Spending Other People's Money: What are the Rules… (it depends)

Urban Transportation Planning
MIT Course 1.252j/11.540j
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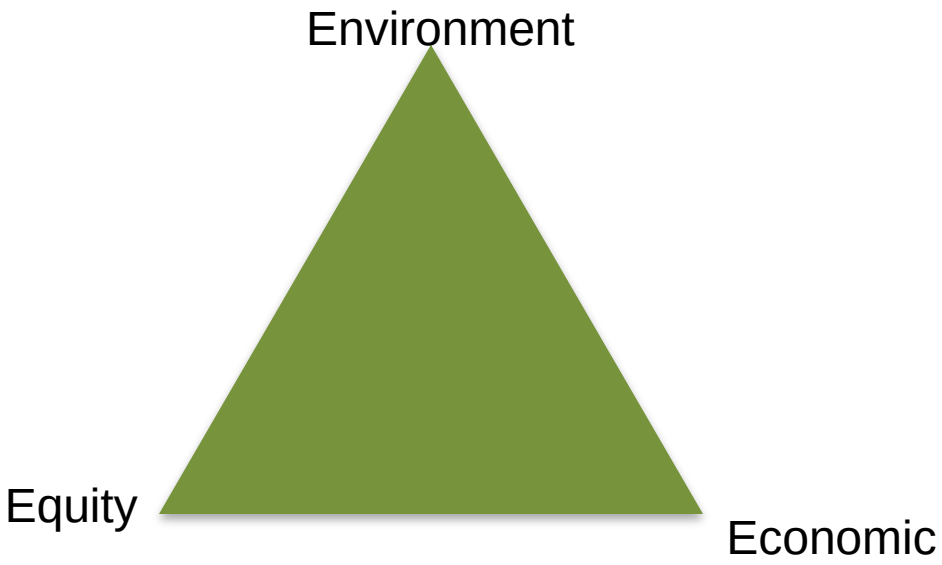
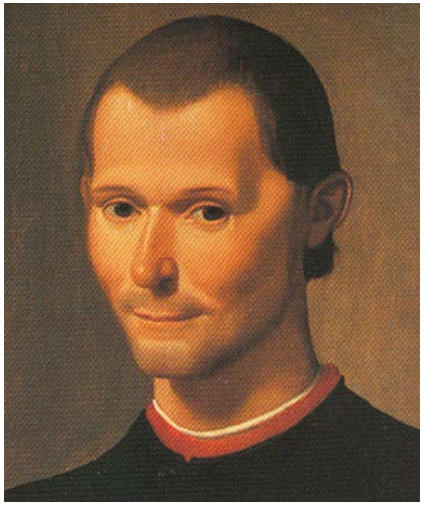
What is sustainability?

- Brundtland Commission (1983) sustainability triangle
- Achieve **E**nvironmental, **E**conomic, and **E**quity benefits simultaneously
- Both ethical and pragmatic



- Prevent pain, future gain associated with investment
  - Machiavelli

    "And it ought to be remembered that there is nothing more difficult to take in hand, more perilous to conduct, or more uncertain in its success, than to take the lead in the introduction of a new order of things. Because the innovator has for enemies all those who have done well under the old conditions, and lukewarm defenders in those who may do well under the new." (The Prince)
  - Obama and surrogate customers



"Portrait of Niccolo Machiavelli" by Santi di Tito. This image is in the public domain.

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Economics

- What?
- How?
- For Whom?

Capitalism allows complex system of production and consumption

- Accommodates different individual taste with at least some choice
- Decentralized decision making allows multiple experiments with differentiated products, production methods, and quality mixes
- Applies discipline regarding quality and cost through destructive competition
- Accommodates investment, technology, and change over time

The theory that Capitalism leads to Reasonable Outcomes Assumes

- Selfish behavior
- Rule of law, reliable enforcement
- Distribution of wealth and income acceptable
- Reasonably full employment
- Reasonable freedom of speech; press
- Reasonable international context
- No Monopoly or monopoly competitive producer

What does market NOT deal with?

- Public goods (difficult to exclude free riders)
- External costs and benefits
- Adequate Infrastructure
  - Water, sewer, transportation
- Equity
- Structural unemployment
- Large economies of scale, monopoly power

Roles of Government

- Tax and spend
- Regulate
- Redistribute wealth and income
- Provide universal opportunity
- Protect the environment
- Provide for equity (minimum wage, access for elderly and disabled)
- Provide for infrastructure and services
- Produce some infrastructure and services
- Deficit spending (stimulus)

Taxes

- 51/49 vs. Civic enterprise government
- $.9^5 < .5$
- Aesop's fable of the body
- Joseph and the Pharaoh's Dream
- US Revolution/Shay's Rebellion; Whiskey Rebellion
- Political will
- Louisiana Purchase
- Seward's Icebox
- Vision vs. White Elephant
- Dedicated fund
- User Fee
- Referendum
- Externality vs. distrust

Taxes continued

- Progressive tax
  - Progressive
  - Regressive
  - Proportional
  - Sales tax
  - Loaf of bread
- Business improvement district
- Museums
- Fare recovery ratio
- Galbraith; the affluent society

Institutional Problems

- Blunt periodic destructive competition (elections)
- Balance of executive, legislative, and judicial power
- Lobby groups
- Polls
- Information; press
- Is Government the consumer or provider?
  - Who are the real customers; surrogate customers?

Institutional Problems

- Annual appropriation vs. multi-year
- Optimistic bias; pessimistic bias
- Tax rate vs Tax yield
- Tax cuts and the Byzantine Empire
- Willie Sutton principle
- Tax exemptions, Tax expenditures

Transportation

- Infrastructure investment, operation, and maintence
- Regulation
  - Safety
  - Worker welfare
  - Environment
  - Prices

Transportation

- Gasoline tax: national vs. state
- VMT tax
- ‘Mitigation” as a source of funding
- CO2 Tax
- Petroleum windfall profits tax
- Who really pays?
- Yield vs. Policy Incentive

Institutional Structure

- National (federal)
- Regional (state)
- Local (city, town, county)

Annual Appropriation

- Administration and finance; OMB / Ways and Means
- Same as last year plus inflation

Capital Investment

- Bond authorization; legislative and referendum
- Theory
- Practical politics

Need for Competency

- Agency structure
- Legislative committee

Changing Need for Resources

- Increase revenue within budget vs. increase tax
- Introduce technology; reduce cost; reduce labor
- Contract out; lower labor cost
- No destructive competition; low innovation; low investment
- Constituency building process – costs are benefits; surrogate customers = producers

Program Development

- Political will
  - Short term benefits
  - Long term benefits
  - Discount rate
- New has few supporters
- Requires different look at silos
- Generate new structure

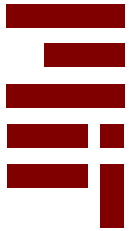
Program Implementation

- Maintain political will
- Use mix of technical and distributive criteria

Silos

- Highway categories
- Highway vs. transit (public $)
- Capital vs. operating
- Private payments - good and bad
- Highway transit – apples/oranges
- Public / private (auto cost)
- Highway transit
- Airports
- Rail inter-city passenger; freight
- Bus inter-city

Rules within silos; Rules across silos



Financial Evaluation

- Ways and means
- Bonding
- Federal grants
- Loans
- User finance
- Land use contributions
- EIR and infrastructure adequacy

Federal Role

- Philosophical, trade, etc.
- Job policy, constituencies
- Peanut butter (Nutella, Marmite, Dulce de leche)
- Peanut butter avoidance
- Categories
- Flexibility

Project Purposes and Origins

- Capacity for service quality
- Capacity for quantity, growth
- Access to intermodal facilities, ports
- Access to land use
- Investments to reduce operations costs
- Patronage (municipal, other)

Operations & Maintenance vs. Capital

- Reasons to fund capital differently
- Distortions from funding capital differently

Use of Models; evaluation

- CTPS
- Conservation Law Foundation

Programming

- Bridges across the Nile
- Interstate highway system
- MPO and flexibility
  - long-range plan
  - transportation improvement plan
  - annual element
- Fiscal constraint
  - over-programming
  - Batching
  - Instructions
- NEPA and lead time

Project Purposes and Origins

Local match: who decides?

- metropolitan planning organization: who really decides?
- surrogate customers
- Municipalities
- land owners, developers, builders
- Jack Sprat & wife
- CTPS: model doesn't matter
- CLF: model does matter
- Referendum

Timeline and Degradation of the Environmental Process into a Way of Delaying Environmentally Beneficial Projects

a) Boston Transportation Planning Review: $1.5 Million, 18 months

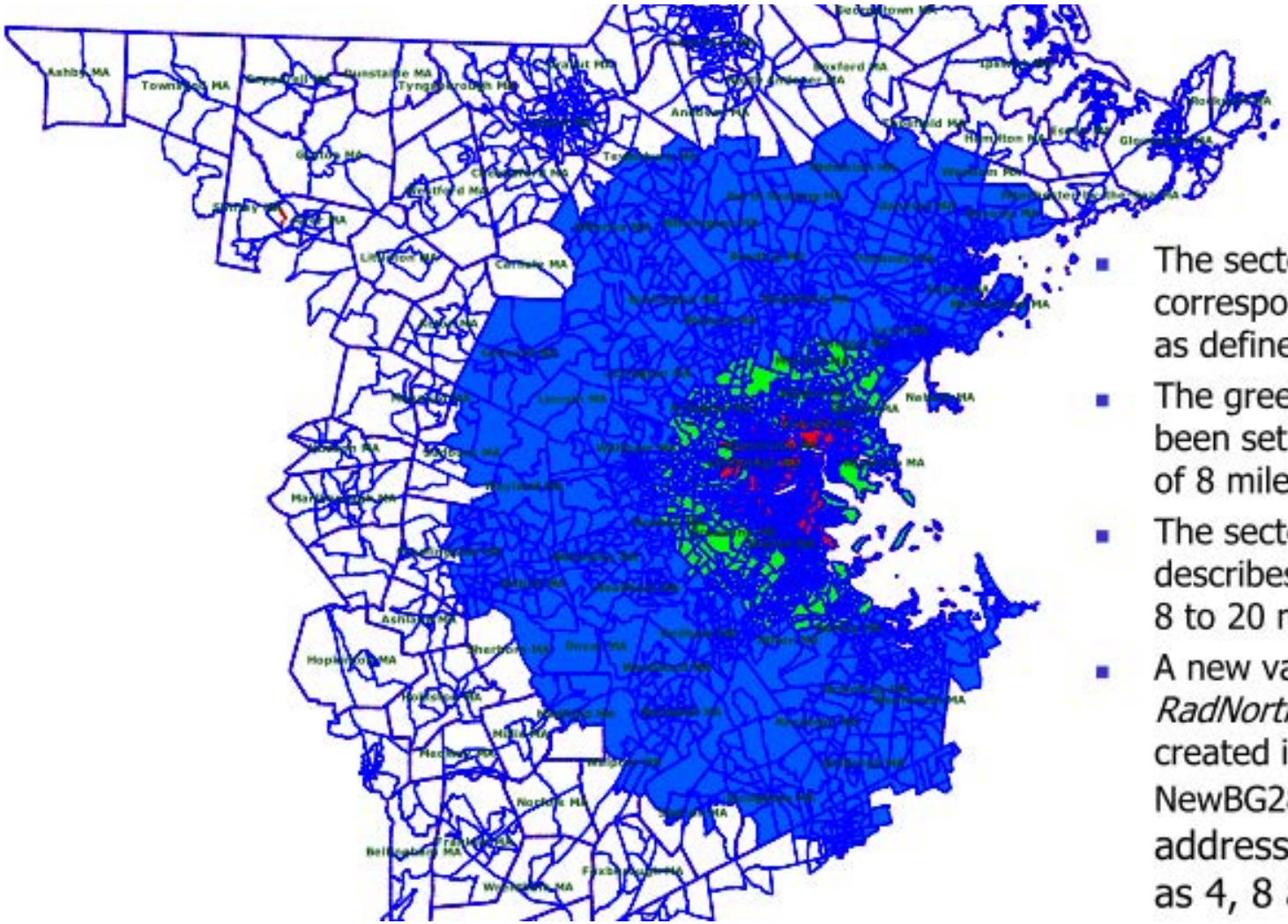
b) Red Line extension: 6 years to begin construction

c) Big Dig: 20 years to begin construction

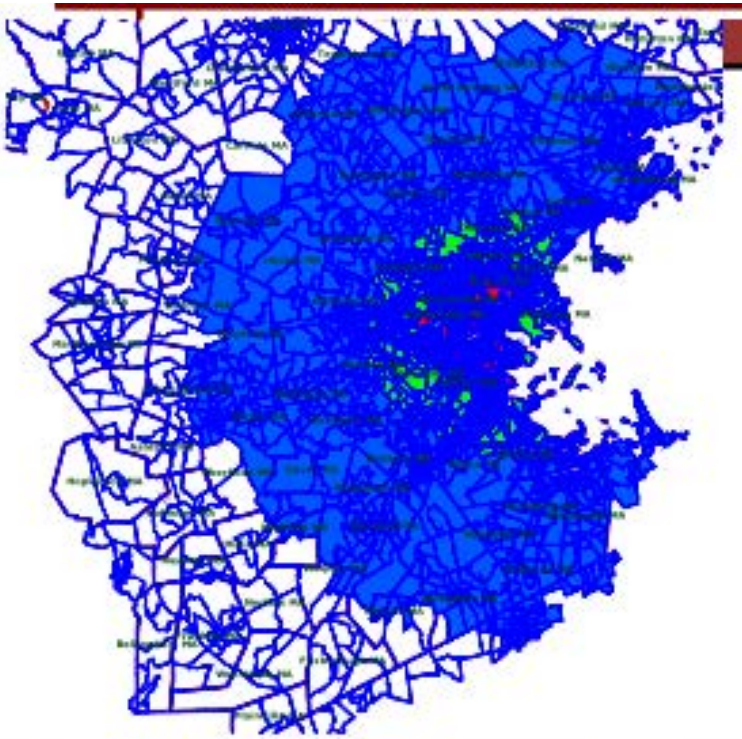
Design-Bid-Build vs. Design-Build

- Manage inputs vs. Manage outputs
- Agency Power, Engineering Firm, Optimism bias, Pipeline
- Discount rate
- Baumol
- Tip of the Iceberg

“Cities and CO2: Two Views of Greenhouse Gas Emissions” has been removed due to copyright restrictions.



- The sector in red corresponds to our CBD as defined earlier
- The green sector has been set using a radius of 8 miles approximately
- The sector in blue describes the area from 8 to 20 miles
- A new variable *RadNorthStat* has been created in our NewBG2884.dbd file to address these sectors as 4, 8 and 20



SOCIOECONOMIC DATA

	All	0-4 miles	4-8 miles	8-20 miles
No of HHs	1,418,534	239,620	293,034	506,680
No of people	3,670,794	561,355	745,989	1,330,295
No of people/HH	2.59	2.34	2.55	2.63
No of workers	1,797,264	273,910	361,984	654,845
No of vehicles	2,105,989	217,675	388,014	842,755
Mean Aver Family Size	3.11	2.92	2.55	3.12
No of Vehicles/HH	1.48	0.91	1.32	1.66
No of Workers/HH	1.27	1.14	1.24	1.29
Total No of Jobs	1,983,536	533,172	240,945	738,444
Retail Jobs	416,021	108,998	49,369	162,209
Service Jobs	980,149	325,049	127,280	341,457
Other Jobs	606,161	117,920	64,296	234,778
Educational Jobs	116,619	32,146	18,348	38,269
No of Jobs/HH	1.40	2.23	0.82	1.46
Kindergarten	121,092	11,549	22,096	46,902.00
Elementary School Students	391,322	38,699	75,875	144,959.00
High Schools Students	188,386	20,655	40,424	68,806.00
College Students	302,567	105,969	61,495	81,249.00
Non-College Students/HH	0.49	0.30	0.47	0.51
Transit Captives	1,042,500	237,222	243,965	315,408.00
Transit Captives/pers	0.28	0.42	0.33	0.24

- These ratios, or other ones you may create, may carry a story:
  - Environments with a higher urban character result in significantly lower ratios of autos per household, leading to strong savings in transportation costs, with a higher ratio of *transit captives*
  - The inner sector is indeed the economic hub of the metropolis with 2.23 jobs/hh. The intermediate sector, 4 to 8 miles, contains much less economic activity, half of the one in the first sector. The 8 to 20 mile sectors attempts to balance jobs and residences with a rather high ratio of 1.46 of jobs per hh and an absolute number of jobs, 50% higher than those in *the Hub*
  - The family orientation of the suburbs is clear through family size and no of students per hh

Remember, from perspective of 1875, both transit and autos are “new”.

1900	• Transit as a regulated utility
1916	• Federal highway funding
1920’s	• Gasoline taxes dedication
	• Turnpikes
1956	• Interstate highway process
	– not local streets
	– not maintenance
	– not transit

Remember … (con’t)

1960	• Commuter Rail - UMTA
1962	• Transport planning
1966	• Section 4f
1970	• N.E.P.A. Clean Air Act
1973	• Transit operating subsidy; flexibility
1991	• ISTEA – post interstate
	• IVHS

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