Developing and Evaluating Institutions: The Role of Local Government Planning in the United States

Jan Whittington

University of Washington

Global Planning Course

May 1, 2018

UNIVERSITY *of* WASHINGTON

AGENDA
Local Cases, Applied Theory, Critical Issues

- Review
- New Readings
- Case Studies: Silicon Valley & Seattle
- Case Study: Zoning & Street Design Standards
- Critical Issue: Artificial Intelligence
- Critical Issue: Climate Change
- Wrap Up

Review

REVIEW:
PLANNING AND MARKETS IN THE USA

- Planning:
  - Federal – State – Local Government

- Relationship with Markets
  - Efficiency, Social justice, Economic growth
  - Aspirational and Regulatory

REVIEW:
PLANNING AND MARKETS IN THE USA

- Neoclassical Economics:
  - Markets work themselves (through price mechanism)
  - Planning is a response to market failure (what the market does not supply)

- Institutional Economics:
  - Markets only work under humanly-devised institutions
  - Planning responds to market failures (externalities, social justice)
  - Planning involves the design and adaptation of institutions
  - Institutions reduce transaction cost (make markets efficient)

New Readings

NEW READINGS

Theory	First Lecture	Second Lecture
Path Dependence	Arthur (1990) **Scientific American**	Pierson (2000) **American Political Science Review**
Institutional Economics	North (1995) **Business Economics**	Ostrom et al. (2011) **Journal of Institutional Economics**
Transaction Cost Economics	Williamson (2000) **Journal of Economic Literature**	Whittington (2012) **Journal of the American Planning Association**

UNDERSTANDING PUBLIC GOODS

Increased Barrier to Entry ←

Increased Scarcity ↑

	Excludable	**Non-excludable**
Rivalrous	Private Goods	Common Goods
Non-rivalrous	Club Goods	Public Goods

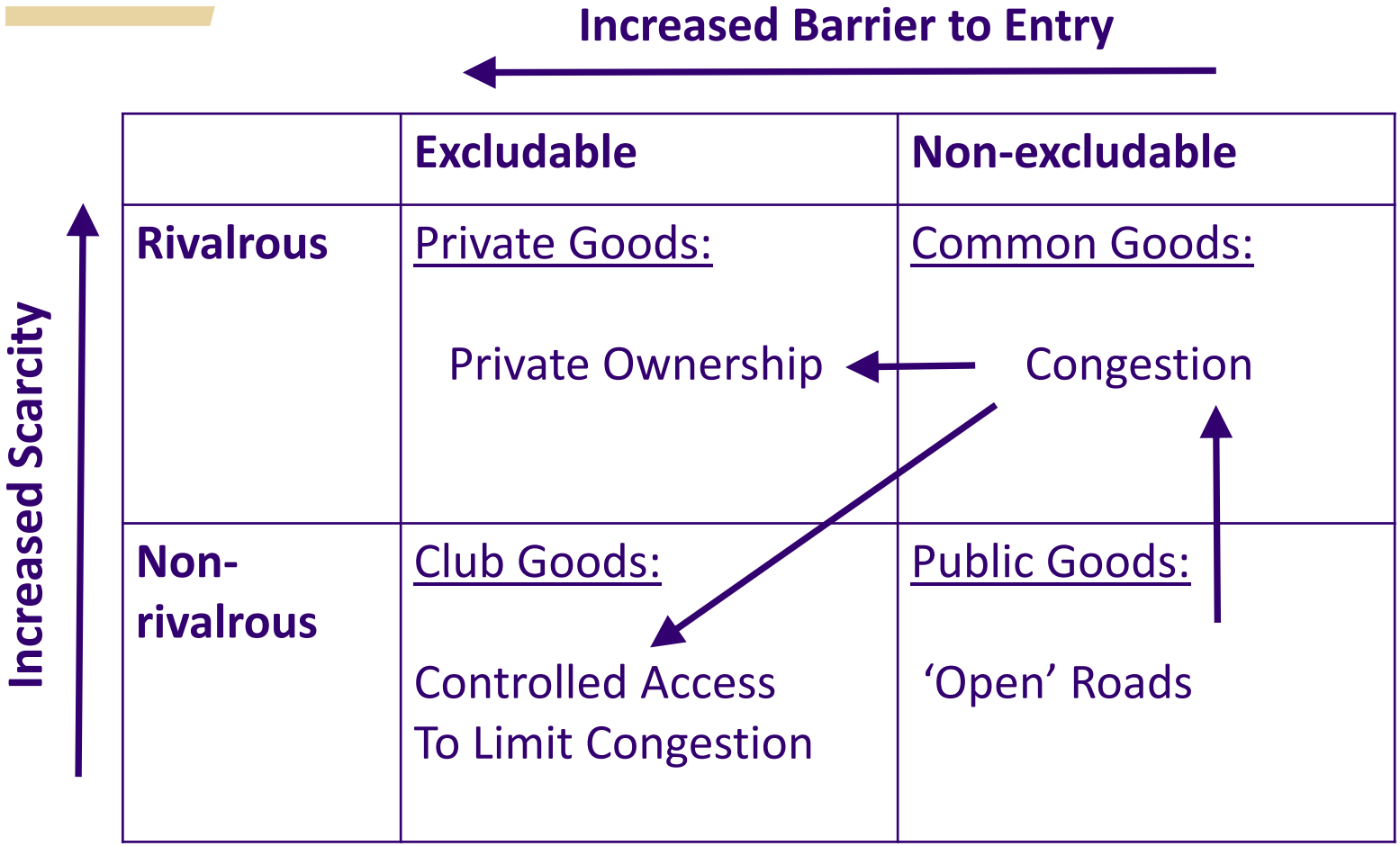
UNDERSTANDING PUBLIC GOODS

Increased Barrier to Entry ←

Increased Scarcity ↑

	Excludable	**Non-excludable**
Rivalrous	<u>Private Goods</u> Privately Owned Property and Business	<u>Common Goods</u> Natural Resources • Fisheries • Forests • Fresh Water
Non-rivalrous	<u>Club Goods</u> Infrastructure	<u>Public Goods</u> Oceans (?) Atmosphere (?) Outer Space

UNDERSTANDING PUBLIC GOODS



Case Studies: Silicon Valley and Seattle

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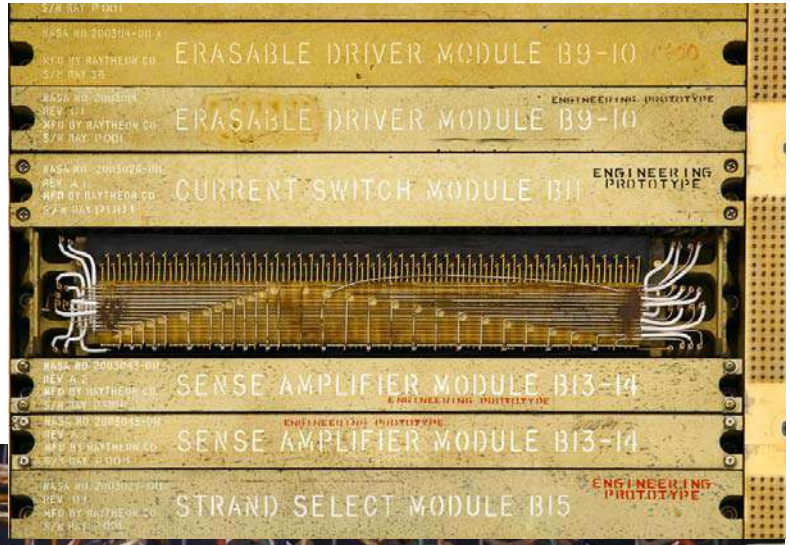
CASE STUDY: SILICON VALLEY

- San Francisco Bay Area, California
- Government
  - US Navy
  - National Aeronautics and Space Administration
- Universities
  - Stanford University, Frederick Terman (Dean, Engineering)
  - Stanford Industrial Park, and Stanford Research Institute
- From inventions to firms
  - Hewlett-Packard (1938), Varian Associates (1948)
  - Shockley Semiconductors, Fairchild Semiconductors, Intel
  - Xerox PARC, Homebrew Computer Club, Apple, Cisco
  - Internet, Venture Capital, Yahoo!, Google, Facebook

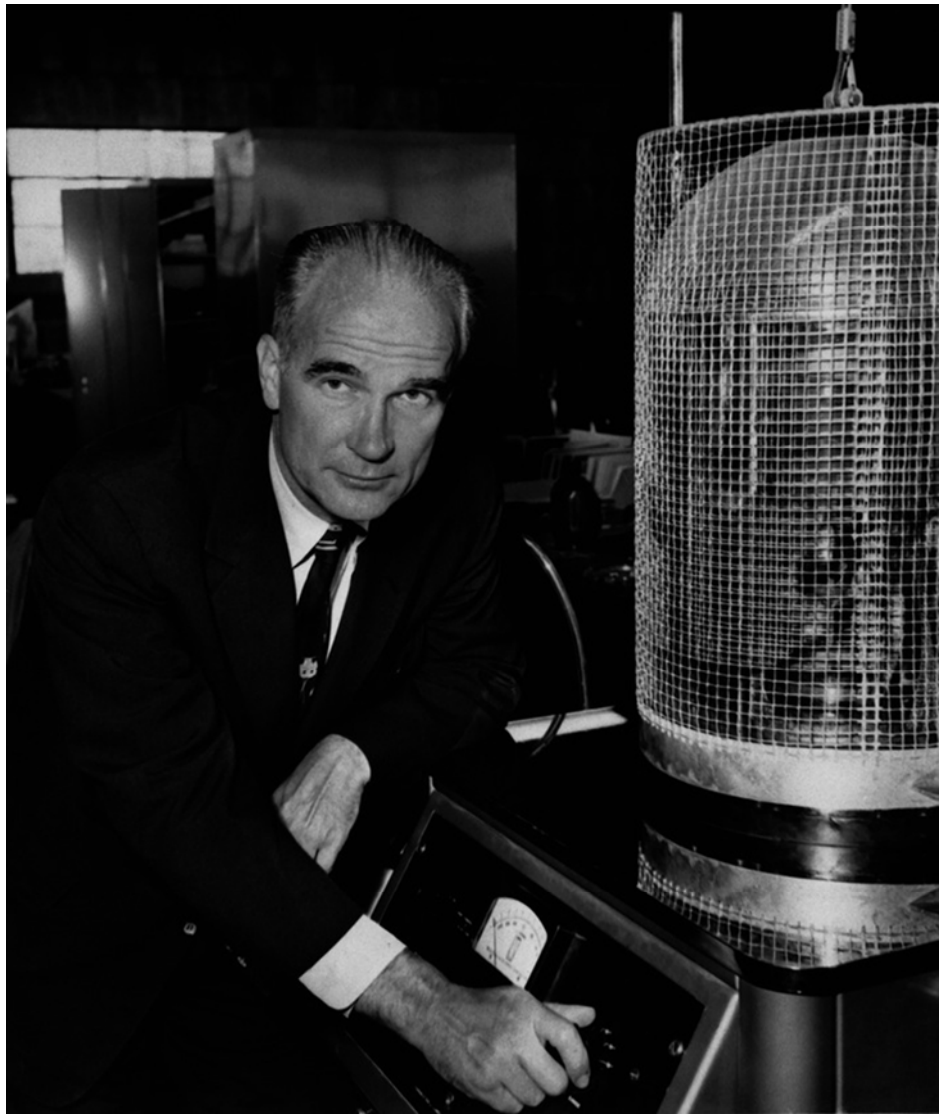
MILITARY INVESTMENT



http://www.markrichards.com/Core_MemoryCollection/coreview/index.html

SHOCKLEY SEMICONDUCTORS

Physicist William Shockley began his career at Bell Laboratories on the east coast. In December 1947, Shockley, along with colleagues John Bardeen and Walter Brattain, invented the world's first transistor for which they won the Nobel Prize in Physics in 1956



http://www.pbs.org/wgbh/americanexperience/features/silicon/

FAIRCHILD SEMICONDUCTORS

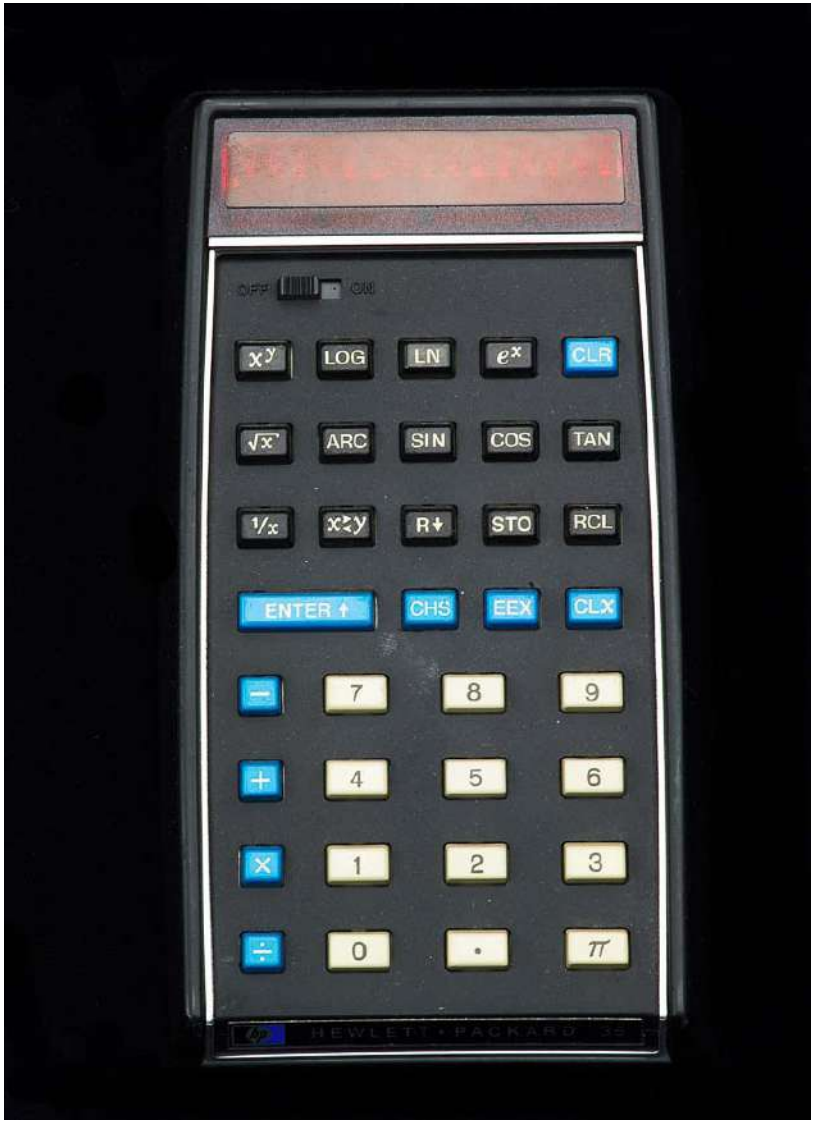
Sherman Fairchild invested $1.3 million to start Fairchild Semiconductor in 1957. He held over 30 patents from silicon semi-conductors to aerial and motion-picture cameras. The over 100 spin-offs from Fairchild Semiconductor between the 1960s and 1980s would come to be known as "Fairchildren." This photo: Fairchild (right) with Robert Noyce (left) and Gordon Moore (center).

http://www.pbs.org/wgbh/americanexperience/features/silicon/

Stanford officials display model of the university's research park to a potential tenant, c. 1951. © Margaret O'Mara

HEWLETT-PACKARD (1938)

Initially founded on their production of electronic test equipment, the precision audio oscillator, Hewlett-Packard (HP) was enormously successful with its creation of a "pocket calculator', as well as the popular ink jet printer.



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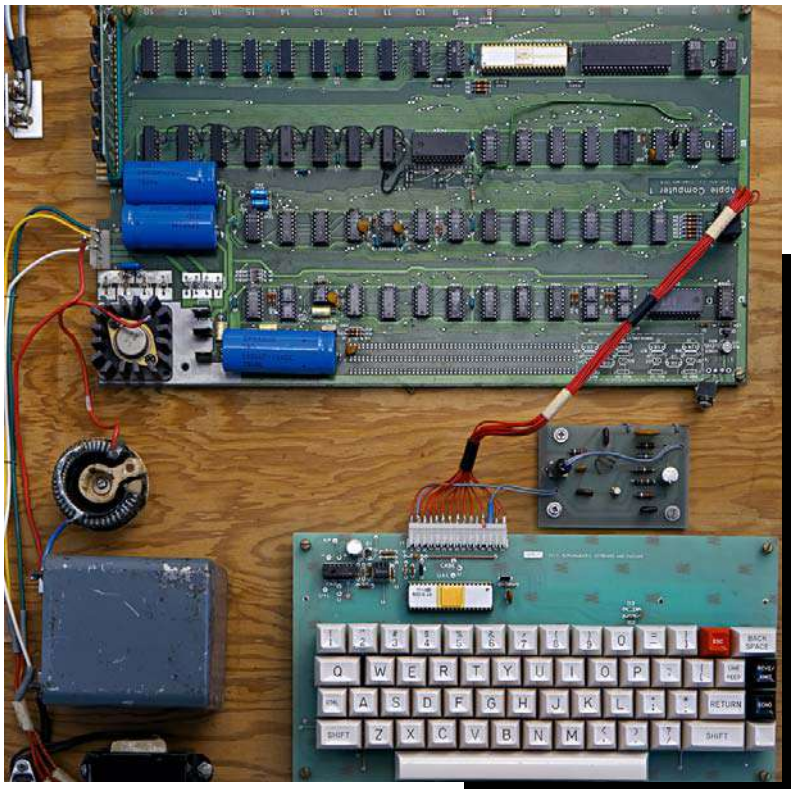
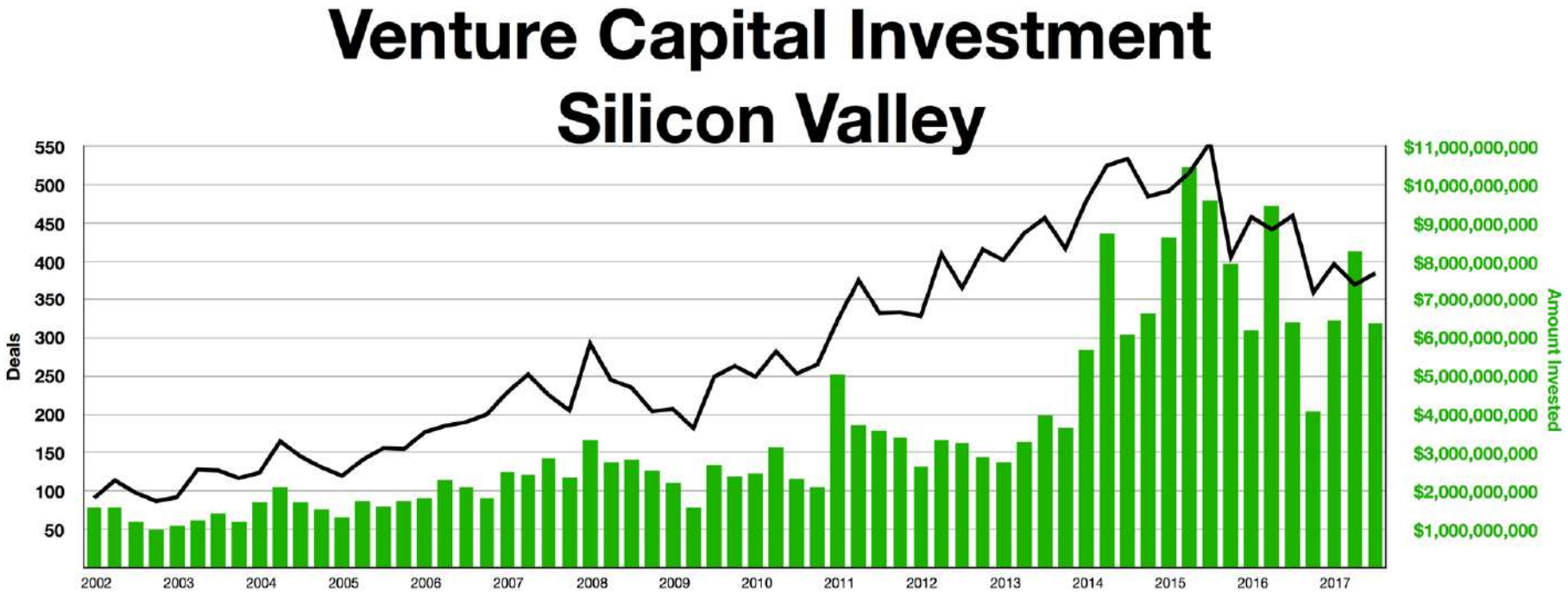
APPLE

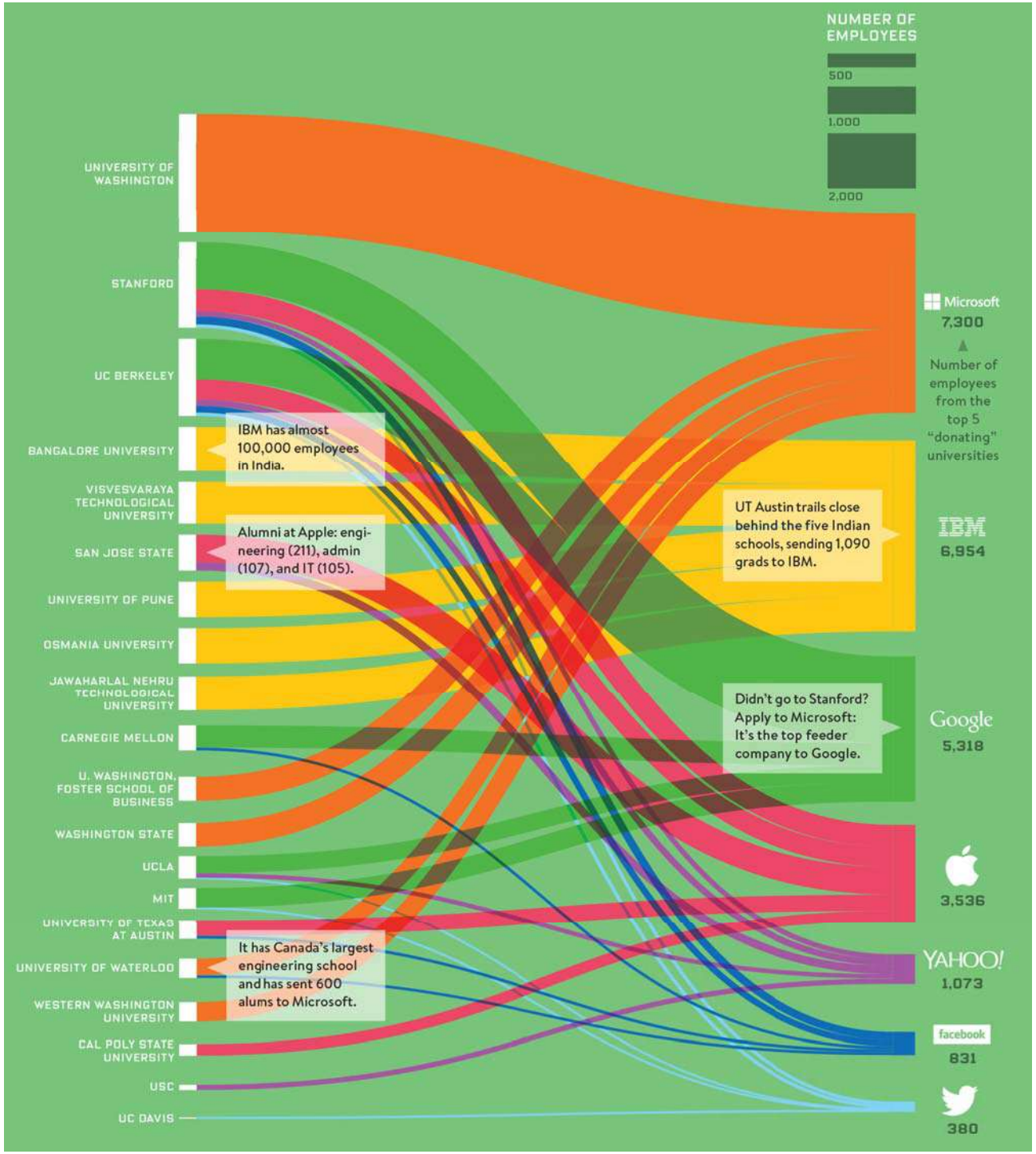


http://www.markrichards.com/Core_MemoryCollection/coreview/index.html

VENTURE CAPITAL

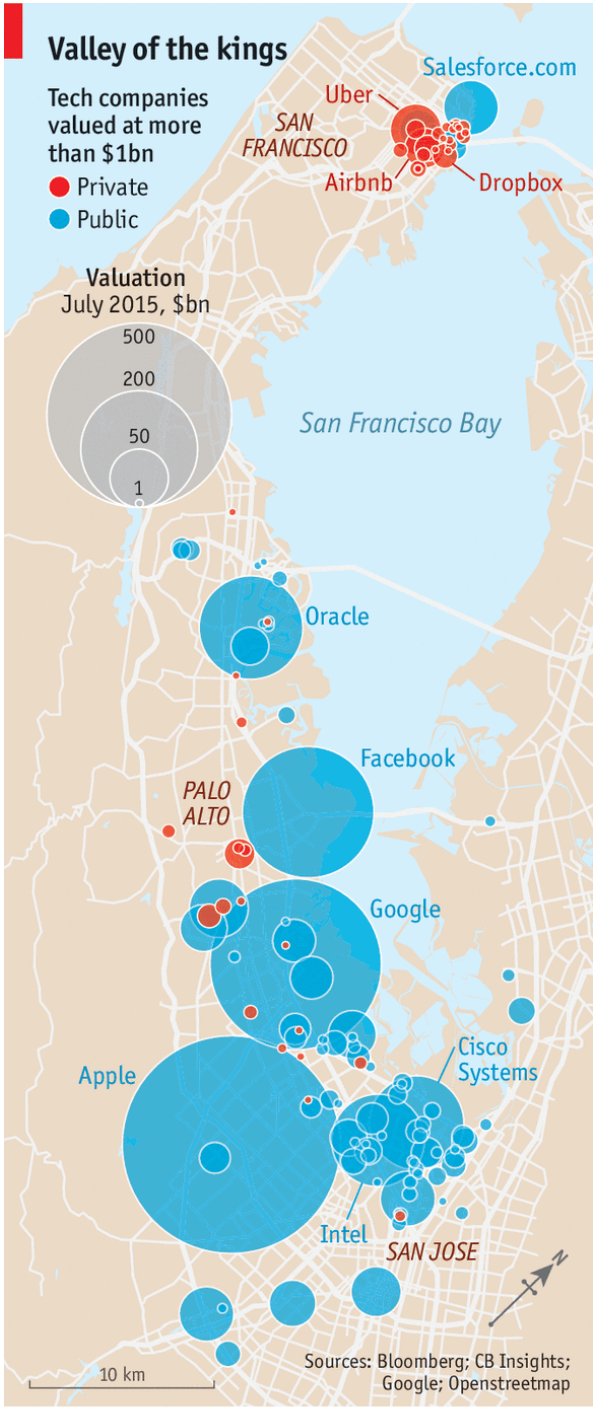


https://www.pwc.com/us/en/technology/moneytree/explorer.html#/



https://www.wired.com/2014/05/alumni-network-2/

SILICON VALLEY



Economist.com, “To fly, to fall, to fly again” July 12, 2015.

W. Brian Arthur defining AGGLOMERATION ECONOMIES (1937)

INCREASING RETURNS OCCUR IN INDUSTRIAL LOCATION IN THE FORM OF AGGLOMERATION ECONOMIES – NET BENEFITS TO BEING CLOSE TO OTHER FIRMS. WHERE FIRMS ENTERING AN INDUSTRY BENEFIT FROM THE PRESENCE OF OTHER FIRMS, A PREDOMINANT SHARE OF THE INDUSTRY MAY CLUSTER IN A SINGLE REGION, OR DISTRICT, OR LOCATION – A 'SILICON VALLEY' – NOT NECESSARILY BECAUSE OF INTRINSIC ADVANTAGE OF THAT PARTICULAR LOCATION, BUT BECAUSE 'HISTORICAL ACCIDENT' PLACED CERTAIN FIRMS THERE INITIALLY AND THIS CONCENTRATION OF FIRMS IN TURN ATTRACTED A HIGH PROPORTION OF SUBSEQUENT ENTRANTS.

Arthur, W. B. (1990). *Mathematical social sciences*, *19*(3), 235-251.

W. Brian Arthur on SILICON VALLEY and PATH DEPENDENCE (1937)

I) WHERE THERE IS NO UPPER BOUND TO LOCATIONAL INCREASING RETURNS DUE TO AGGLOMERATION, THERE WILL INDEED BE A MONOPOLY OUTCOME: INDUSTRY WILL CLUSTER IN ONE DOMINANT LOCATION, WHICH LOCATION DEPENDS BOTH ON GEOGRAPHICAL ATTRACTIVENESS AND ACCIDENTIAL HISTORICAL ORDER OF FIRM ENTRY.

Arthur, W. B. (1990). *Mathematical social sciences*, *19*(3), 235-251.

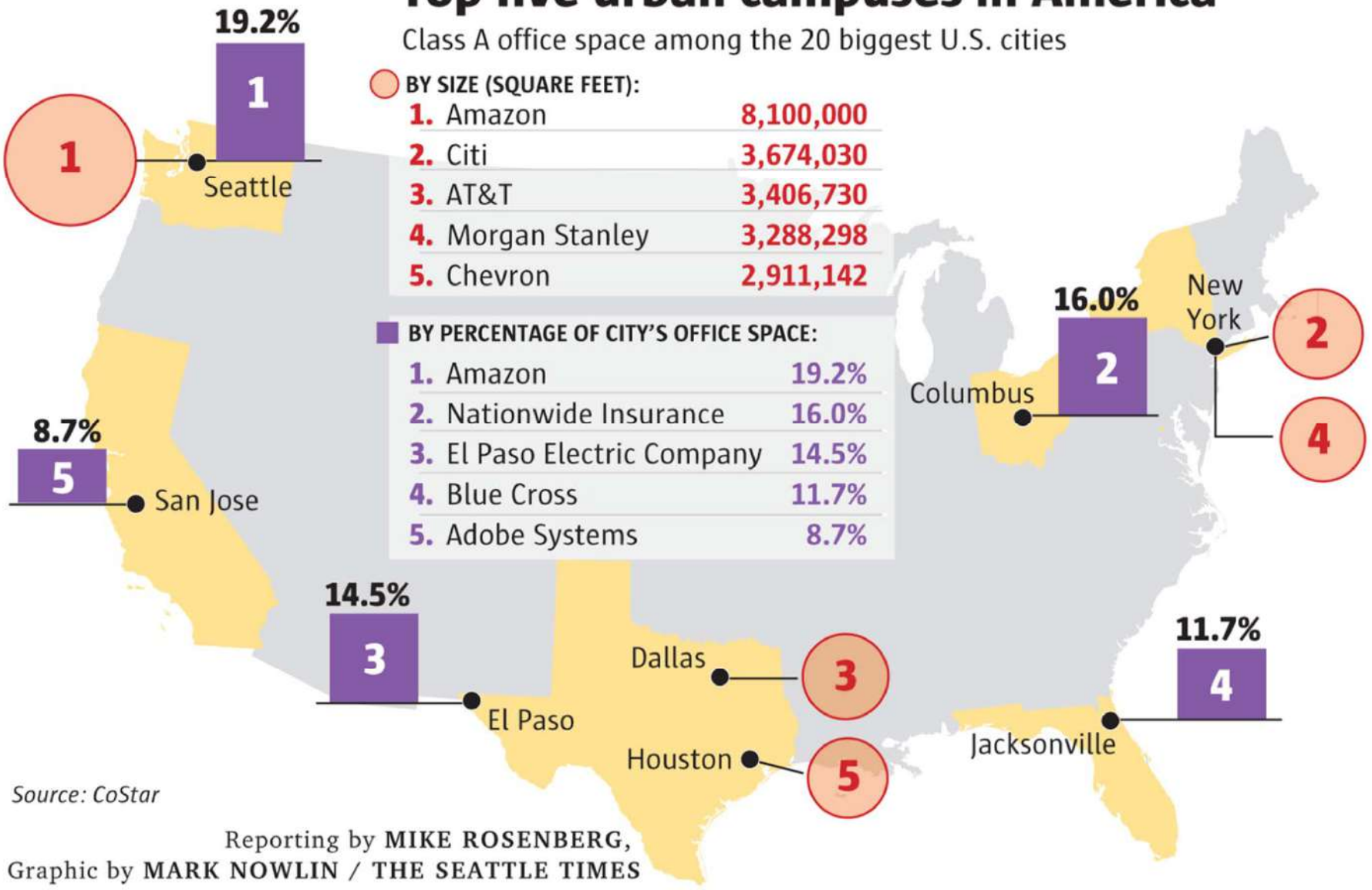
W. Brian Arthur on SILICON VALLEY and PATH DEPENDENCE (1937)

II) WHERE THERE IS AN UPPER BOUND TO INCREASING RETURNS DUE TO AGGLOMERATION, CERTAIN SEQUENCES OF FIRM ENTRY CAN PRODUCE A MONOPOLY BY ONE LOCATION; OTHERS CAN PRODUCE LOCATIONAL SHARING OF THE INDUSTRY EXACTLY AS IF THE AGGLOMERATION EFFECTS WERE ABSENT

Arthur, W. B. (1990). *Mathematical social sciences*, *19*(3), 235-251.

Top five urban campuses in America

Class A office space among the 20 biggest U.S. cities

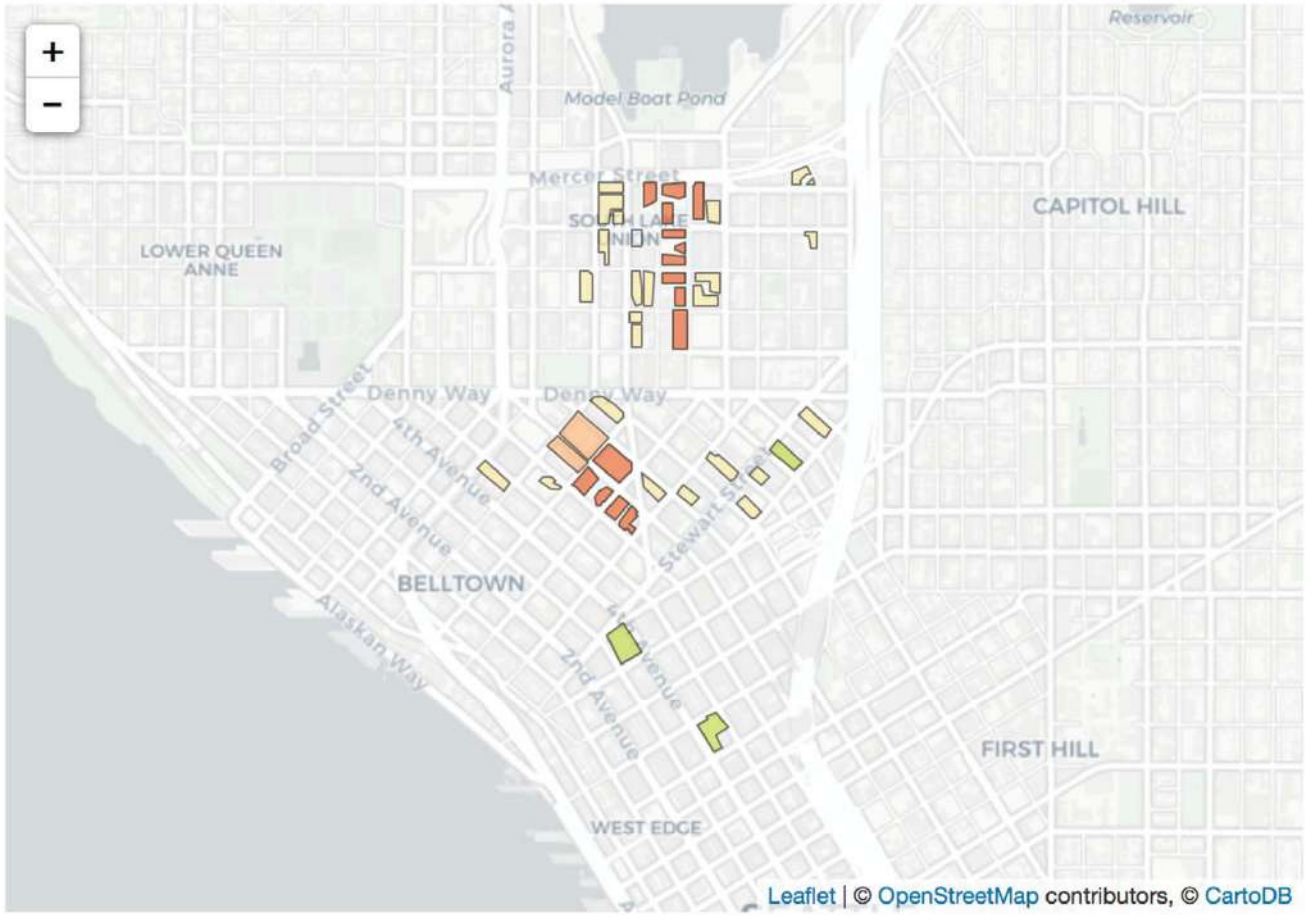


Source: CoStar

Reporting by **MIKE ROSENBERG**,
Graphic by **MARK NOWLIN / THE SEATTLE TIMES**

Amazonia

Amazon occupies or plans to occupy about three dozen different office buildings in and around South Lake Union. Click on the buildings for the Amazon office names and other details.



WHAT AMAZON...

...owns | ...is developing | ...is leasing | ...plans to occupy

As of Nov. 30, 2017
Source: Seattle Times staff research

EMILY M. ENG AND AMANDA E. WELCH / THE SEATTLE TIMES

HOW MANY COMPANIES DOES IT TAKE TO EQUAL AMAZON'S OFFICE SPACE IN SEATTLE?

Amazon: 8.10M sq. ft.

Others include:

> Facebook
> Zillow
> UW
> JPMorgan Chase
> US Department of Labor
> Adobe
> Nordstrom

Source: CoStar

THOMAS WILBURN / THE SEATTLE TIMES

	Amazon Seattle HQ	
Direct[1]	Number of buildings	33
	Square feet	8.1 million
	Local retail within Amazon headquarters	24 restaurants/cafes + 8 other services
	Amazon Employees	40,000+
	Capital investment (buildings & infrastructure)	$3.7 billion
	Operational expenditures (utilities & maintenance)	$1.4 billion
	Compensation to employees	$25.7 billion
	Number of annual hotel nights by visiting Amazonians and guests	233,000 (2016)
	Amount paid into the city's public transportation system as employees' transportation benefit	$43 million
Indirect[2]	Additional jobs created in the city as a result of Amazon's direct investments	53,000
	Additional investments in the local economy as a result of Amazon's direct investments	$38 billion
	Increase in personal income by non-Amazon employees as a result of Amazon's direct investments	$17 billion
	Increase in Fortune 500 companies with engineering/R&D centers in Seattle	From 7 in 2010 to 31 in 2017

[1]From 2010 (when Amazon moved its headquarters to downtown Seattle) to June 2017.

[2]From 2010-2016. Calculated using Input-Output methodology and multipliers developed by the U.S. Bureau of Economic Analysis.

Amazon and Seattle

The Seattle Times

Ten years ago, Amazon changed Seattle, announcing its move to South Lake Union

Originally published December 21, 2017 at 7:38 am | *Updated December 21, 2017 at 2:58 pm*

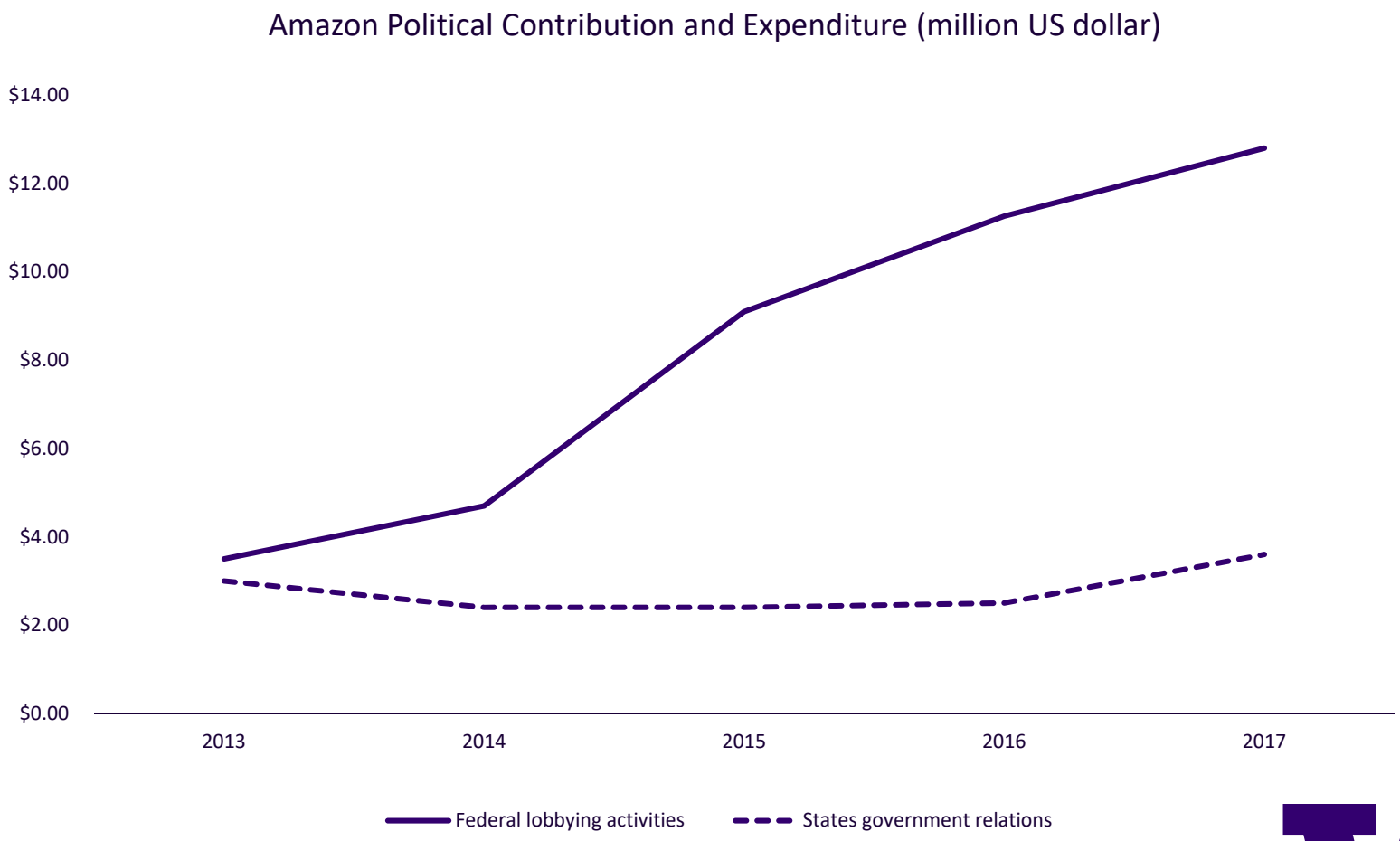
The Amazon effect: Metro adds buses to handle new flock of summer interns

Originally published June 22, 2017 at 5:00 am | *Updated February 12, 2018 at 9:53 am* | *Corrected*

Amazon creating a place for hundreds of homeless on its shiny new Seattle campus

Originally published May 9, 2017 at 9:00 pm | *Updated May 16, 2017 at 9:07 am*

Amazon Political Contribution and Expenditure



Source: Amazon U.S. Political Contribution and Expenditure Policy and Statement

Amazon HQ2 RFP

Core Preferences	***Quantity***	***Units***	***Description***
Site Requirements			
Proximity to population center	30	Miles	
Proximity to International airport	Within approx. 45	Minutes	
Proximity to major highways and arterial roads	Not more than 1-2	Miles	Close to major arterial roads to provide optimal access
Access to mass transit	At site		Direct access to rail, train, subway/metro, bus routes

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Case Studies:
Zoning & Street Design Standards

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Spatial planning IDEOLOGIES in the US

Colonial Towns | **Early Zoning** | **Urban Renewal** | **New Urbanism** | **Mixed-use today**





1860s | **1960s** | **1990s**

Most land uses are mixed	Areas are zoned into single uses to remove non-conforming uses	Mixed use is widely advocated by urban planners, however, developers are still reluctant to invest because of the high risk	Mixed use has slowly gained financial viability

Las Vegas, Nevada


Irvine, California
© 2009 Europa Technologies
©2009 Google
© 2009 Google
ate: Oct 23, 2007
33°40'40.90" N 117°49'22.81" W elev 17 m
Eye alt 1.24 km


Las Vegas, Nevada
Image U.S. Geological Survey
2009 Google
an 31, 2008
36°12'44.44" N 115°17'44.31" W elev 783 m
Eye alt 6.52 km

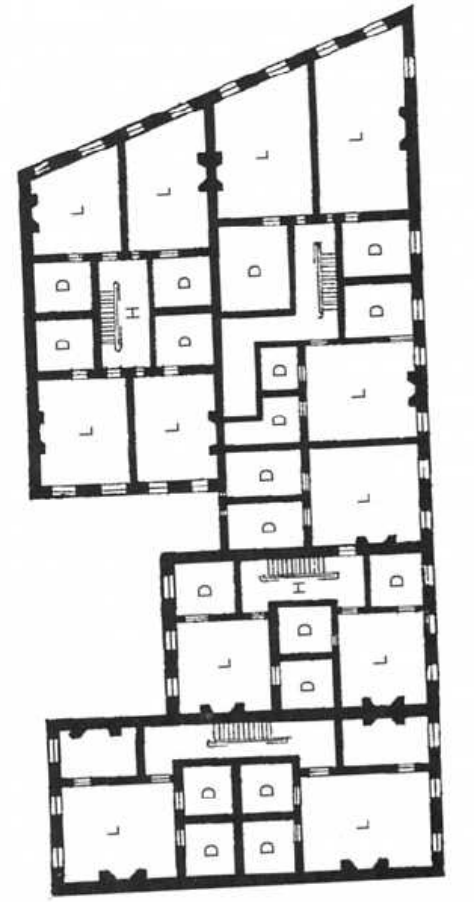
LOCAL GOVERNMENT PLANNING began with ZONING

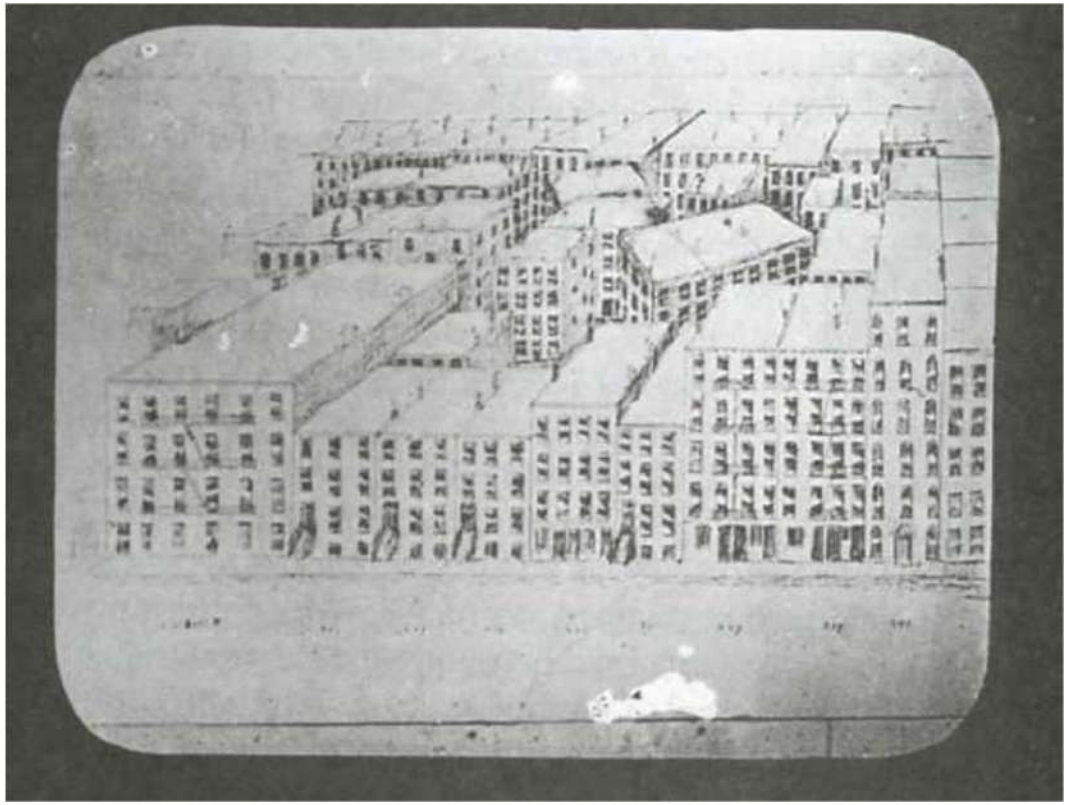
1785 Ordinance of 1785. Provided for the rectangular land survey of the Old Northwest.

1901 New York State Tenement House Law. The legislative basis for the revision of city codes that outlawed tenements such as the "Dumbbell Tenement.“

1916 Nation's first comprehensive zoning resolution adopted by New York City Board of Estimates.

1924 U.S. Department of Commerce issues a Standard State Zoning Enabling Act.





Riis, Jacob. 1890. *How the Other Half Lives*. Charles Scribner's Sons.

Tenement Housing in New York City

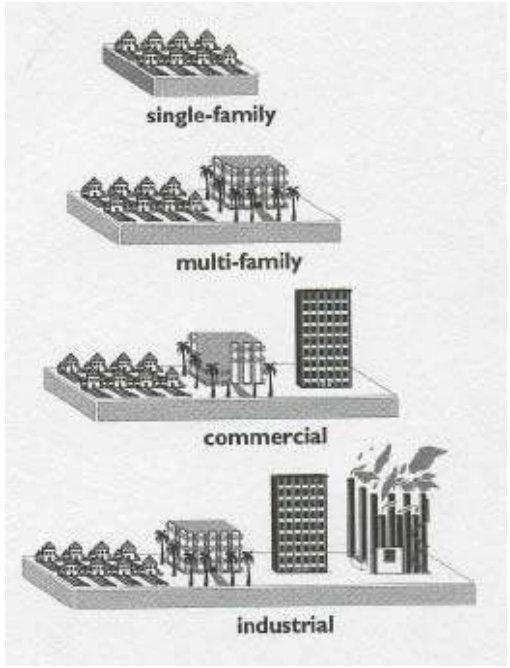
PURPOSE OF ZONING

Zoning	positive & negative externalities infrastructure capacity fiscal objectives information symmetry manage supply protect amenities schedule (time) development
Development Rights	permanent allocation of land uses

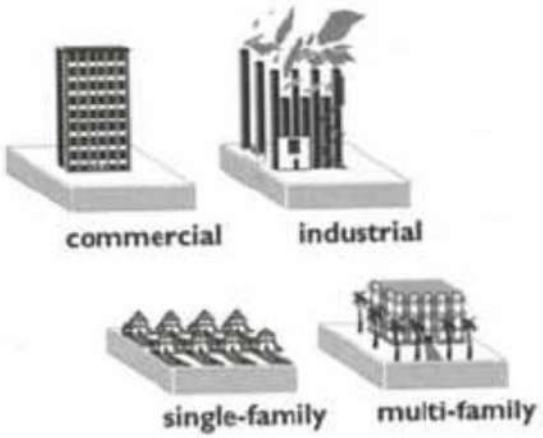
ZONING STRUCTURES

1926 *Village of Euclid v. Ambler Realty Co.* Constitutionality of zoning upheld by the U.S. Supreme Court.

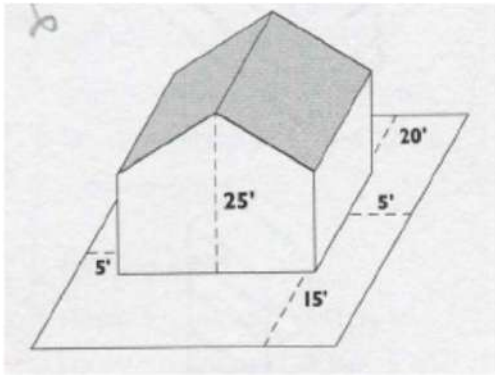
Euclidian Zoning



Exclusive Zoning



Per Lot



Fulton, William. 1999. *Guide to California Planning*. Solano Press.

Las Vegas, Nevada

SPATIAL PLANNING

1. Land available
2. Demands for growth
3. How much space is needed
4. Where to supply it…

Emphasis in the five editions of *Urban Land Use Planning* textbook in the US

1957 – planning technique

1965 – mathematical modeling

1979 – information systems

1995 – participation, development

2006 – sustainable development

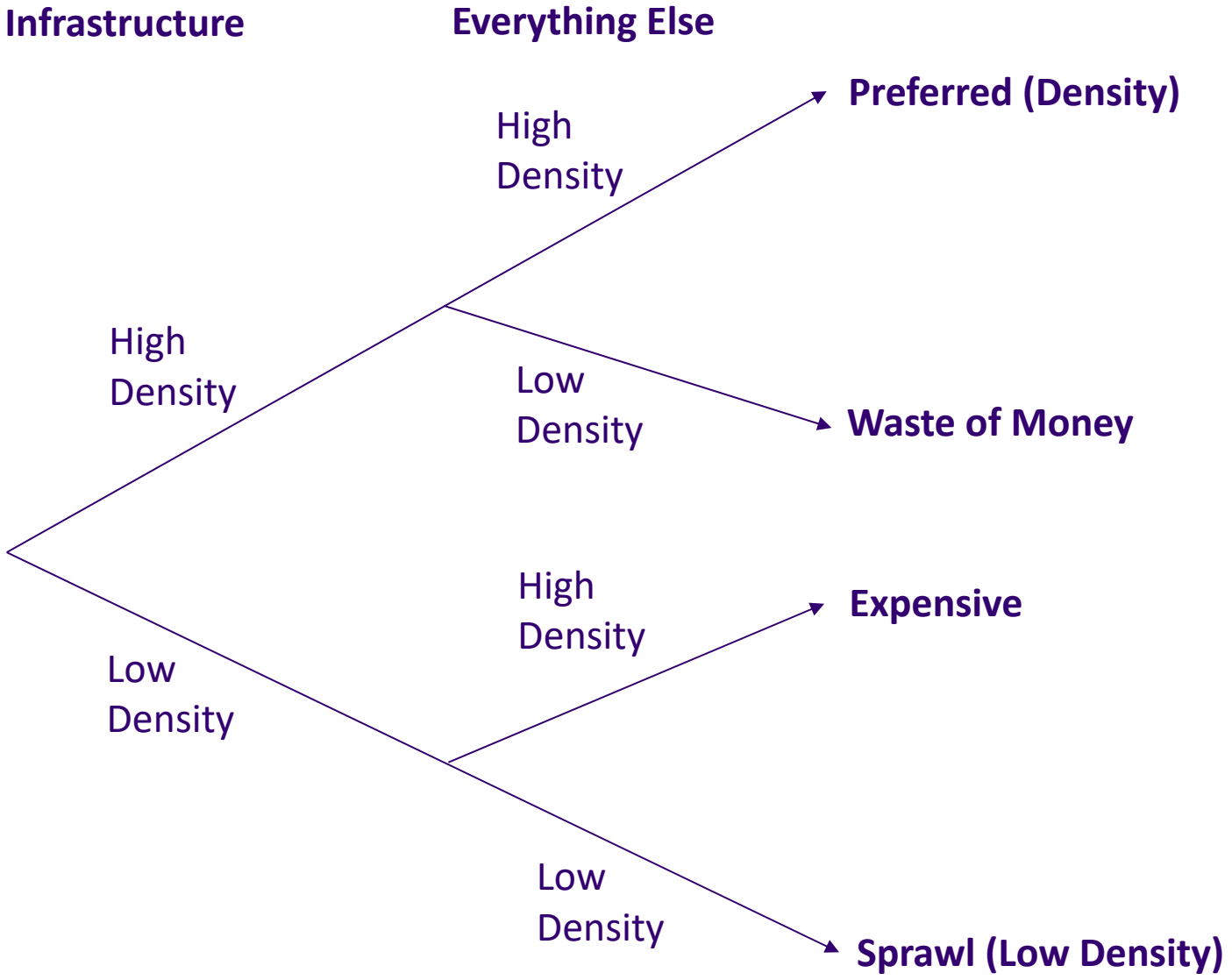
SPATIAL PLANNING

1. Reduce risk
2. for private developer, and
3. Public entity
4. in a sequence of decisions

Investments in Infrastructure → *Investment in "Structures"*

Infrastructure Decisions

Weigh Cost and Revenue



Las Vegas, Nevada

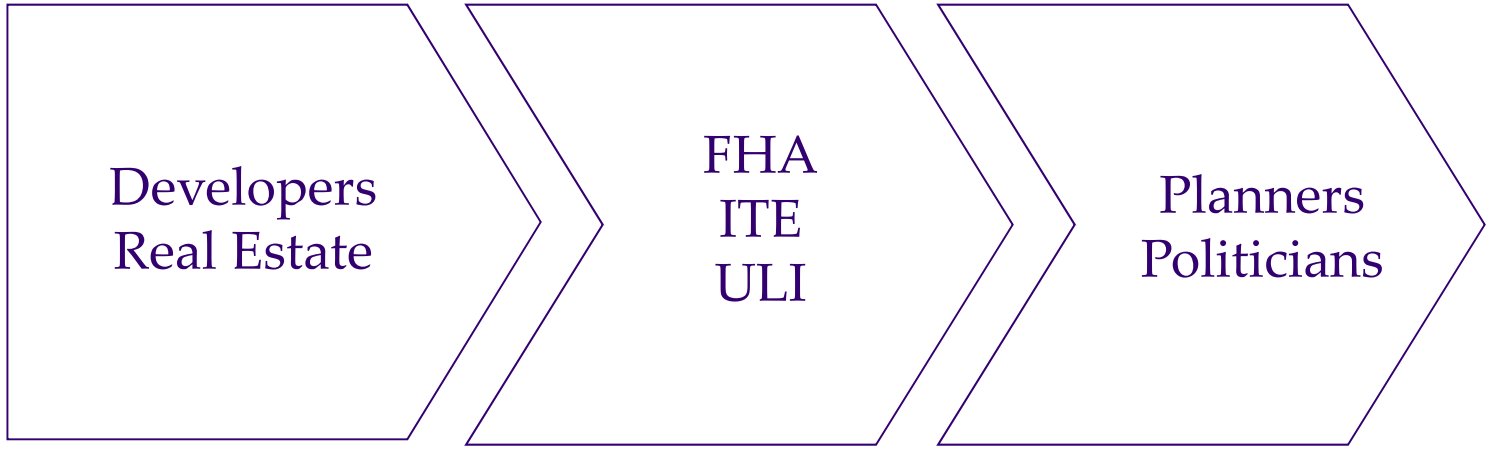
Origin of STANDARDS for STREET DESIGN

> Methodological administration of public works

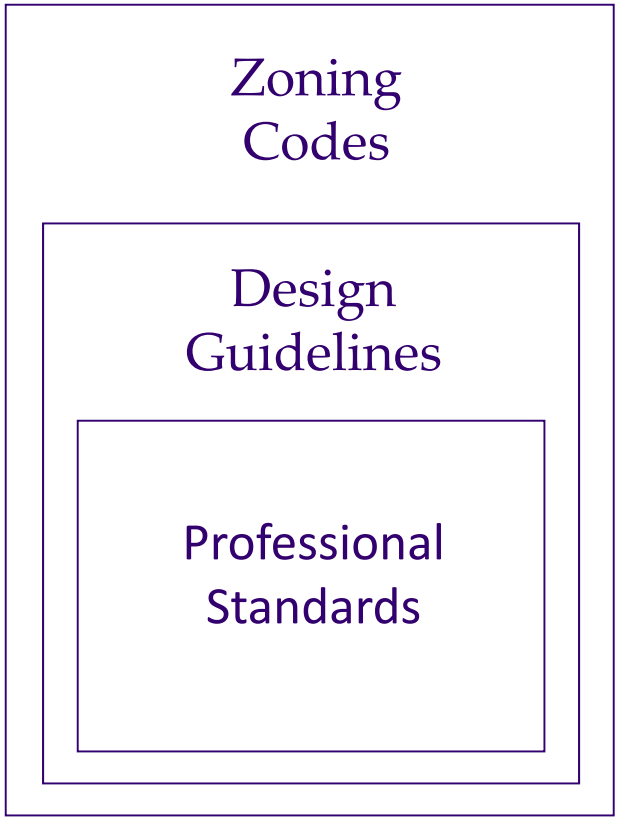
> Centralized supervision over land development

> Rise of road and transportation engineering professions

LEGITIMIZING PROCESS



EMBEDDED STANDARDS

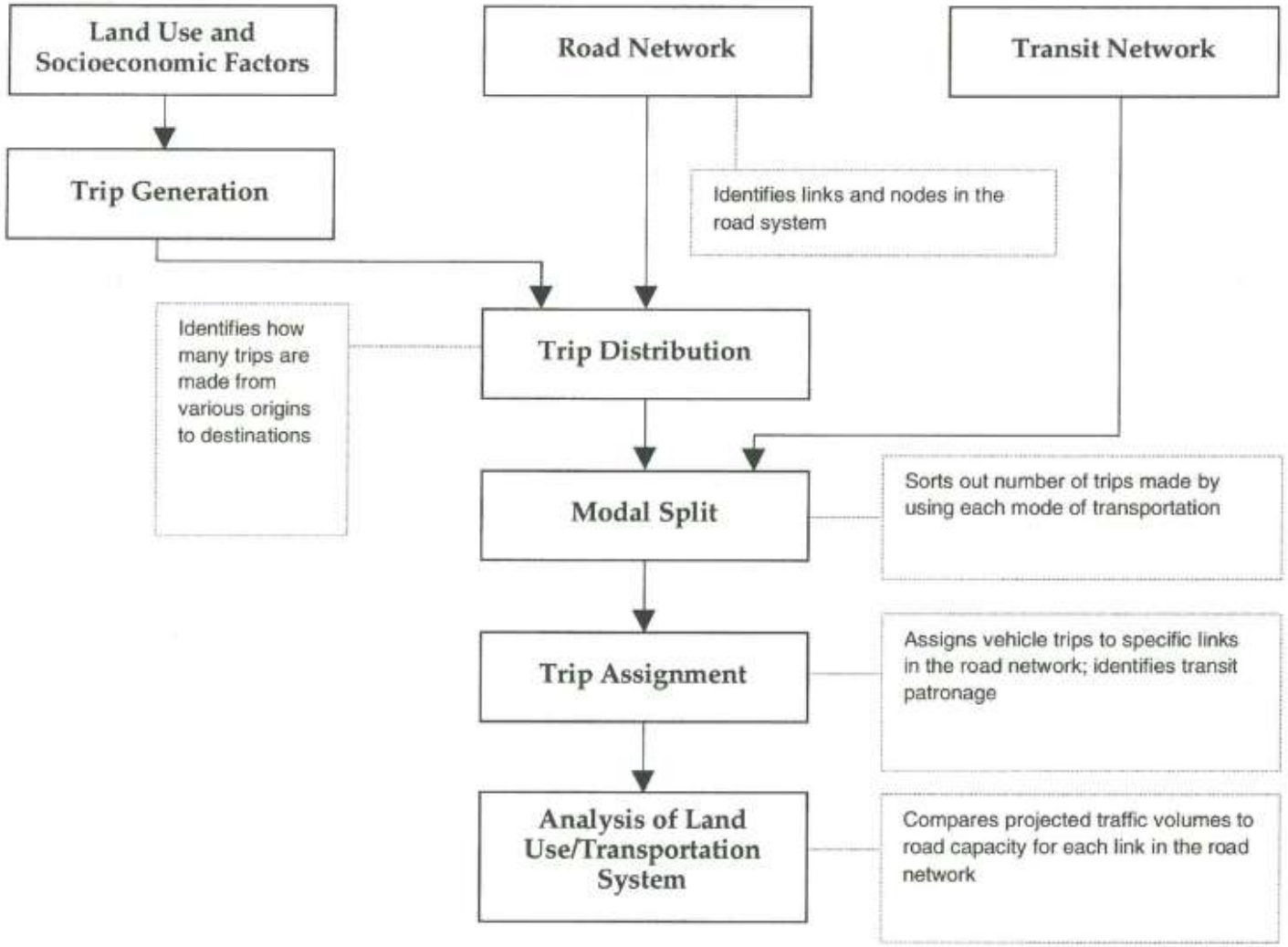


Local Government Regulation

Time-Saver Series

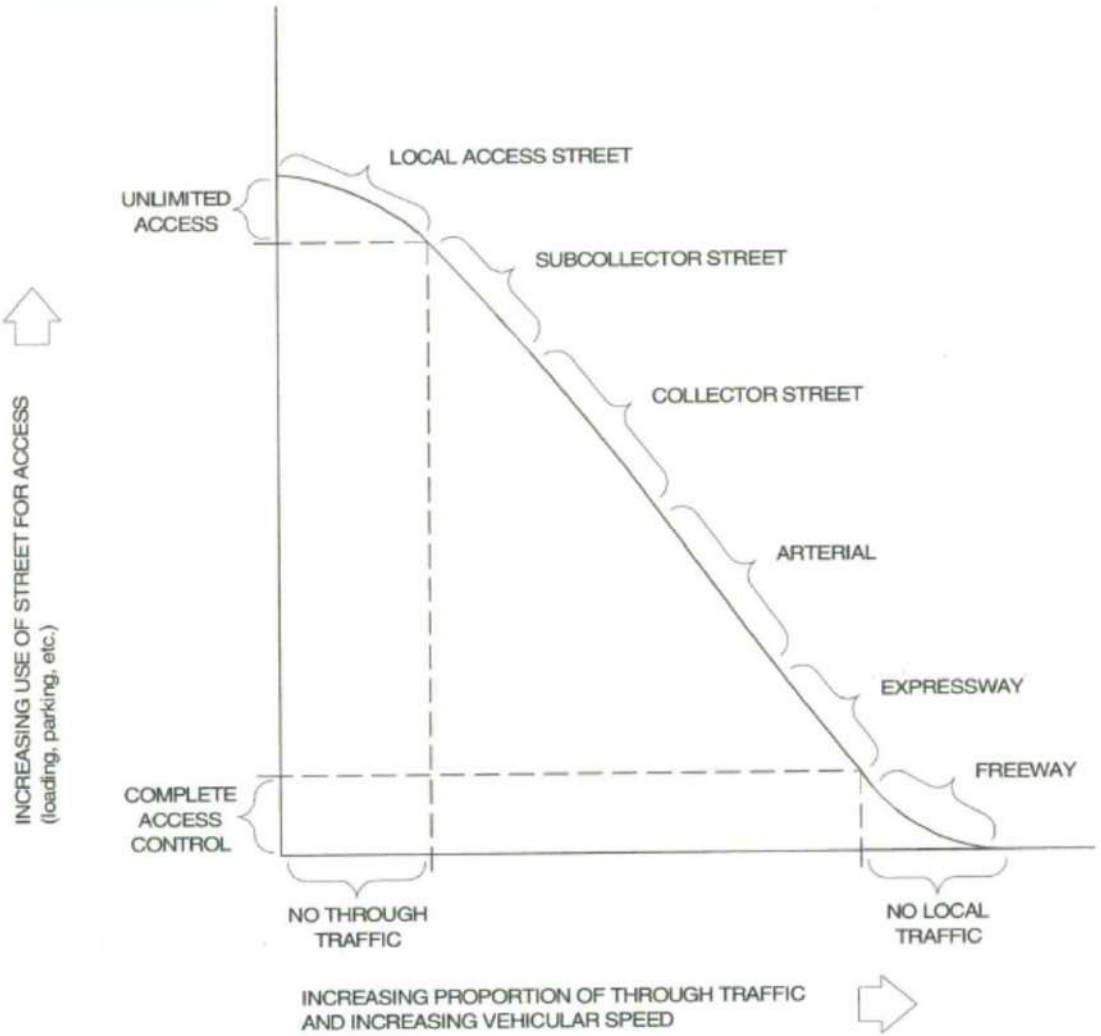
Trip Generation
Parking Generation
National Electrical Code

ESTIMATING DEMAND



Andersen, Larz. 2000. *Planning the Built Environment*. APA.

HIERARCHY OF STREETS



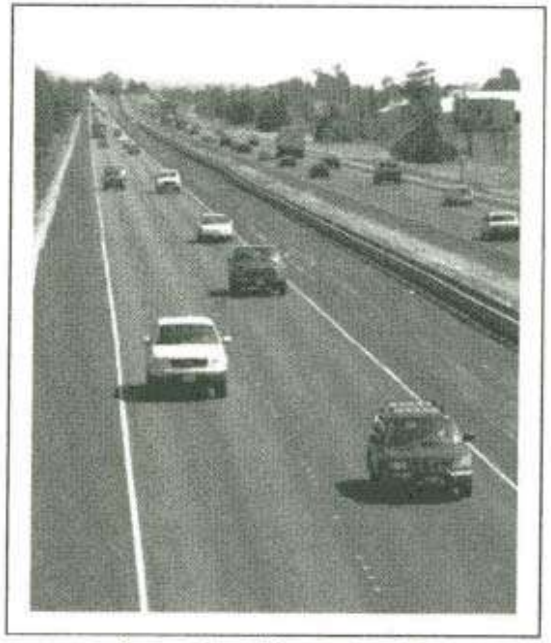
Andersen, Larz. 2000. *Planning the Built Environment*. APA.

Type of Development	Average Weekday Trip-Ends	Range	Number of Studies
RESIDENTIAL			
Single-family, detached	9.57 per DU*	4.31-21.85	348
Condo/townhouse	5.86 per DU	1.83-11.79	53
Mobile home park	4.81 per occupied DU	2.29-10.42	37
Low-rise apartment	6.59 per occupied DU	5.10-9.24	22
High-rise apartment	4.20 per DU	3.00-6.45	9
MAJOR INSTITUTIONS			
Junior/community college	1.54 per student	0.94-2.16	4
University/college	2.38 per student	2.03-3.31	7
Hospital	5.17 per employee	2.17-11.10	19
COMMERCIAL			
Fast-food restaurant with drive-thru	496.12 per 1,000 sq. ft. gross floor area	195.98-1132.92	21
Supermarket	111.51 per 1,000 sq. ft. gross floor area	68.65-168.88	2
Shopping center	49.97 per 1,000 sq. ft. gross floor area	16.70-227.50	123
General office building	3.32 per employee	1.59-7.28	62
INDUSTRIAL			
General light industrial	3.02 per employee	1.53-4.48	18
Industrial park	3.34 per employee	1.24-8.80	48
General heavy industrial	0.82 per employee	0.75-1.81	3

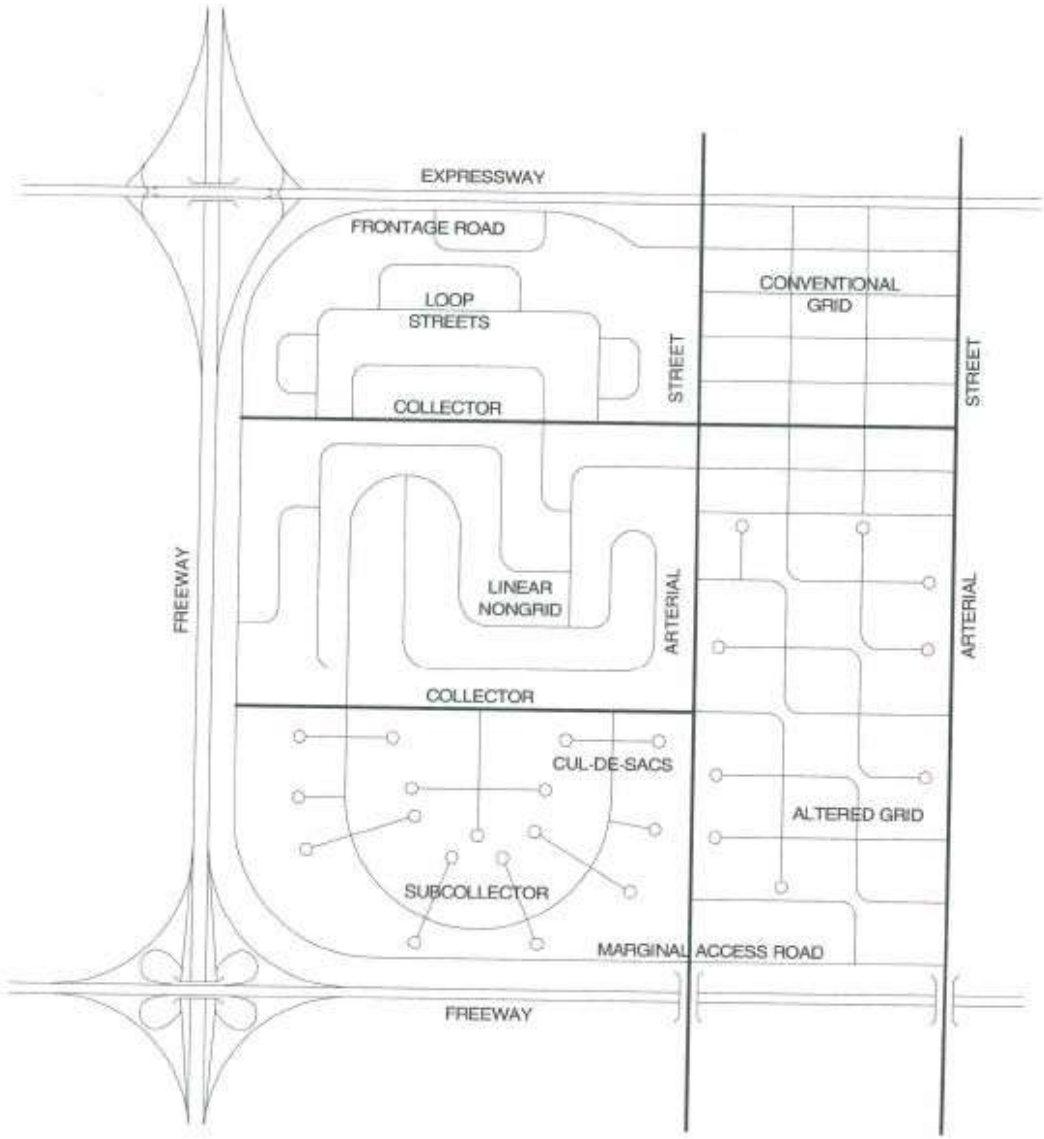
Institute of Transportation Engineers. 1997. *Trip Generation*.

TYPICAL AVERAGE DAILY TRAFFIC (ADT)

Freeway	20,000	–	200,000
Expressway	20,000	–	50,000
Arterial street	5,000	–	25,000
Collector street	1,000	–	10,000
Subcollector street	250	–	1,000
Local access street	0	–	250



Level of Service B



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Single-Family Detached Housing
(210)

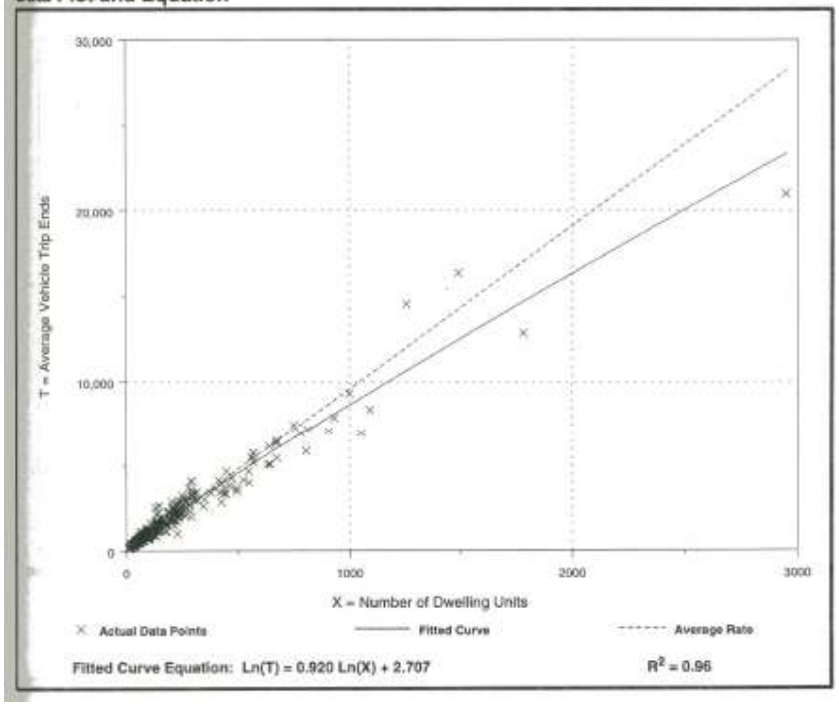
Average Vehicle Trip Ends vs: Dwelling Units
On a: Weekday

Number of Studies: 348
Avg. Number of Dwelling Units: 198
Directional Distribution: 50% entering, 50% exiting

Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
9.57	4.31 - 21.85	3.69

Data Plot and Equation



Fitted Curve Equation: Ln(T) = 0.920 Ln(X) + 2.707

$R^2 = 0.96$

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Las Vegas, Nevada

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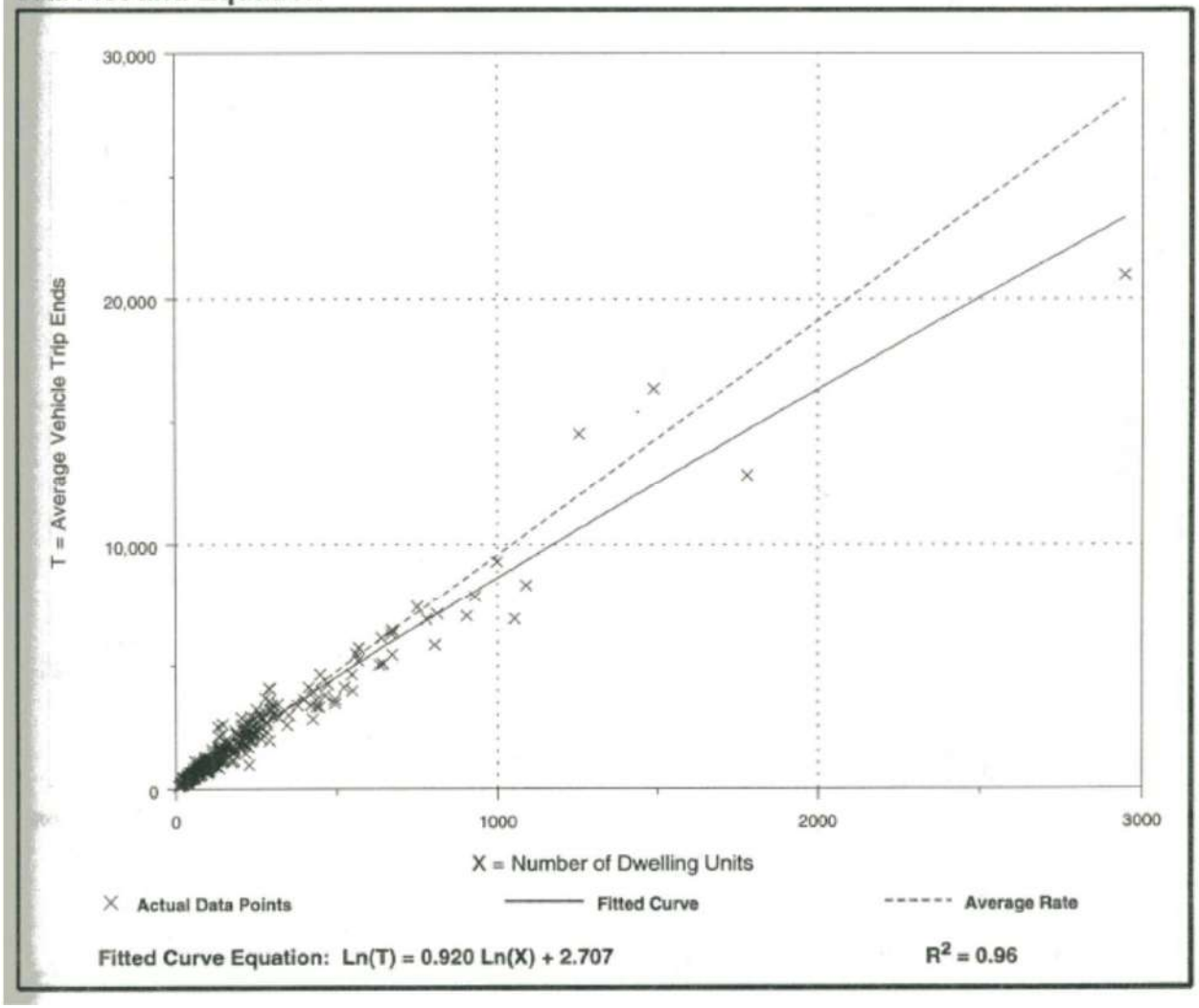

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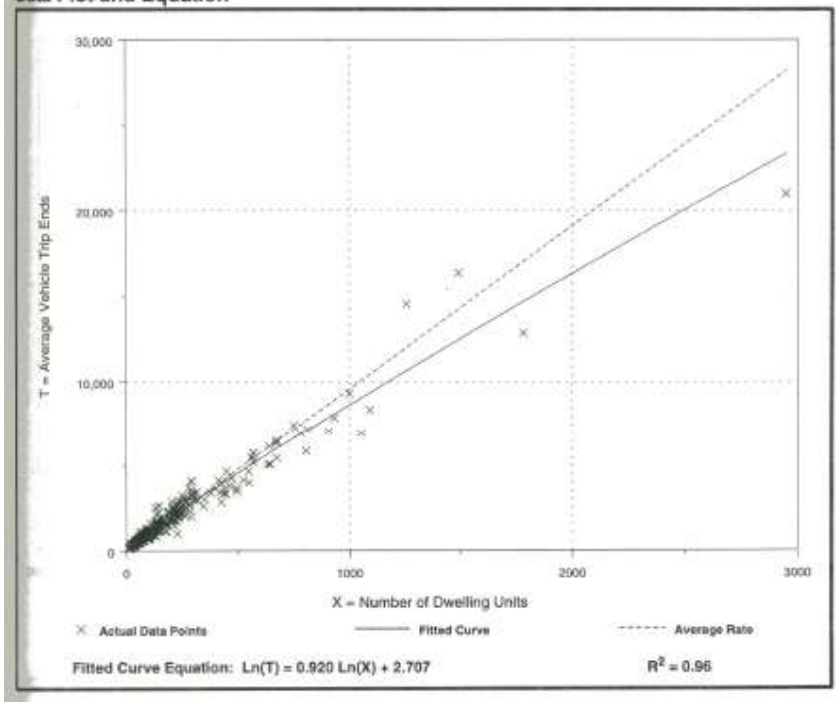

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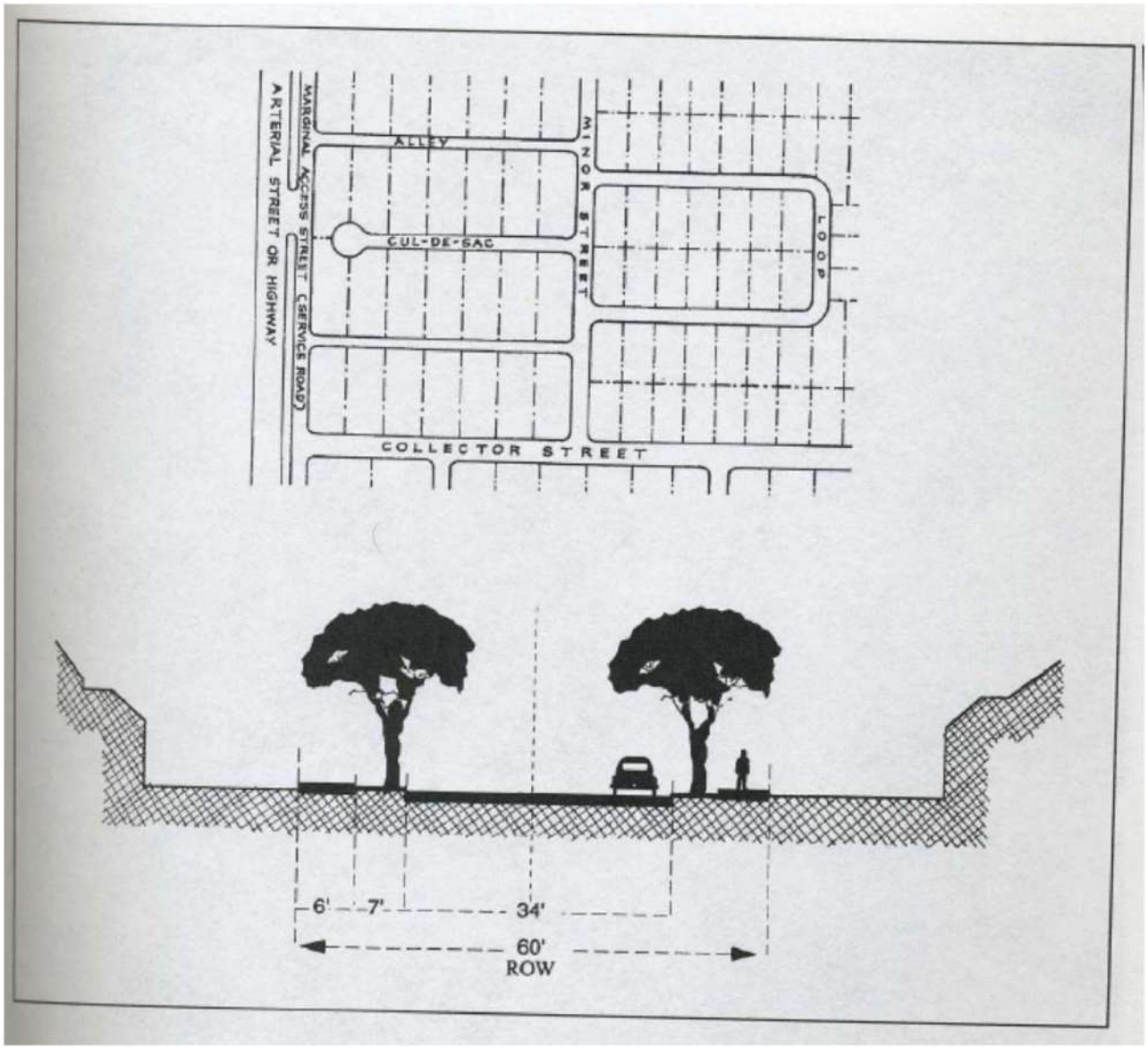
High-rise apartment	4.20 per DU	3.00-6.45	9
MAJOR INSTITUTIONS			
Junior/community college	1.54 per student	0.94-2.16	4
University/college	2.38 per student	2.03-3.31	7
Hospital	5.17 per employee	2.17-11.10	19
COMMERCIAL			
Fast-food restaurant with drive-thru	496.12 per 1,000 sq. ft. gross floor area	195.98-1132.92	21
Supermarket	111.51 per 1,000 sq. ft. gross floor area	68.65-168.88	2
Shopping center	49.97 per 1,000 sq. ft. gross floor area	16.70-227.50	123
General office building	3.32 per employee	1.59-7.28	62
INDUSTRIAL			
General light industrial	3.02 per employee	1.53-4.48	18
Industrial park	3.34 per employee	1.24-8.80	48
General heavy industrial	0.82 per employee	0.75-1.81	3

Institute of Transportation Engineers. 1997. *Trip Generation*.



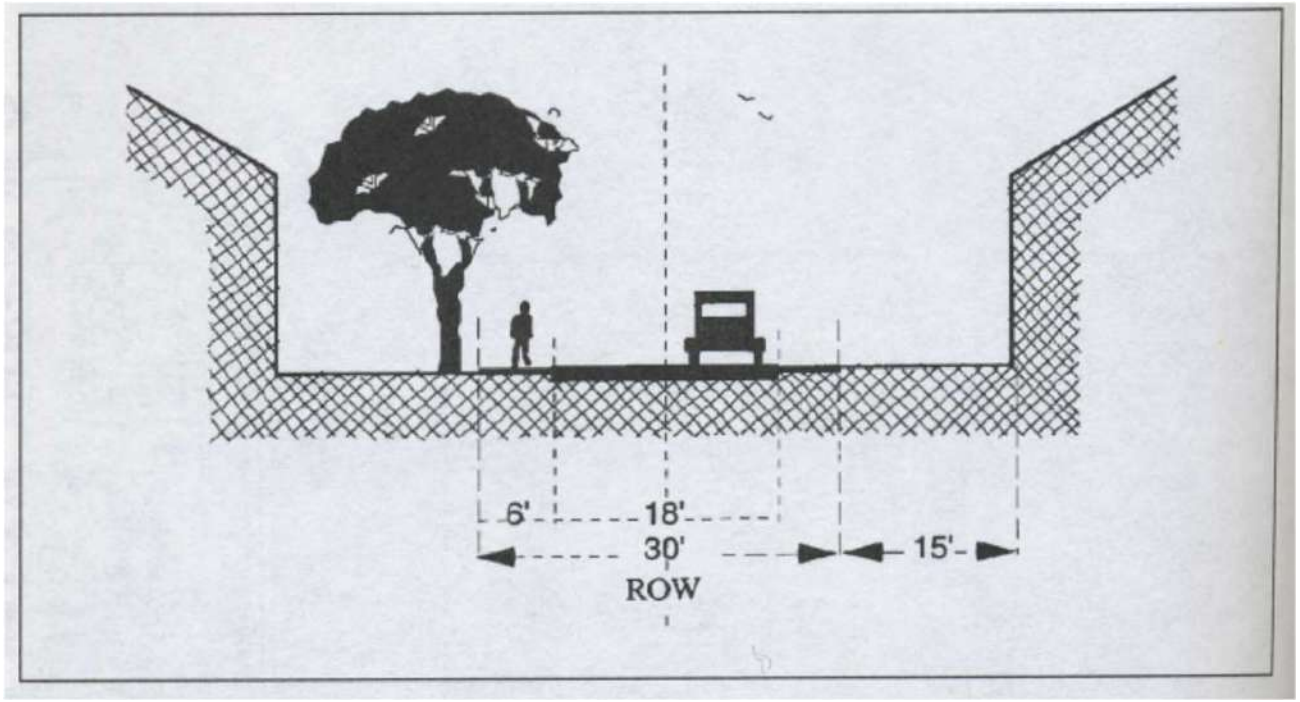
Southworth and Ben-Joseph. 1997. *Streets and the Shaping of Towns and Cities*. McGraw-Hill.

Institute of Transportation Engineer's guidelines for street width, 1965 and 1984

Las Vegas, Nevada

Critique ITE Assumptions

- Shoup, *The High Cost of Free Parking*
  - Trip Generation contains weak data
  - Same problems in Parking Generation, by ITE
  - Parking demand is a function of price
- Downs, *Stuck in Traffic*
  - Triple Convergence (choice of mode, route, timing of travel)
  - You can't build your way out (Say's Law)
  - We will always have congestion



Southworth and Ben-Joseph. 1997. *Streets and the Shaping of Towns and Cities*. McGraw-Hill.

Radburn Cul-de-sac, 1929

Southworth and Ben-Joseph. 1997. *Streets and the Shaping of Towns and Cities*. McGraw-Hill.

Radburn Cul-de-sac, 1990s

Neo-Traditionalism

> Raymond Unwin, *Town Planning* (1909)

> Clarence Stein, *Toward New Towns for America* (1957)

> Randall Arendt, *Rural by Design* (1994)

Sunset District, San Francisco, California

Boston, Massachusetts

Paris, France

CHANGING STANDARDS – CHANGING INSTITUTIONS

- Source historical sites
  - Get local traffic counts, accident records
- Learn more about the sources of the standards in use
  - Are they outdated? What was the intention?
- For Trip Generation (especially the hierarchy of streets)
  - Narrow the sample of studies to fit your projects
  - Run your own statistics
- Update with new insights
  - Downs and Shoup

CHANGING STANDARDS – CHANGING INSTITUTIONS

- Apply Peirson's reasoning
  - Understand the path dependent origins of current standards
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- Apply Ostrom's methodology
  - What is the process of institutional change?
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  - What could the impacts be?
- Apply Whittington's methodology
  - Examine the transactions that would occur under each rule set
  - Compare the costs and 'who pays?' of building both ways

Using TRANSACTION COST ECONOMICS for INSTITUTIONAL ANALYSIS

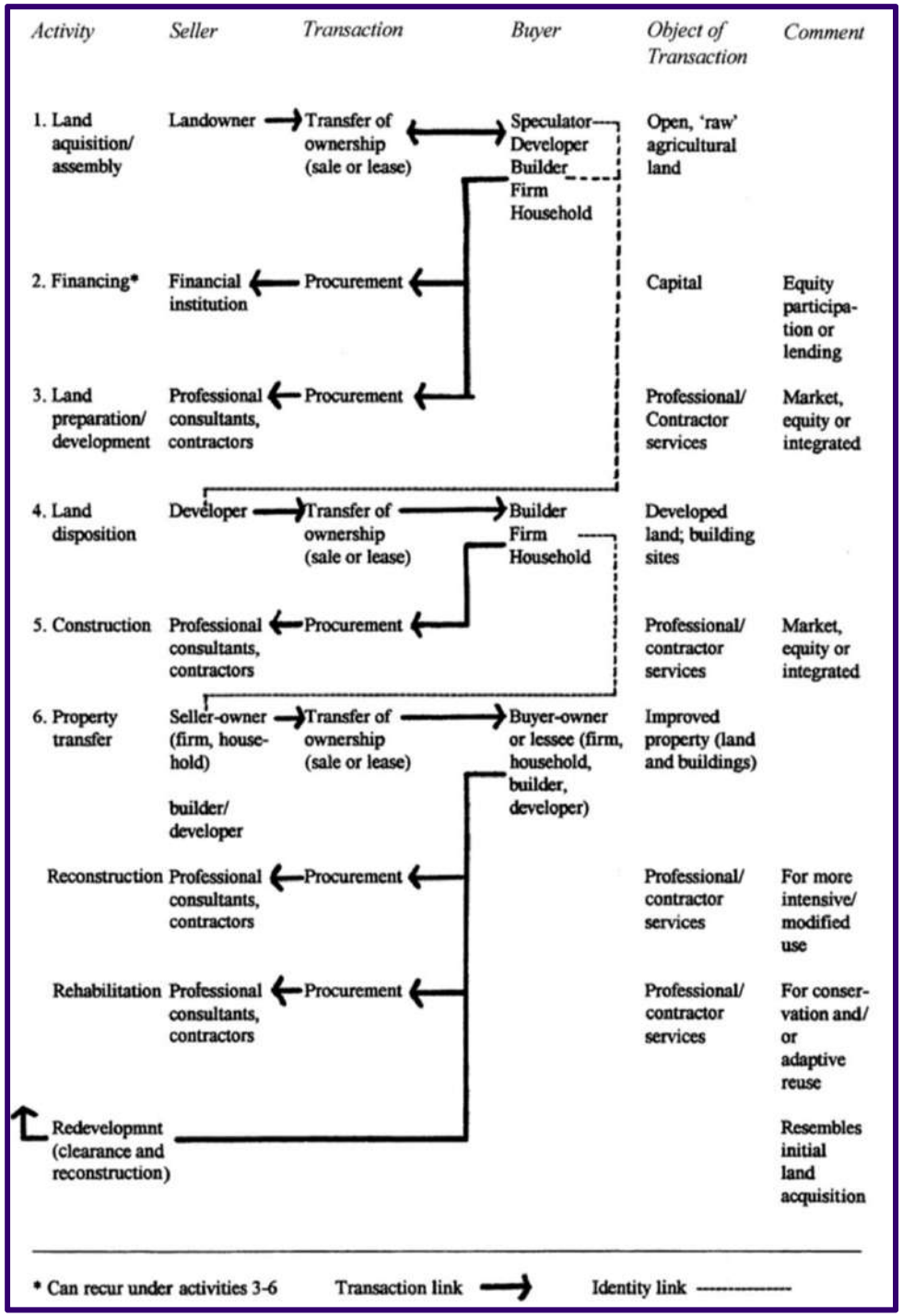
- Transaction as the unit of analysis is ubiquitous, concrete, and well defined
- The concept of "remediableness" prescribes comparison between alternative feasible forms of governance
- Its normative potential to select an alignment of transactions with governance structures

Source: Alexander, 2001, The Town Planning Review, Vol. 72, No. 1, pp. 45-75

FEATURES OF LAND TRANSACTIONS from a TRANSACTION COST ECONOMIC Perspective

- **Asset Specificity (non-redeployable durable investments)**
  - Bilateral monopoly
  - Opportunism
  - Bounded Rationality
- **Uncertainty**
  - Incomplete contract
  - Information asymmetry
  - Opportunism
  - Externality
- **Timing (duration and frequency)**
  - Setup costs

Source: Williamson, 2002, Journal of Economic Perspectives, Vol. 16, Num. 3, pg. 171 - 195



A FRAMEWORK for understanding the LAND DEVELOPMENT as a SET OF TRANSACTIONS

Source: Alexander, 2001, The Town Planning Review, Vol. 72, No. 1, pp. 45-75

TRANSACTION TYPES in the LAND DEVELOPMENT PROCESS

1. Land Purchase
2. Financing
3. Land preparation and development
4. Land disposition
5. Construction
6. Property transfer

Source: Alexander, 2001, The Town Planning Review, Vol. 72, No. 1, pp. 45-75

Critical Issue: Artificial Intelligence

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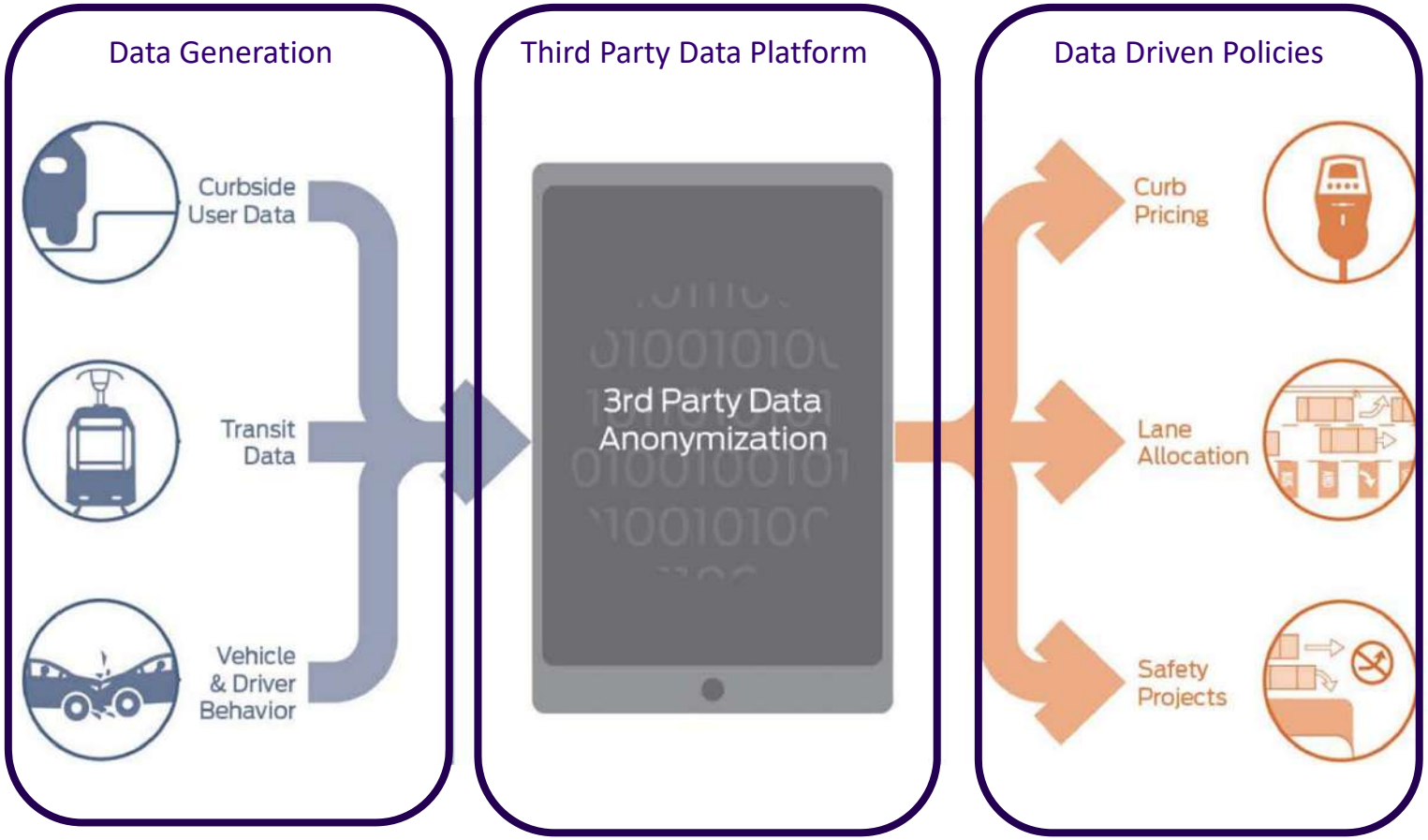
ARTIFICIAL INTELLIGENCE in the TRANSPORTATION SECTOR

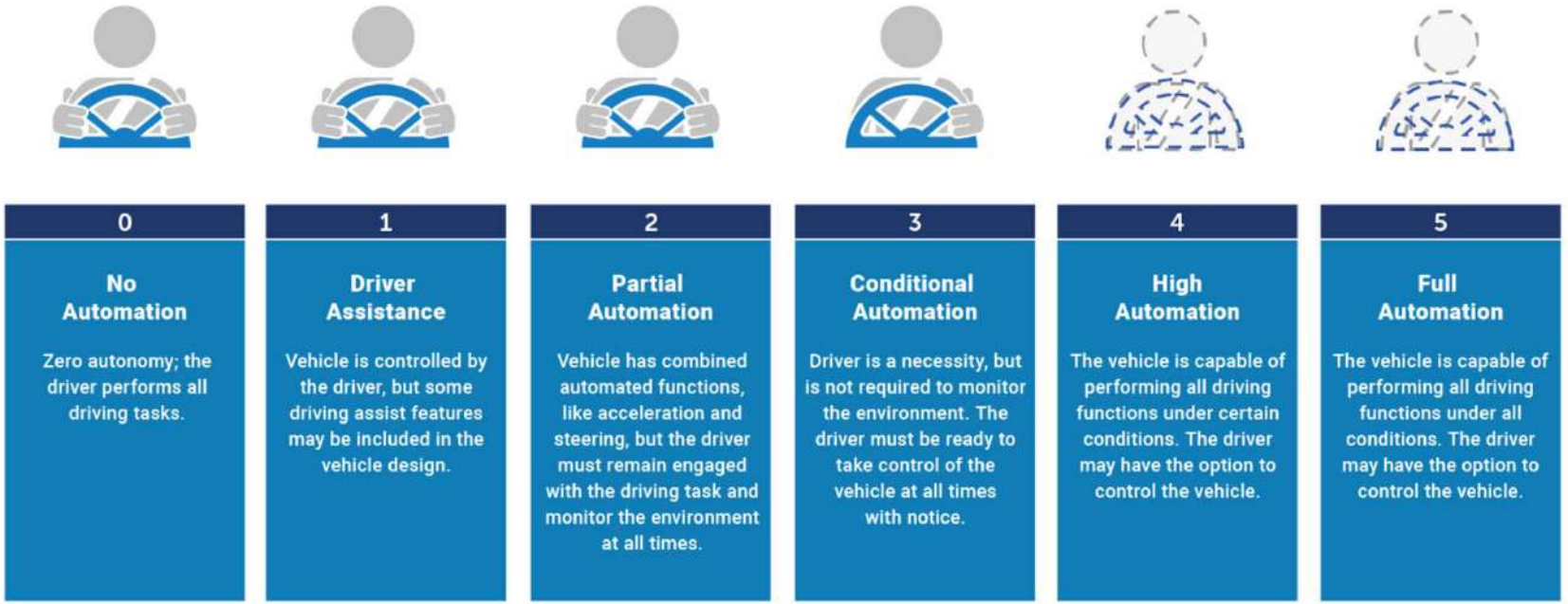
- Artificial Intelligence emergent in Transportation
  - Use of sensors (radar/lidar) to collect data on objects in space and time
  - Combine with sets of rules to govern the matching of patterns (i.e., light and dark, proximity to sensor) to 'objects' (i.e., this is a car, a pedestrian, a streetlight, a bicycle, a curb, a wheelchair)
  - Flip the script to Machine Learning, so that the device (i.e., robot, drone, or automated vehicle) adapts the rules to govern its own behavior based on new data from the environment
- Robotics rapidly entering urban markets
  - In public rights-of-way (streets, sidewalks, bike lanes)
  - In multiple markets (e.g., ride share, package delivery, transit)

DATA IS THE FOUNDATION



Source: NACTO, 2017, Blueprint for Autonomous Urbanism

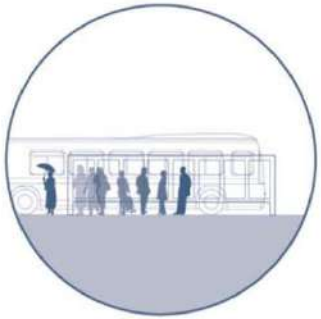
LEVELS OF AUTOMATION



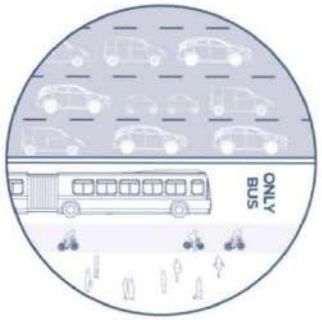
Source: https://www.nhtsa.gov/technology-innovation/automated-vehicles-safety

PRINCIPLES from National Association of City Transportation Officials

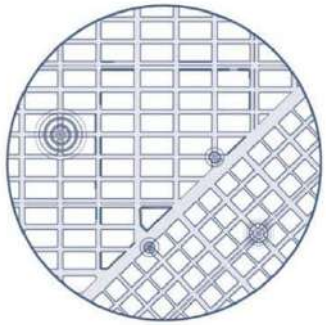
Safety is the Top Priority



Provide Mobility for the Whole City



Rebalance the Right-of-Way

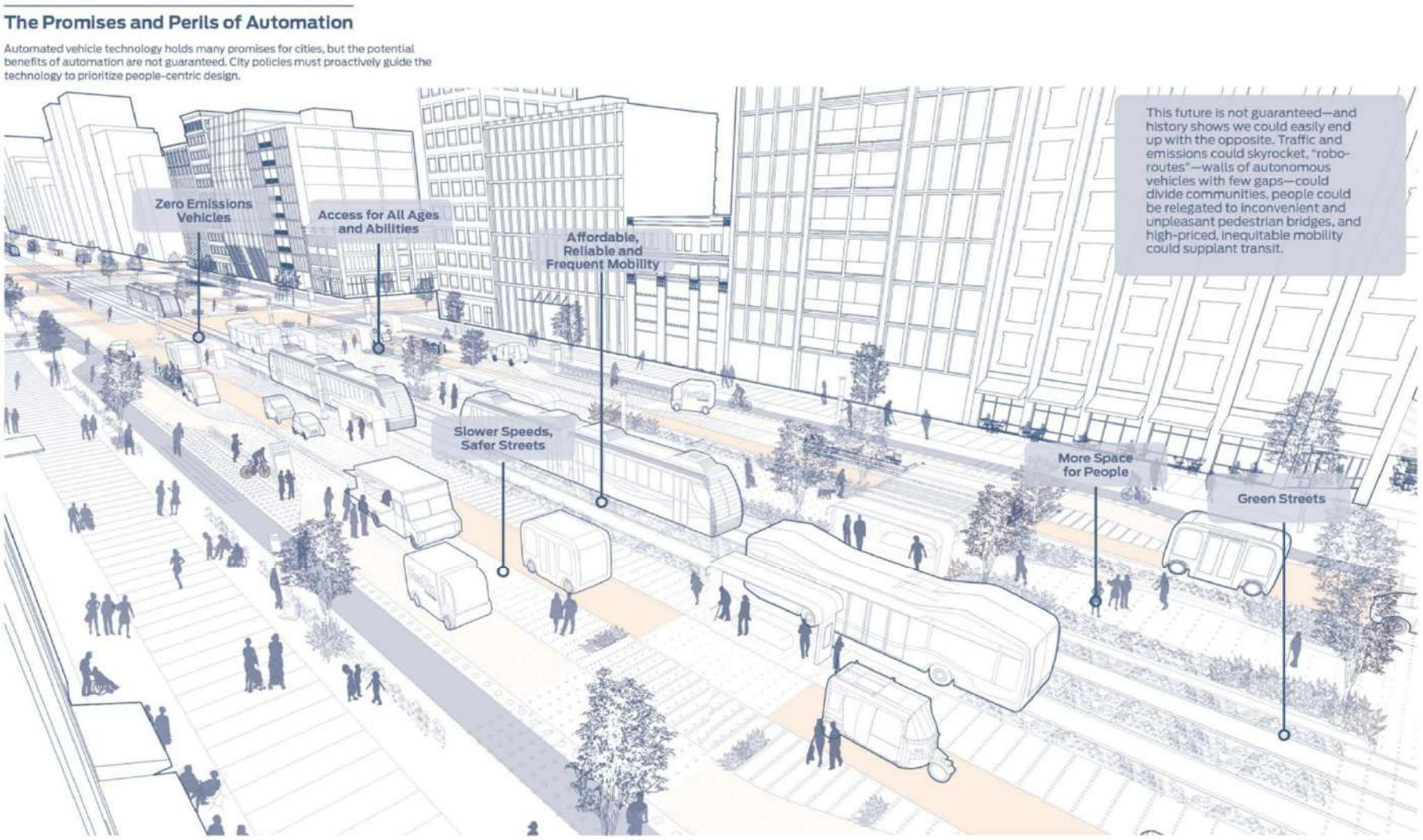


Manage Streets in Real Time

Move More with Fewer Vehicles

Public Benefit Guides Private Action

Source: NACTO, 2017, Blueprint for Autonomous Urbanism



Source: NACTO, 2017, Blueprint for Autonomous Urbanism

CITIES need NEW INSTITUTIONAL RULES OF THE GAME for these MARKETS

- Cities are testbeds for these products
  - These robotics are only capable of safely navigating situations that they have already tried and successfully navigated
- Companies want access, cities can restrict access
  - In public rights-of-way (streets, sidewalks, bike lanes)
  - Congestion isn't going away
  - Priority is for the public benefit (efficiency, social justice)
  - In multiple markets (e.g., ride share, package delivery, transit)
- City planners co-designing robotics in public space?
  - Pilot programs
  - Geo-fencing
  - Beta-testing

CHANGING STANDARDS – CHANGING INSTITUTIONS

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Critical Issue: Climate Change

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FACTORS IN CHANGING TRANSPORTATION

> Factors generally involved in transportation change may fit into a few categories:
  - Technological innovation
  - Market supply (i.e., the choice of the firms)
  - Public market demand (i.e., the choice of consumers)
  - Governmental policy and its enforcement

FACTORS IN CHANGING TRANSPORTATION EMISSIONS

> Factors discussed in changing transportation carbon emissions:
  - Lower carbon-intensity of fuel
  - Vehicle fuel efficiency
  - Consumer behavior change
  - Urban design for VMT efficiency

GROWING COOLER GHG ESTIMATES

Figure 0-3 Projected Growth in CO_2 Emissions from Cars and Light Trucks Assuming Stringent Nationwide Vehicle and Fuel Standards*
Source: EIA 2007

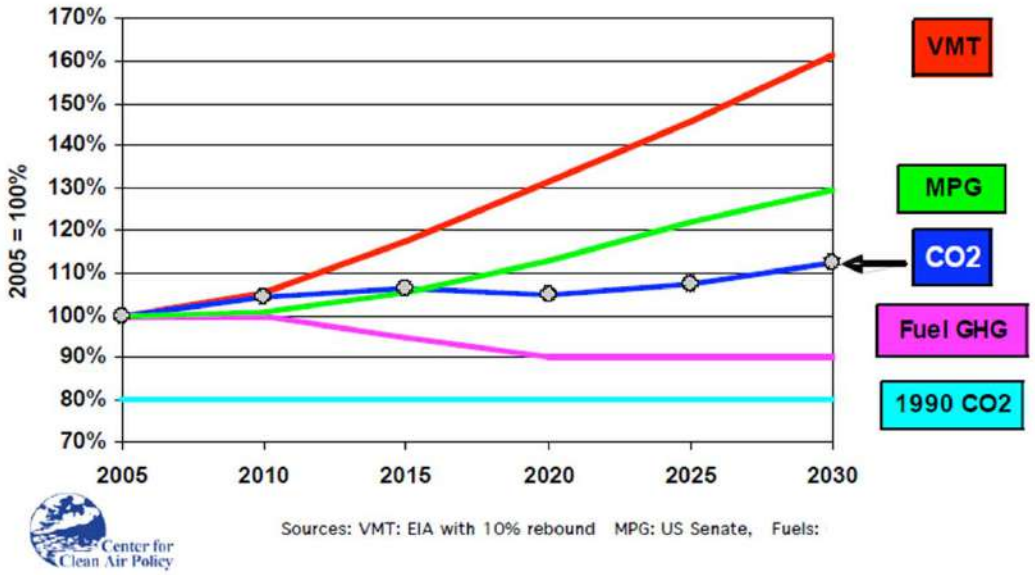
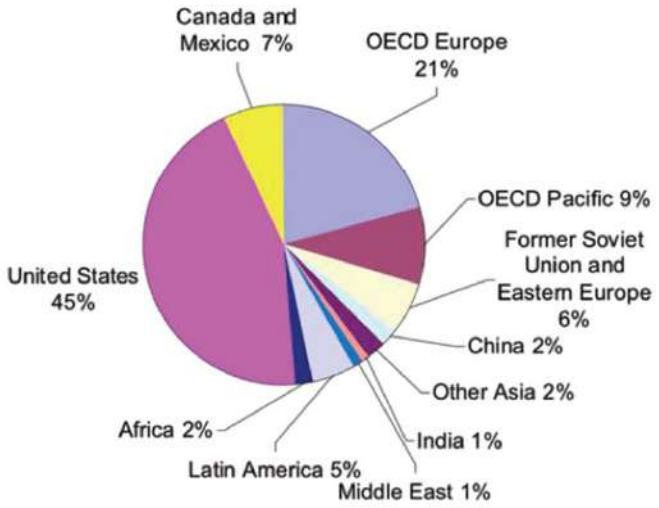
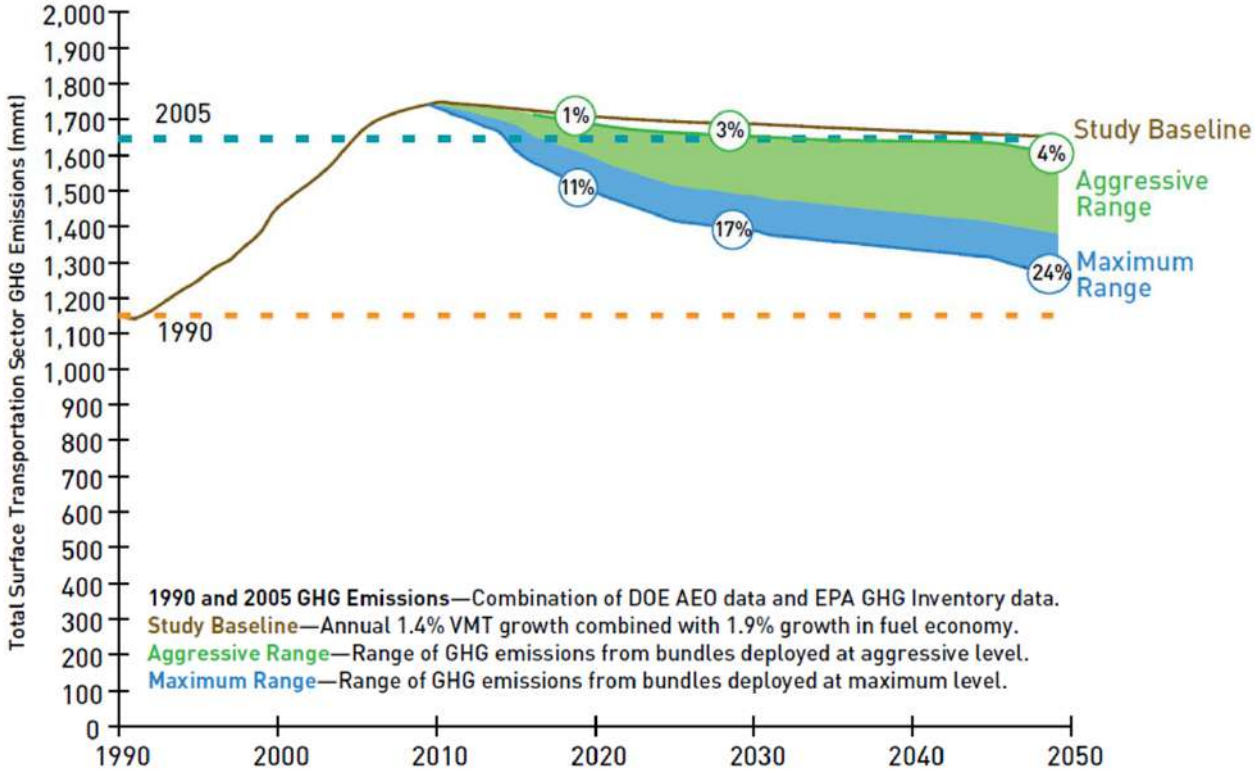


Figure 1-9 Light-Duty Vehicle Emissions by World Region, 2003
Source: DiCicco and Fung 2006.



MOVING COOLER GHG ESTIMATES

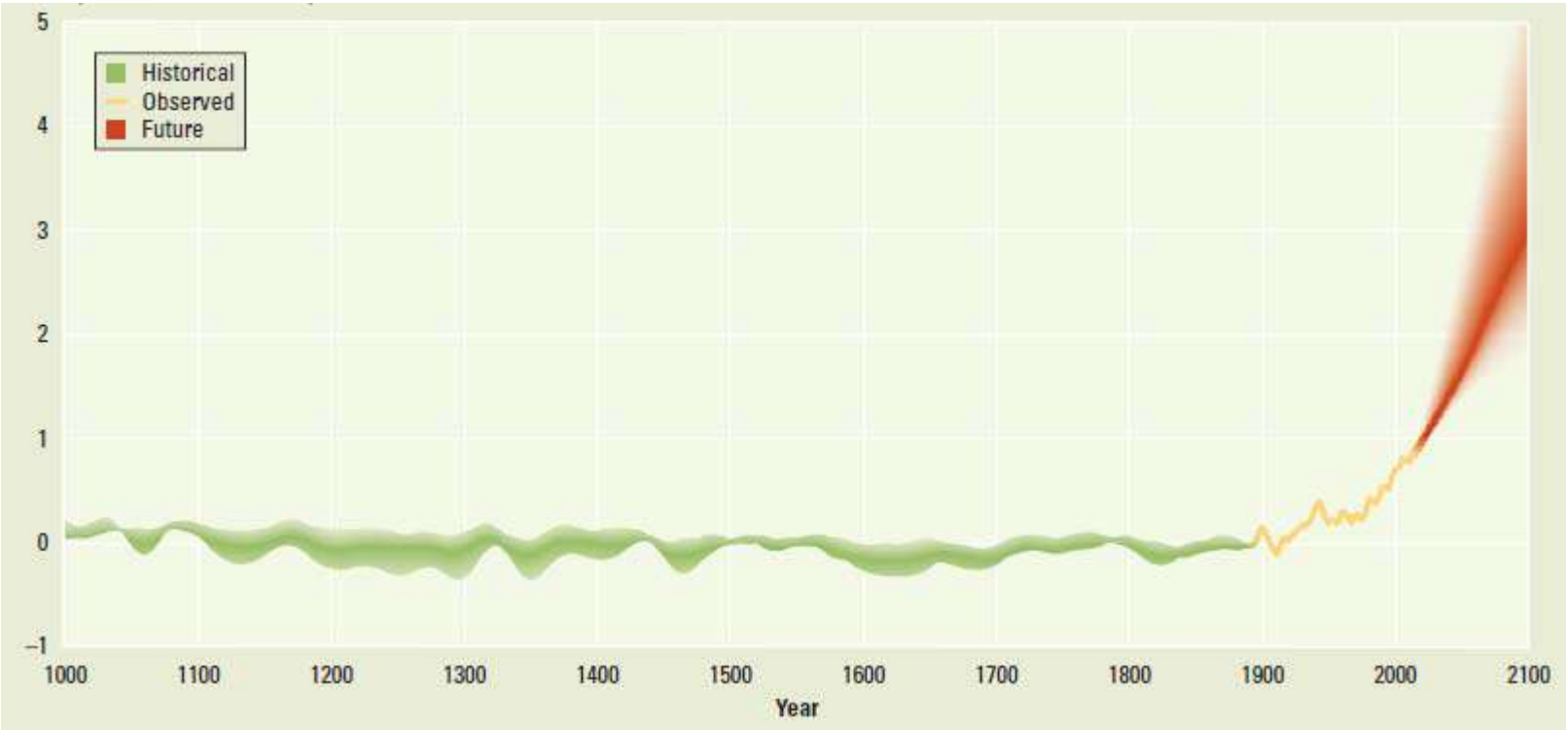
Figure ES.3 **Range of Annual GHG Emission Reductions of Six Strategy Bundles at Aggressive and Maximum Deployment Levels**
2010 to 2050



Note: This figure displays the GHG emission range across the six bundles for the aggressive and maximum deployment scenarios. The percent reductions are on an annual basis from the study baseline. The 1990 and 2005 baselines are included for reference.

RISING GLOBAL TEMPERATURES

Temperatures are rising* (Celsius)



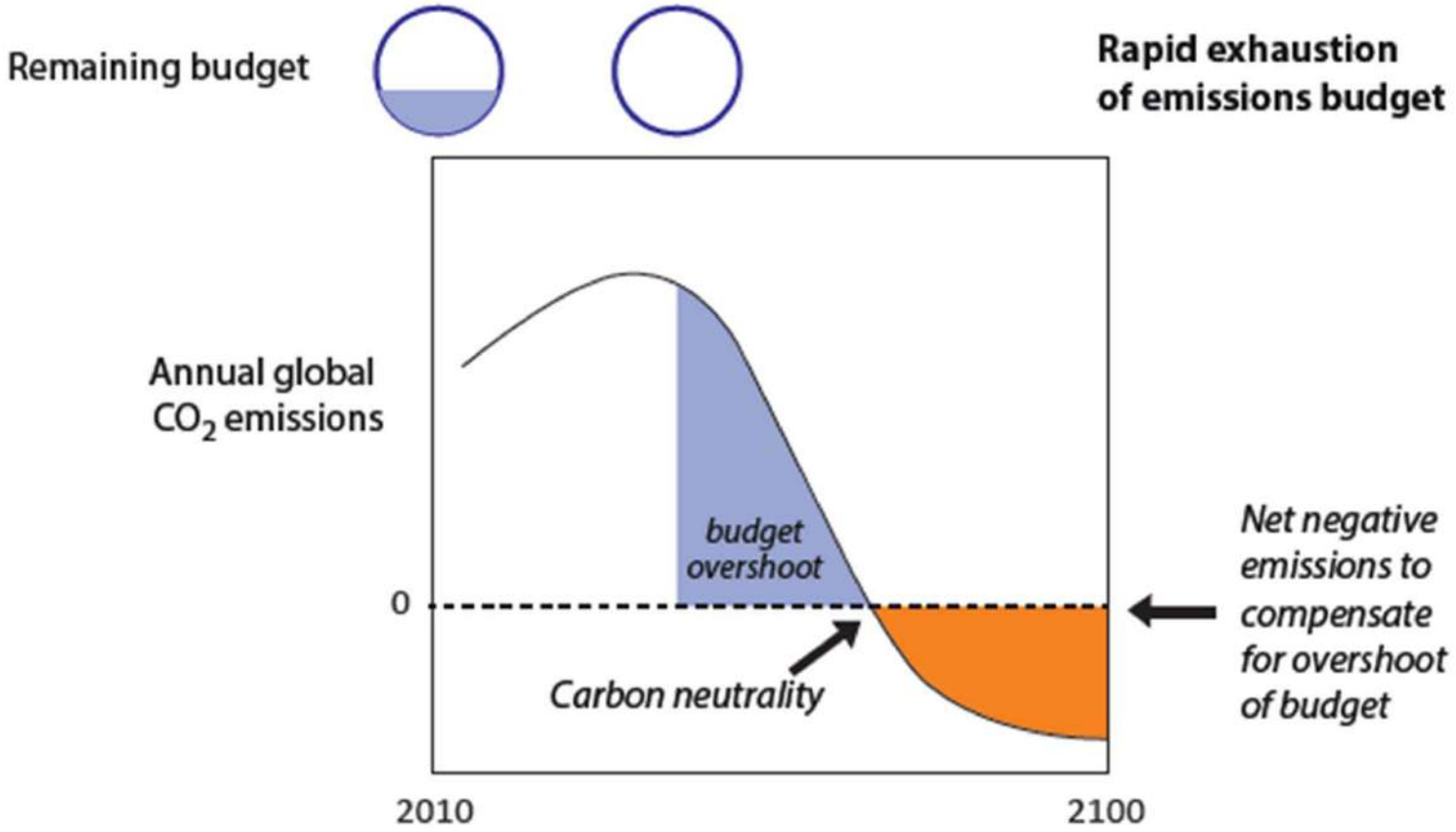
*compared to pre-Industrial era

World Bank. *World Development Report 2010: Development and Climate Change.* 2009. Washington, DC: World Bank.

THE CARBON BUDGET: 2° CELSIUS INCREASE

United Nations Environment Programme. *Emissions Gap Report.* 2014. Washington, DC: UNEP. http://www.unep.org/publications/ebooks/emissionsgapreport2014/portals/50268/pdf/EGR2014_LOWRES.pdf. Figure ES-1.

UNEP EMISSIONS GAP REPORT: CARBON BUDGET



United Nations Environment Programme. *Emissions Gap Report.* 2014. Washington, DC: UNEP. http://www.unep.org/publications/ebooks/emissionsgapreport2014/portals/50268/pdf/EGR2014_LOWRES.pdf. Figure ES-1.

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Wrap Up

THEORIES AND METHODS for INSTITUTIONAL ANALYSIS

- Path Dependence
  - Arthur, introduction
  - Pierson, application in Political Science
  - The economic geography of Silicon Valley and Seattle
  - Case of Standards in Zoning and Street Design
  - Relationship to technological change, and Artificial Intelligence

THEORIES AND METHODS for INSTITUTIONAL ANALYSIS

- Institutional Economics, and Dynamic Change
  - North, understanding the political economy of the US
  - Ostrom, analytics for studying common pool resources
  - Influence of large organizations on the rules of the game
  - Case of changing standards in zoning and street design
  - Artificial intelligence is changing the organization of the economy in the transportation sector
  - Climate Change will force additional new changes

THEORIES AND METHODS for INSTITUTIONAL ANALYSIS

- Transaction Cost Economics
  - Williamson, introduction
  - Whittington, method for comparing approaches to development
  - Planning intervenes in the market for development
  - There are methods to apply to determine whether the interventions planners are using are as efficient as they could be in accomplishing their goals
  - Transaction cost methods can be used to internalize externalities (recommend new institutional designs to address AI and Climate Change, for example)

Thank you!

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