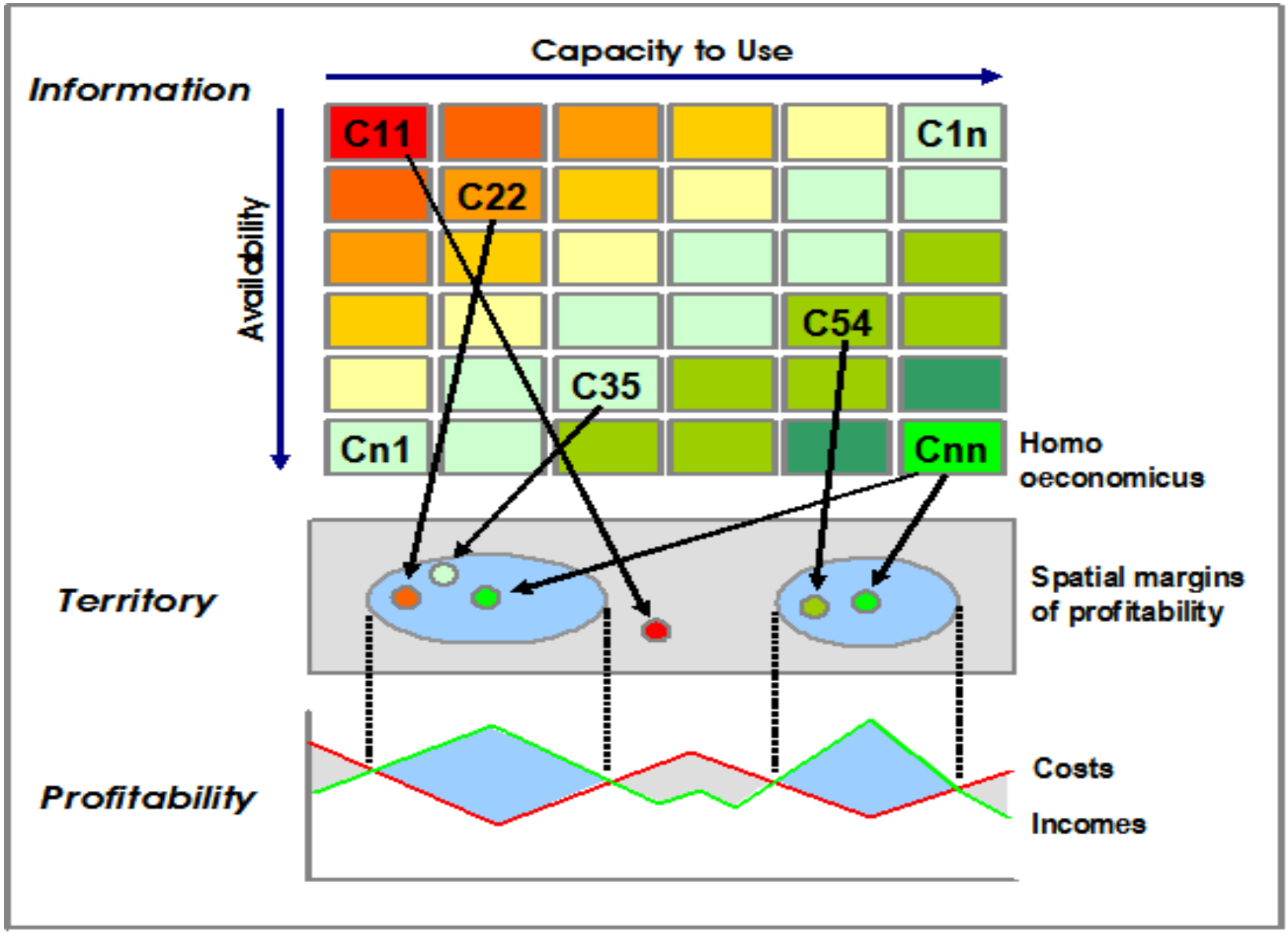


- actors are different from each other:
- access to information
- capacity of processing information

- location choice as heuristic = using limited knowledge to make “informed guesses” about unknown issues

- behavioural matrix of Pred

behaviourial matrix of Pred

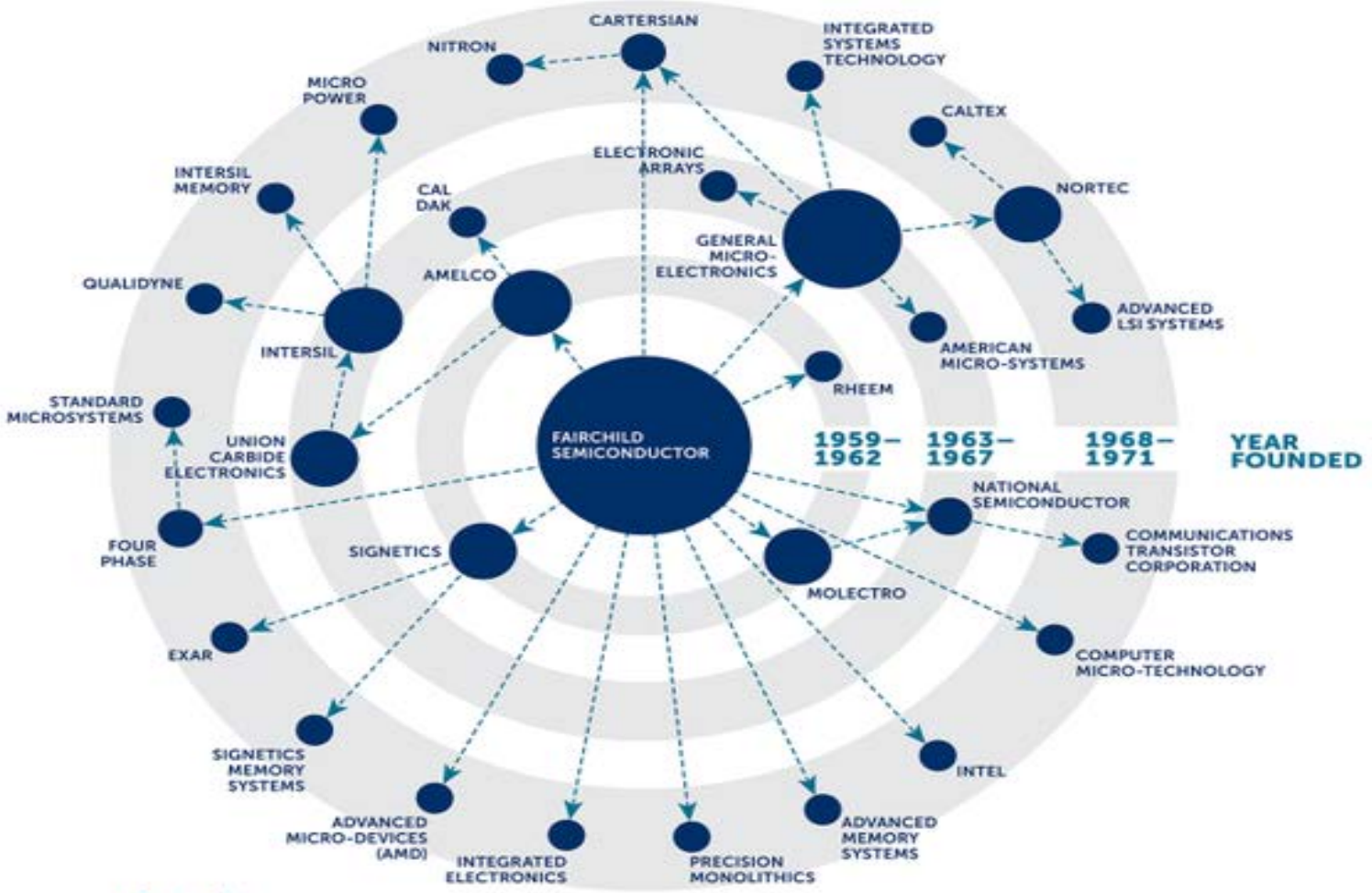


evolutionary approach on clusters

- clusters as the outcome of a spinoff process (Arthur 1994): focus is on entry of firms

- spinoffs are new start-ups that are established by entrepreneurs that worked previously for another firm (parent) in the same industry
- probability of new spinoff in a region is equal to the number of existing firms in that region
- clusters outcome of a dynamic process that is self-reinforcing and path-dependent
- location of clusters unpredictable: small events are crucial
- cluster occur without aggl. economies **(**no role for Marshall)

THE CREATION OF SILICON VALLEY: GROWTH OF THE LOCAL COMPUTER CHIP INDUSTRY

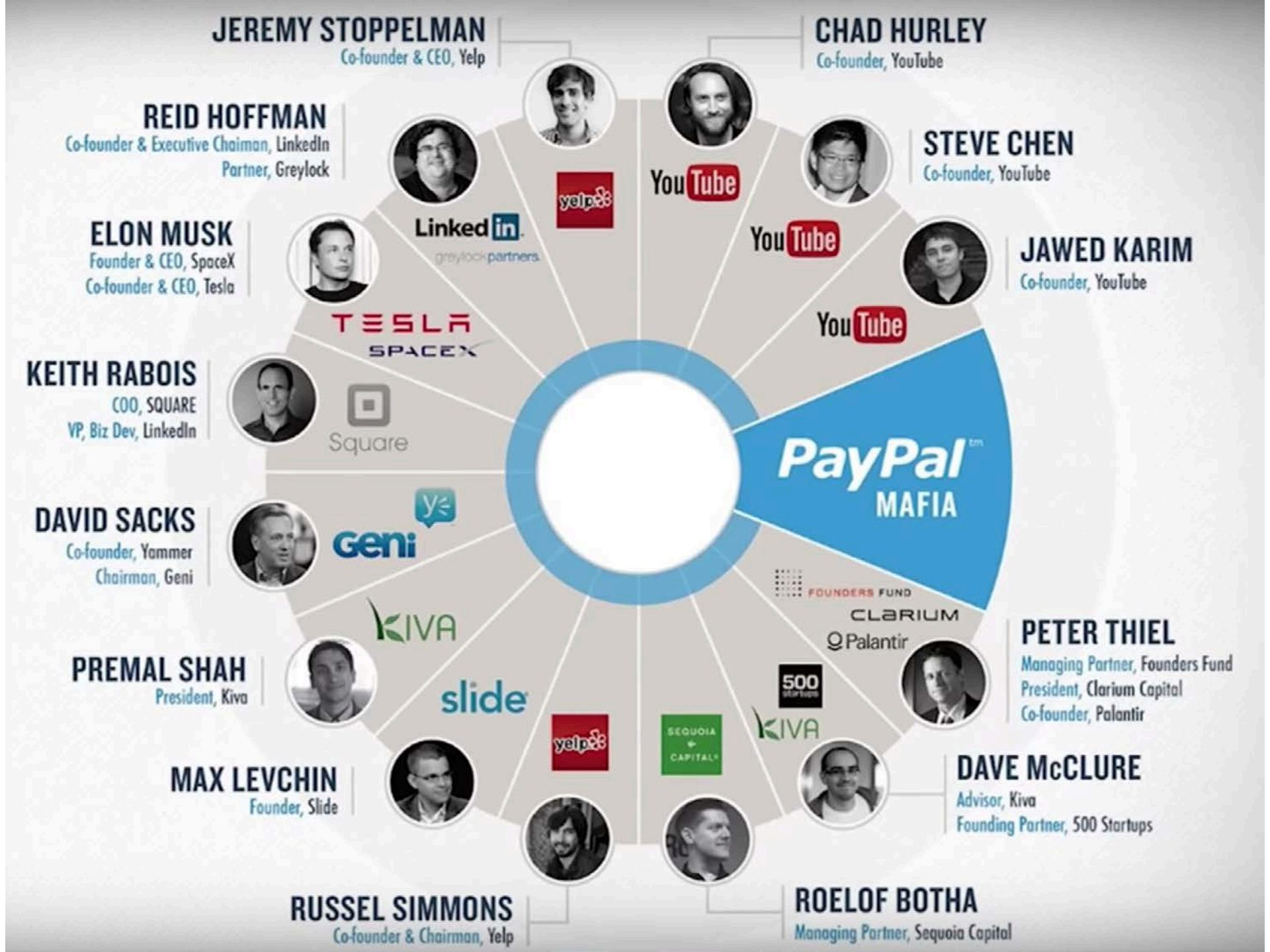


Legend:

Size of circle reflects the influence of the entrepreneurs at each company based on the number of spinoff firms.

SPINOFFS

Source: Endeavor Insight.


JEREMY STOPPELMAN
Co-founder & CEO, Yelp
CHAD HURLEY
Co-founder, YouTube
REID HOFFMAN
Co-founder & Executive Chairman, LinkedIn
Partner, Greylock
STEVE CHEN
Co-founder, YouTube
ELON MUSK
Founder & CEO, SpaceX
Co-founder & CEO, Tesla
JAWED KARIM
Co-founder, YouTube
KEITH RABOIS
COO, SQUARE
VP, Biz Dev, LinkedIn
DAVID SACKS
Co-founder, Yammer
Chairman, Geni
PayPal MAFIA
PREMAL SHAH
President, Kiva
PETER THIEL
Managing Partner, Founders Fund
President, Clarium Capital
Co-founder, Palantir
MAX LEVCHIN
Founder, Slide
DAVE McCLURE
Advisor, Kiva
Founding Partner, 500 Startups
RUSSEL SIMMONS
Co-founder & Chairman, Yelp
ROELOF BOTHA
Managing Partner, Sequoia Capital
YouTube
yelp
LinkedIn
greylockpartners
TESLA
SPACEX
Square
Geni
KIVA
slide
FOUNDERS FUND
CLARIUM
Palantir
500 startups
SEQUOIA CAPITAL

evolutionary approach on clusters

- clusters as the outcome of a spinoff process (Klepper 2007): focus is now on inheritance and survival of firms

- spinoffs are successful companies because they inherit routines from their parent firms: inheritance theory (similar to genes in biology)
- successful parents generate more and more successful spinoffs: 'success breeds success'
- spinoffs tend to locate near their parents: not an optimal location decision
- clusters: accidental presence of very successful spinoffs

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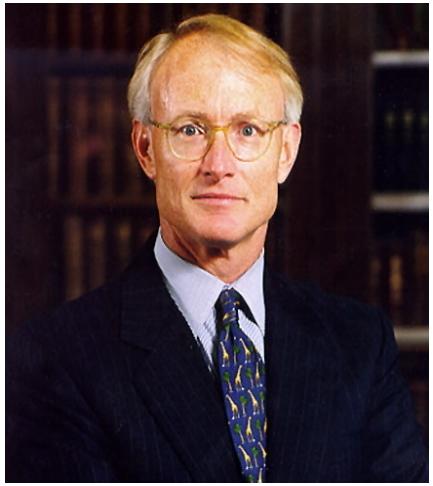
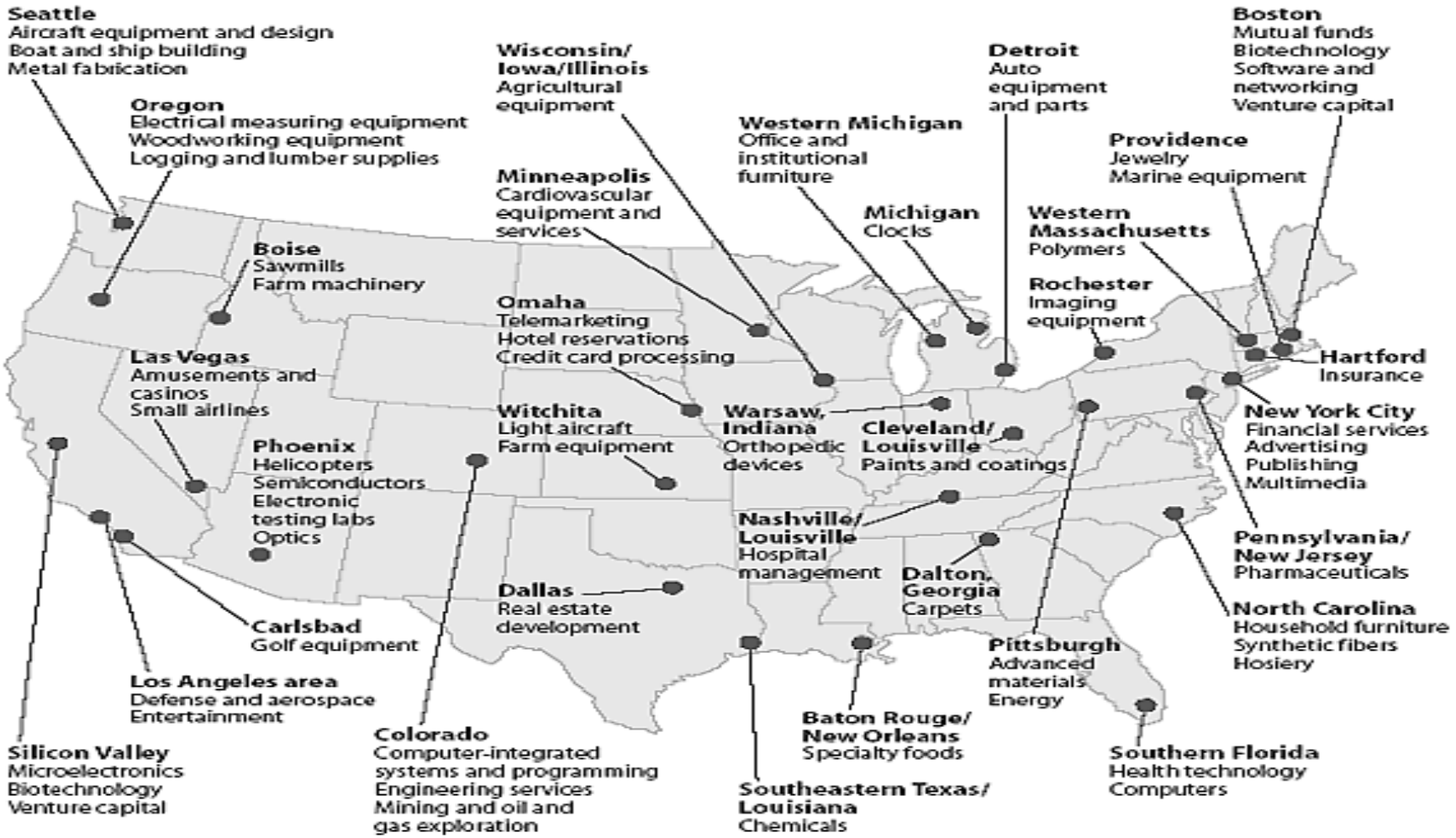
institutional approach on clusters

- Porter (1990) Competitive Advantage of Nations



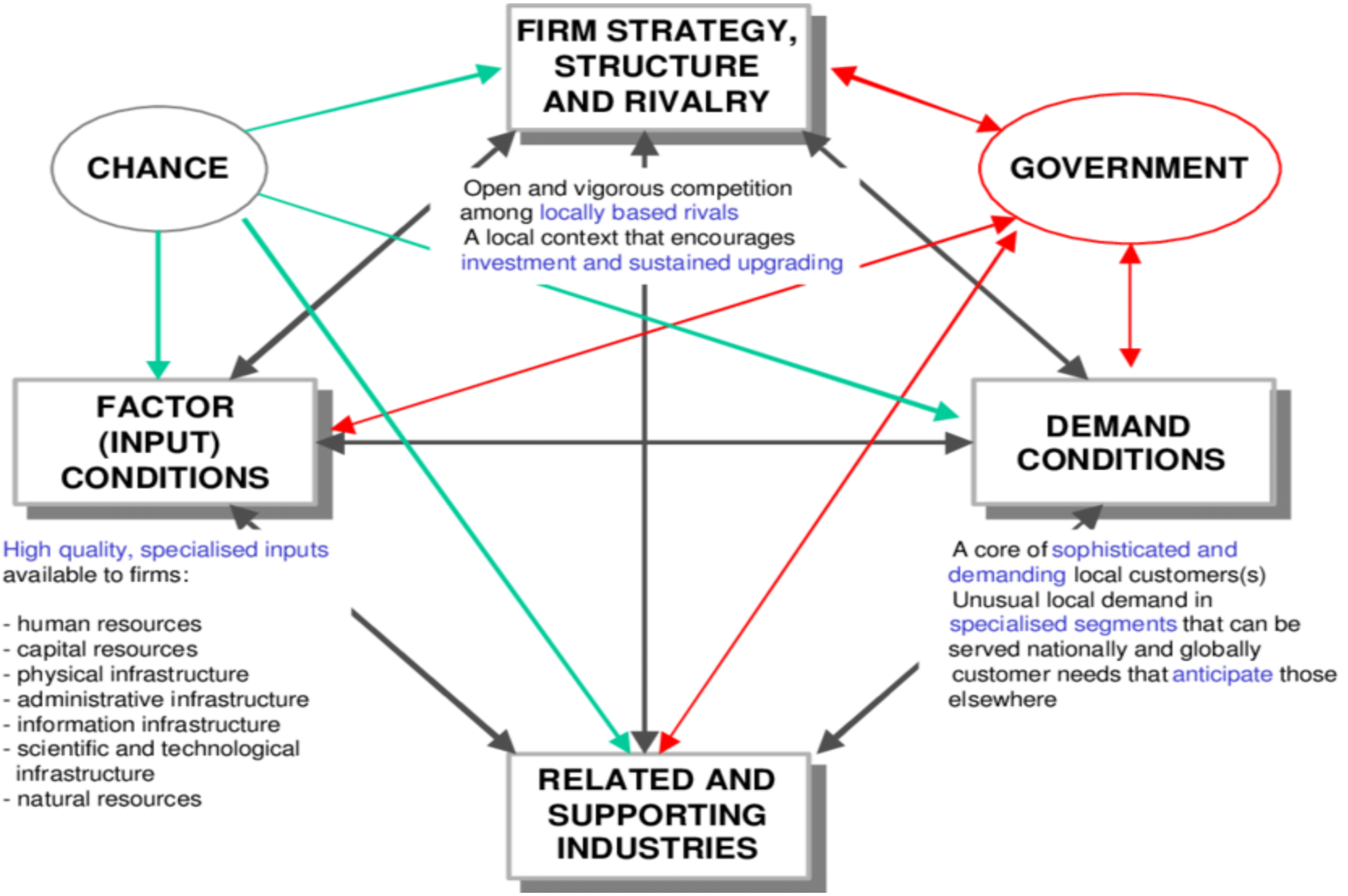
- role of regional institutions, among other factors
- diamond model: four factors that explain clusters

clusters in the US



source: Porter 1998

diamond model of Porter

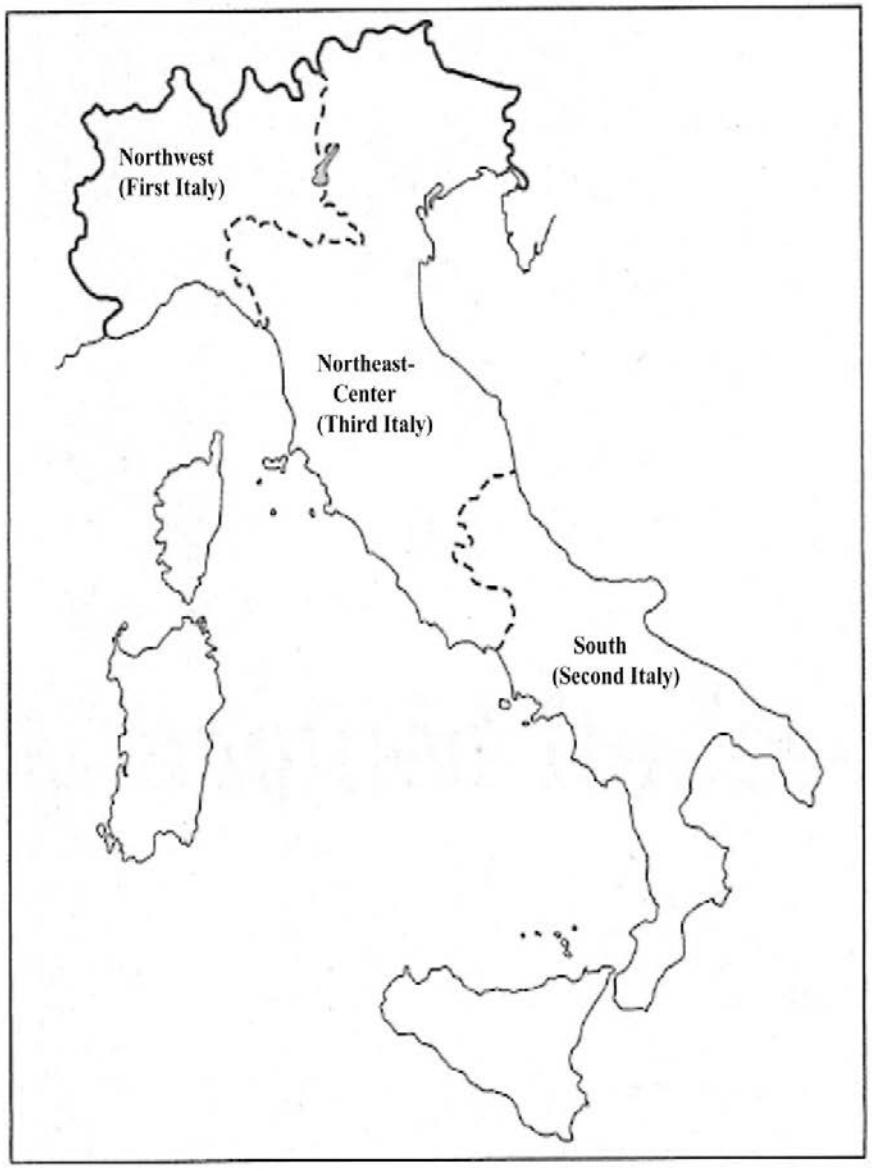


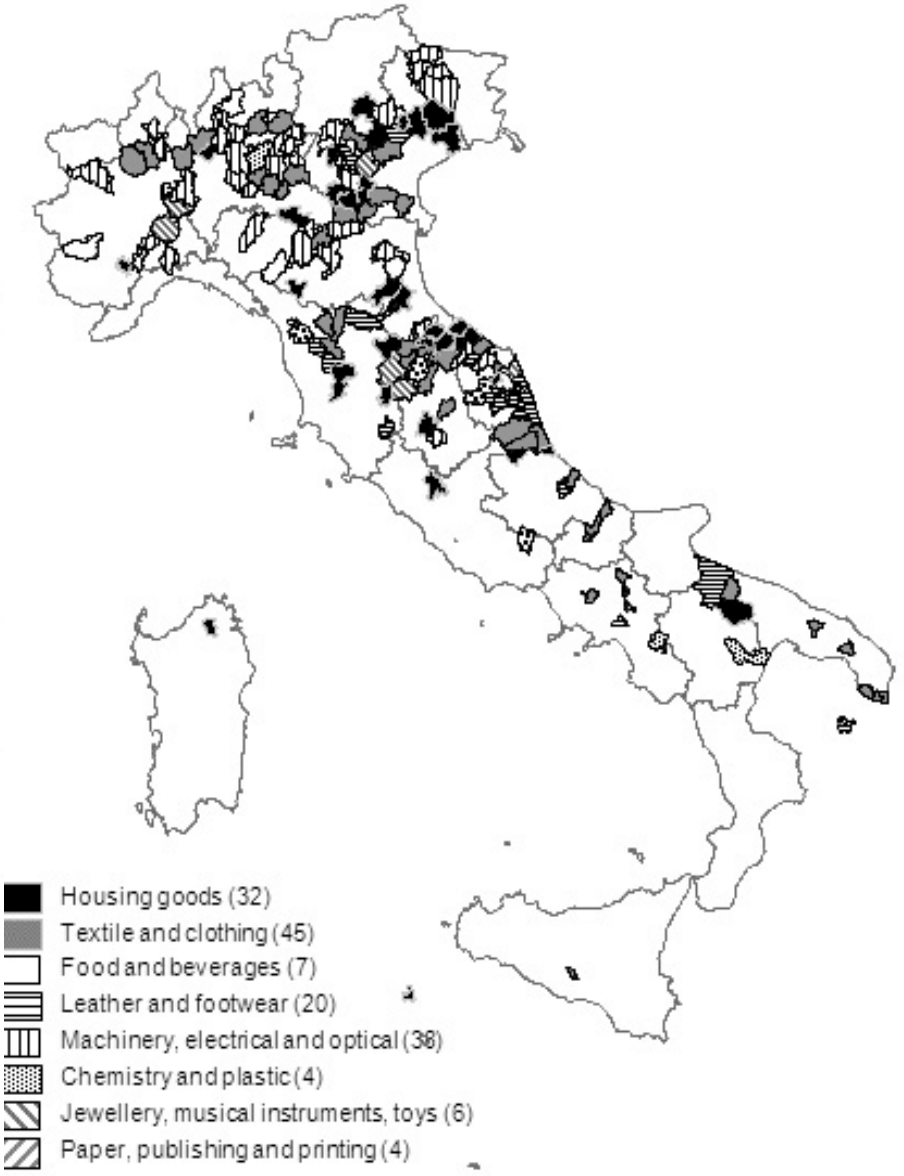
institutional approach on clusters

- industrial district literature, especially on the Third Italy (Becattini 1979)

- industrial districts: "… territorial agglomeration of small firms …. held together by inter-personal links, by a common 'social culture' amongst the workers, entrepreneurs and politicians, and enveloped by an 'industrial atmosphere' which circulates information, favours professional training, facilitates the diffusion of innovation, thereby generating important flows of external-internal economies" (Bianchi 1994, p. 4)

industrial districts in Third Italy





institutional approach on clusters

- emphasis on cultural factors that enhance the performance of firms within clusters

- crucial role of social capital: “trust, norms and networks that improve the efficiency of society by facilitating co-ordinated action” (Putnam 1993, p. 167)

- economic effects of social capital:

- facilitates transactions
- enables the exchange of knowledge and information
- promotes collaboration
- enhances efficiency of local governance

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thank you for your attention!