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Course Overview

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Urban Transportation Planning

MIT Course 1.252j/11.380j

Fall 2002

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First, a confession...

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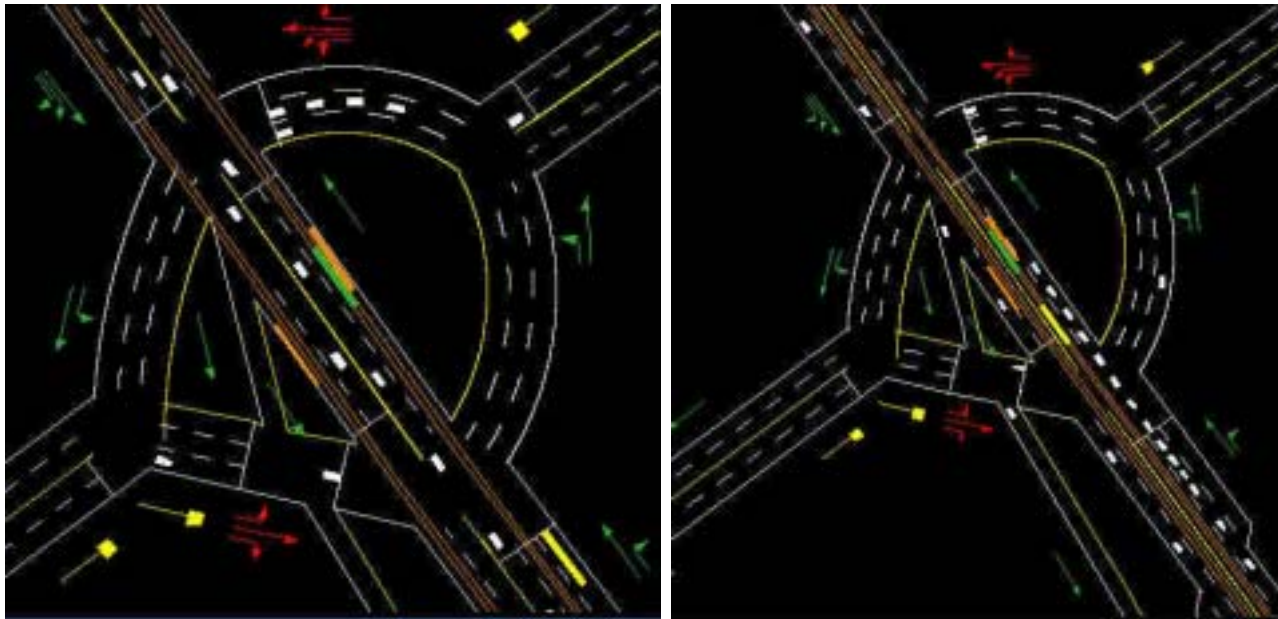
I make a living selling ideas to design roads, to upgrade transit systems or to rehabilitate cities and towns



First, a confession...

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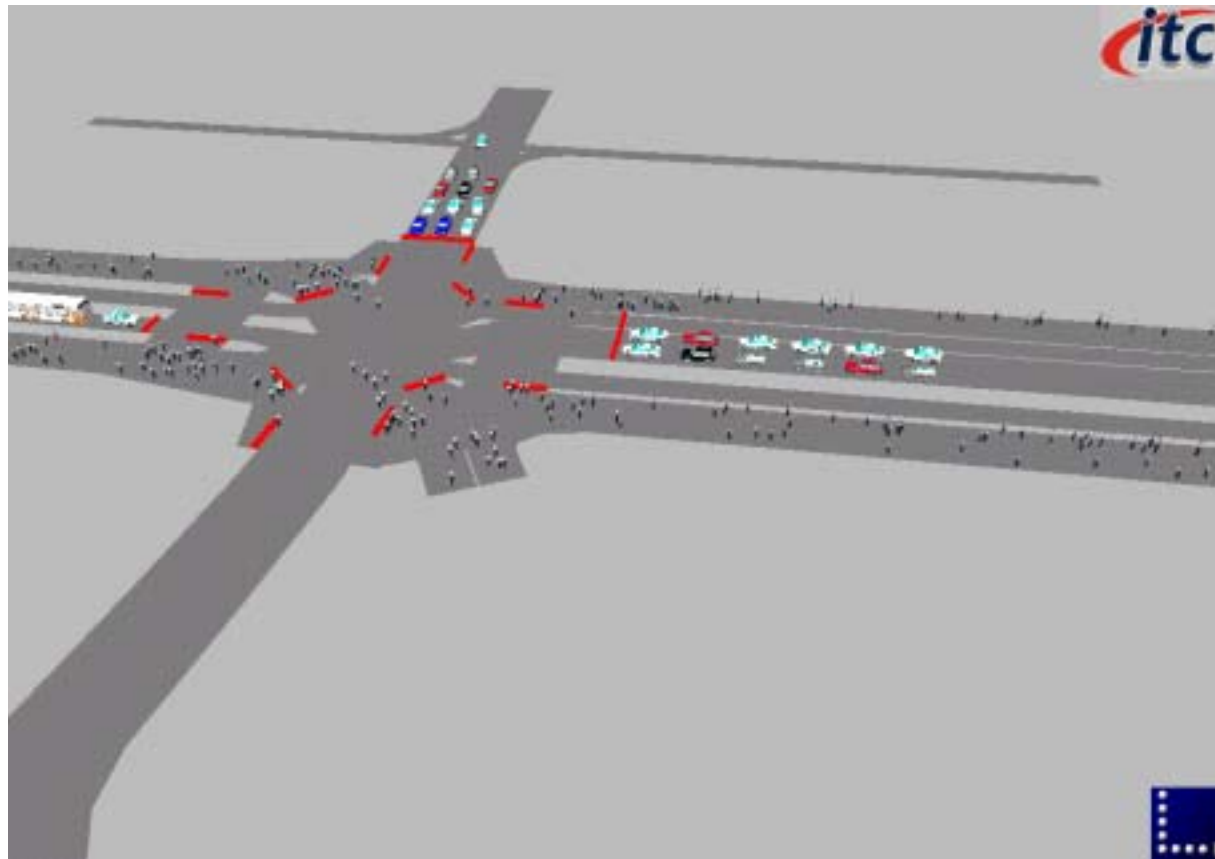


The two schemes, outer or median lanes, were thoroughly compared to examine relative operational advantages and pitfalls

First, a confession...

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First, a confession

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“It is wonderful when a calculation is made, how little the mind is actually employed in the discharge of any profession”

- Dr. Samuel Johnson

That is why I am here today with no answers but rather with just lots of questions

Emerging Transportation Issues

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- The automobile
- Transit: Past ... and Future
- Transportation
- ... And Land Use
- Technological Fixes
- Transportation: A Complex System

The Automobile

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- Convenience, comfort, flexibility...
- Who is against the American way of life?
- It drives the economy!
- *Don't leave home without it!*



The Automobile

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- How much does it cost?
 - To the driver
 - To the rest of society
- Fixed and operating costs
- What is the required infrastructure?
- What do we mean by externalities?

The Automobile

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- Current urban development trends increase car ownership and use
- Car operating costs are lower than ownership costs
- Drivers do not pay full costs (despite lobby claims to the contrary)

The Automobile

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- Some prevailing popular beliefs:
 - car taxes exceed car induced costs
 - car mobility is a right
 - proper technology will solve the problem
- which together with the lack of "quick fixes", compound the problem

- When a service is free, it tends towards over-consumption:
 - Congestion
 - Latent demand
 - Induced Demand
- The Car Free Movement in Europe

The Automobile

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- Suburban sprawl:
 - A dream made true by the car
 - Have we locked ourselves into it?
 - What does it imply?
 - *Stadt luft macht frei*
 - From city life to *Edge Cities*?

MIT Transit

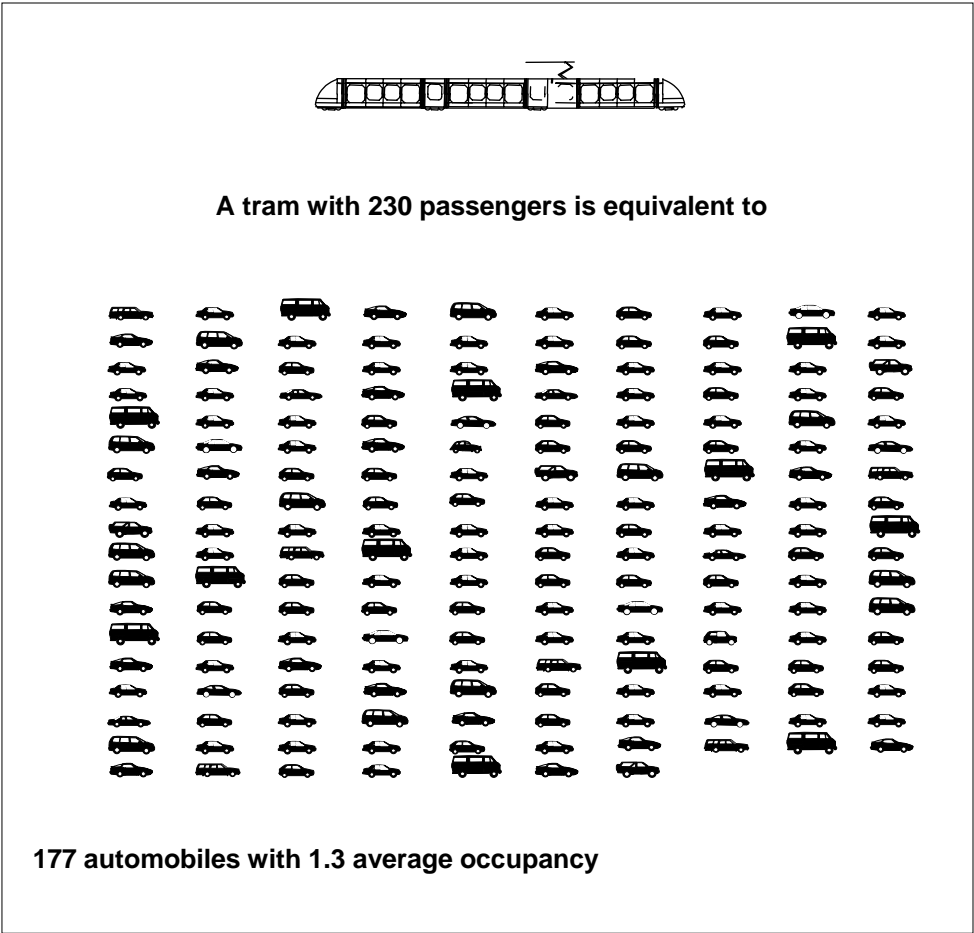
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- We are all in favor!
- But **my** case is special
- Choice ... and captive riders
- Levels-of-Service (LOS) like the car?
It's about time!



Is it a panacea?

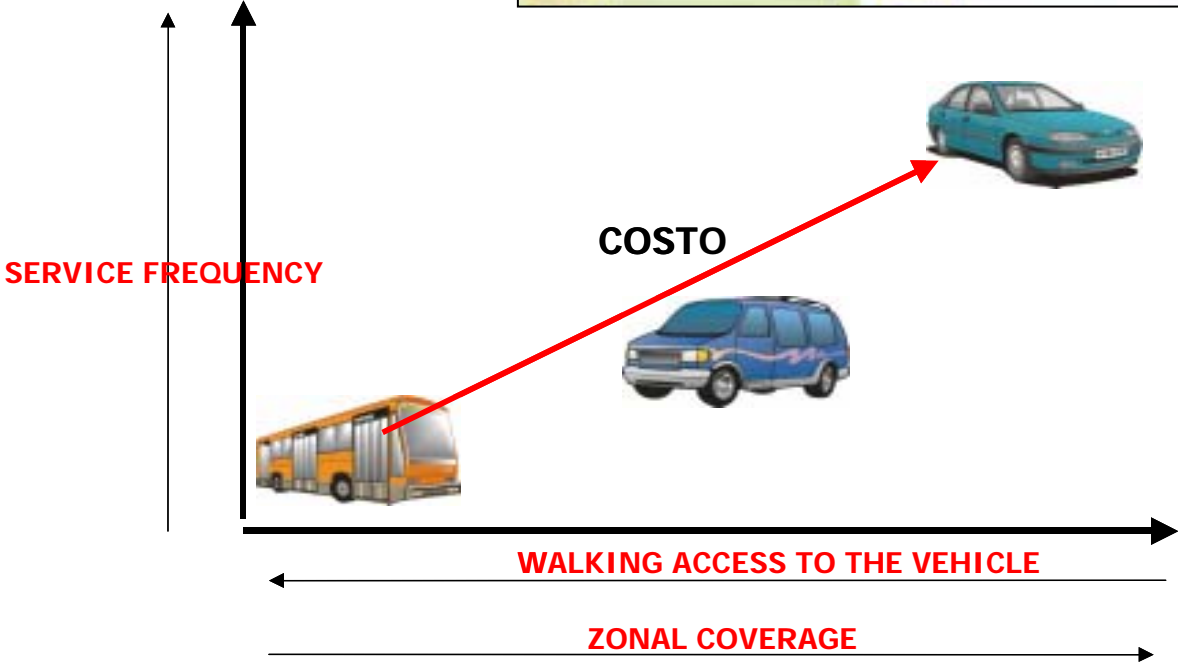
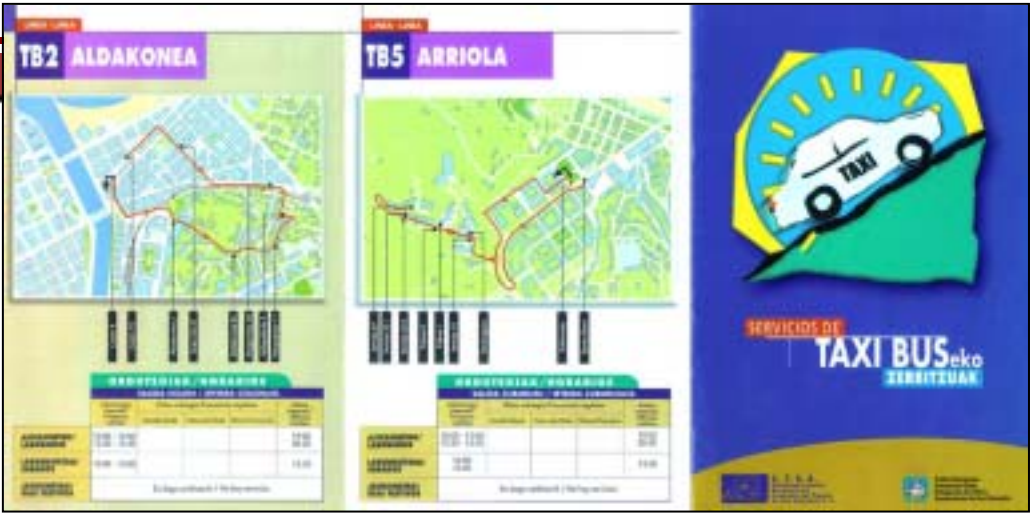
A tram with say **230 riders** is equivalent to **177 automobiles** with an occupancy ratio of 1.3...
provided they are all choice riders



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Same menu for all like the Ford T?



MIT Transit

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- Every major transit project (as every road scheme) is announced as “the solution”
- Sometimes hard to see the opportunities which open if the right process is engaged





Opportunity for
urban
rehabilitation

- Part of a bigger whole
- Service quality as a prerequisite but...
 - Urban Density
 - Parking policy
 - Priority
 - Information
 - Pricing
 -



MIT Transit

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- How do we rate it a success?
 - The % of patrons: captive vs choice riders?
 - Total transit trips per capita?
 - Transit share of the overall mobility market?
 - The growth of city traffic?
 - Downtown parking supply vs number of jobs?
 - The impact on the real estate and retail markets?



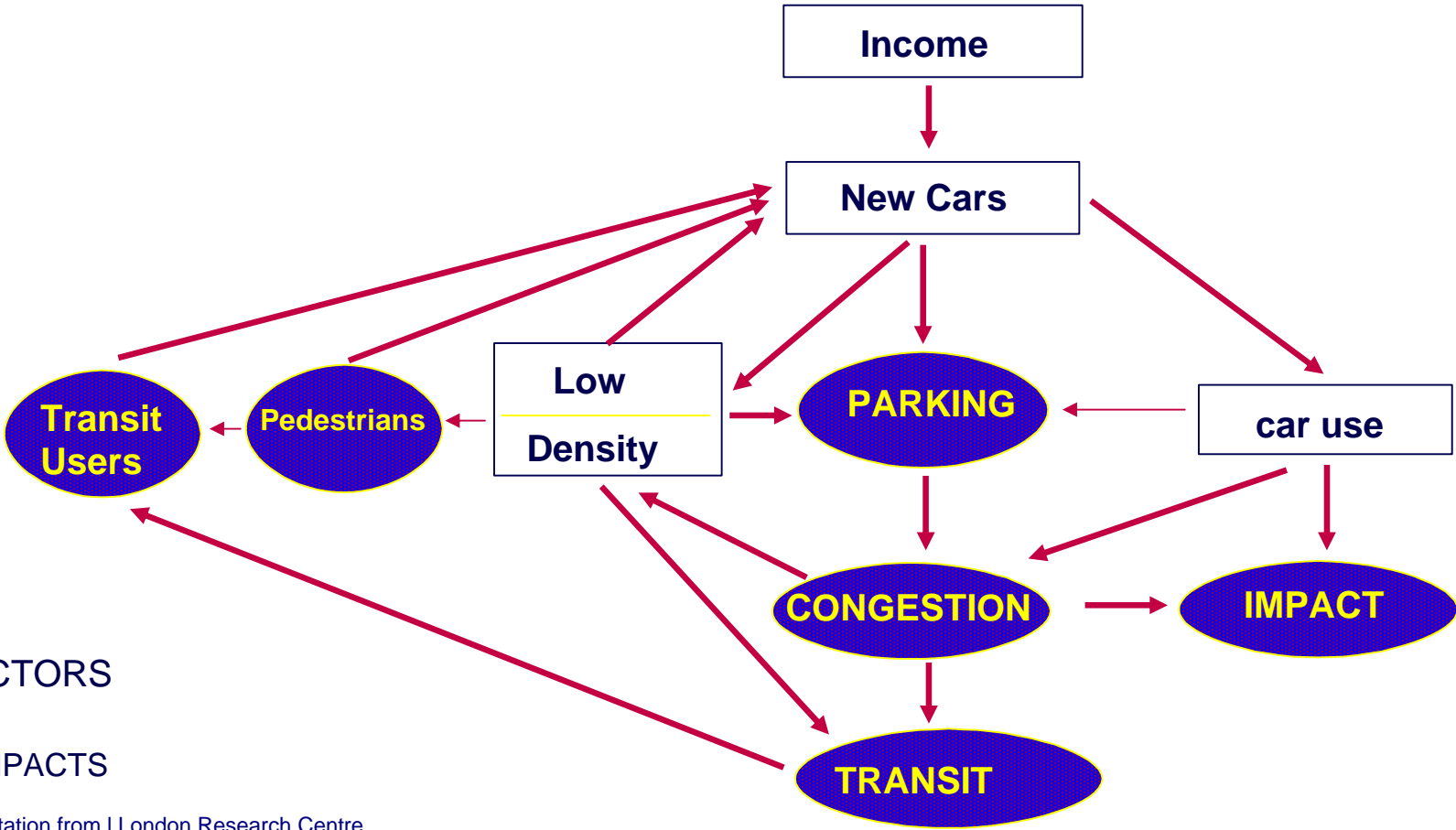
- Basic for our daily life
- How many trips per day?
- What purpose? How often? How far?
- Are we talking about motorized trips?
- Should we talk about activities instead?

- What should be the goal of urban transportation?
 - Faster and further away?
 - Cheaper?
 - Safer?
 - More comfortable?
 - Is mobility the target?
 - What about accessibility?

- Opening the new frontier...
- Who gains with a new expressway?
 - New access opportunities?
 - Faster times for present users?
 - New development opportunities?
 - Induced demand to get back to square one?

A simplified interaction model

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FACTORS

IMPACTS

Source: Adaptation from I London Research Centre

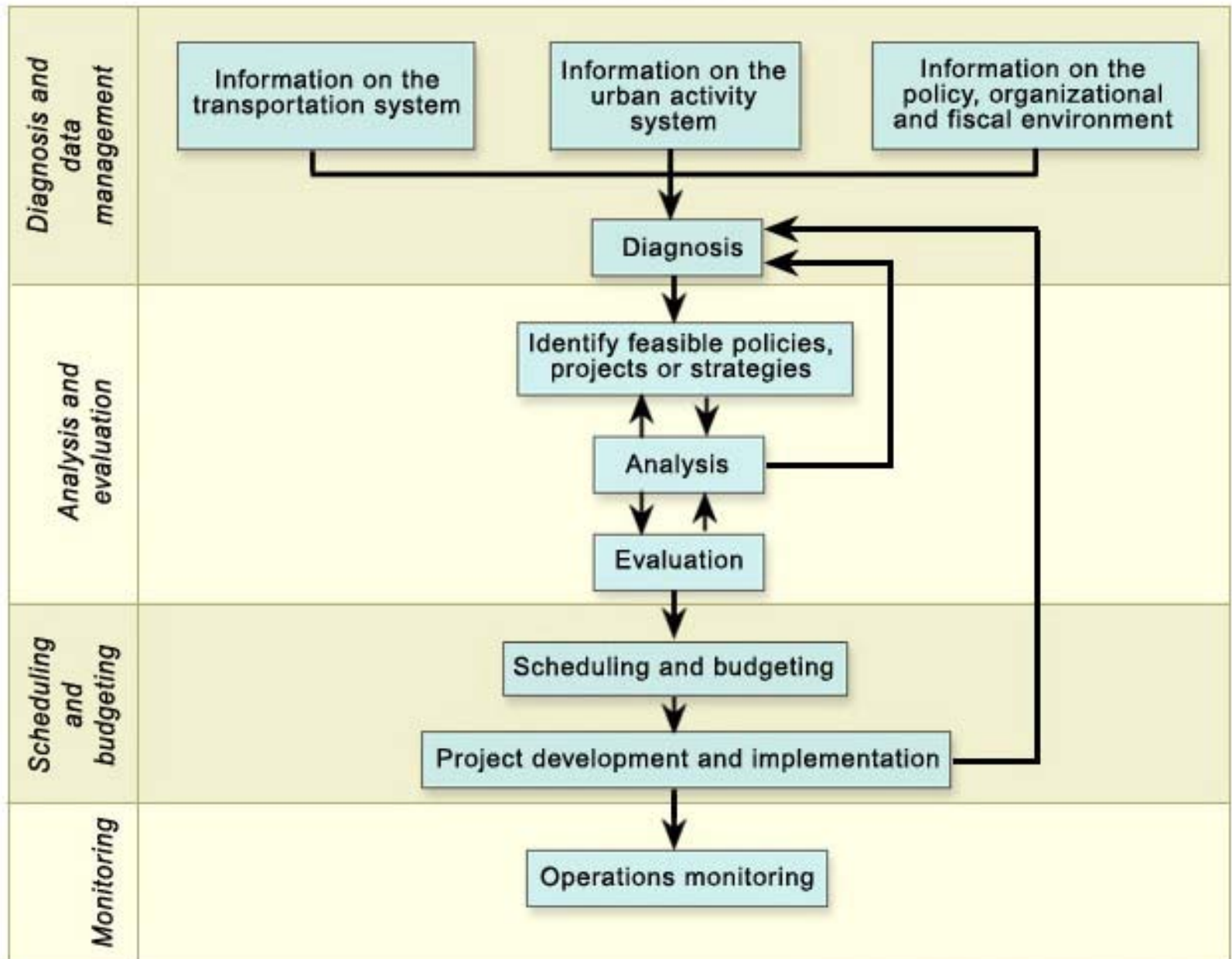
Transport and Land Use

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- Suburban sprawl and the car
 - Did we want to segregate society?
 - Downtown vs the Mall
 - Public vs private space, or
 - Public wealth vs private wealth
- Transit and density
- Infill development around stations

Transport Planning

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Transport Planning

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- Single decision makers?
- Once and for all?
- End-state or ongoing process?
- Solutions or *managing chaos*?
- Crisis as the motor for change?
- Community involvement:
 - From information to participation
 - how to visualize change?
- Feedback mechanisms

Technological Fixes

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- New car technologies:
 - Increased efficiency
 - Lower pollution levels
 - Safer operation (mainly for the driver)

- ITS or how to get *more mileage* from our present system

Traffic and Traveler Information Services

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People's decisions based on **perceptions!**



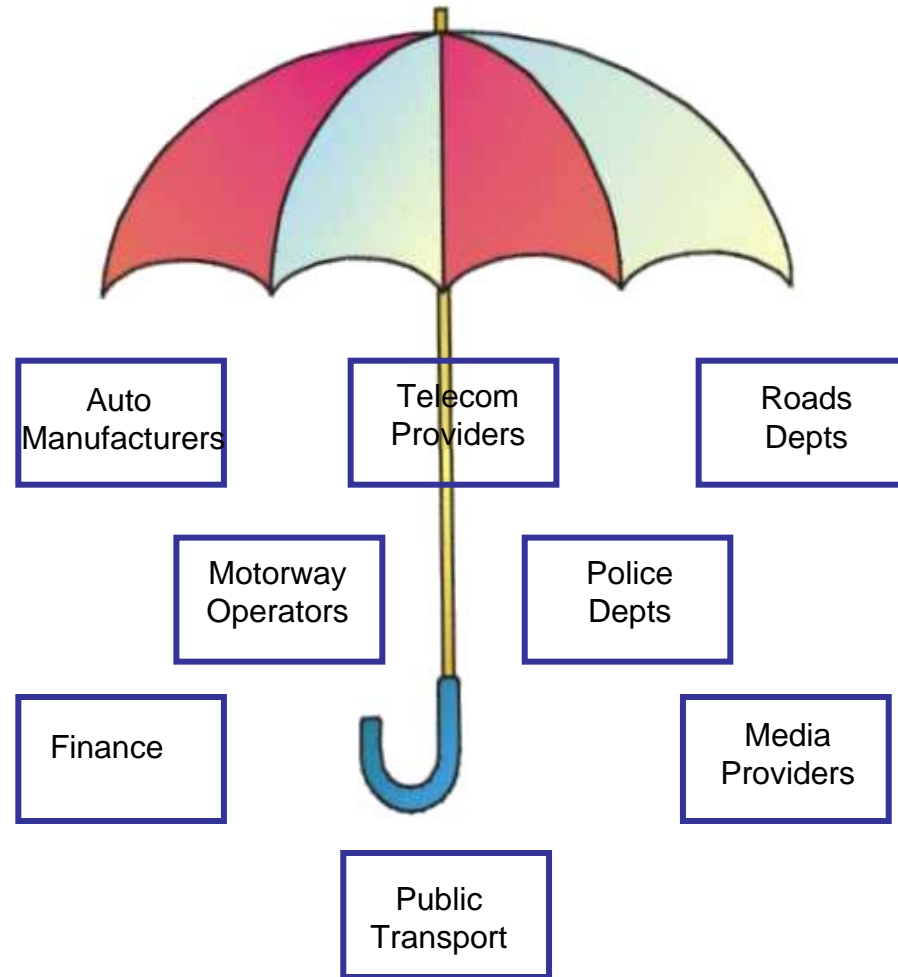
Web sites and cell phones give updates on traffic conditions.

Typical ITS priorities

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- Common Transport Vision
- Common Strategic Approach
- Reduction of Road Congestion
- Improve Road Safety
- Decreased Negative Environmental Impacts
- Supply and Demand Systems Management
- New Model for Institutional Cooperation

- A unique **cooperation** opportunity for joint policy and action
- Till now, here and elsewhere: consistent sub-optimizing

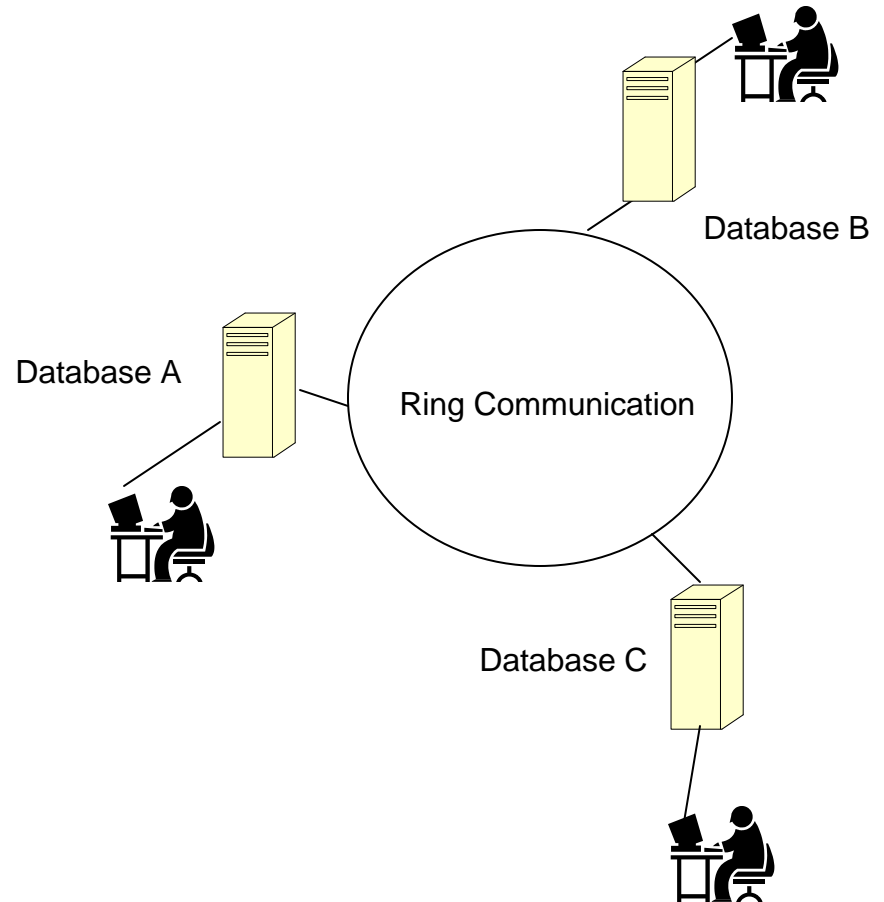


MIT ITS? How?

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It serves 3 critical functions:

- Information
- Communications
- Integration



The long road to ITS Deployment

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- ITS tools easy to buy... but difficult to integrate
- They require organizational changes and new networking schemes
- Existing technological, political and jurisdictional barriers have to be addressed
- ITS itself has to be integrated into conventional planning

Transportation: A Complex System

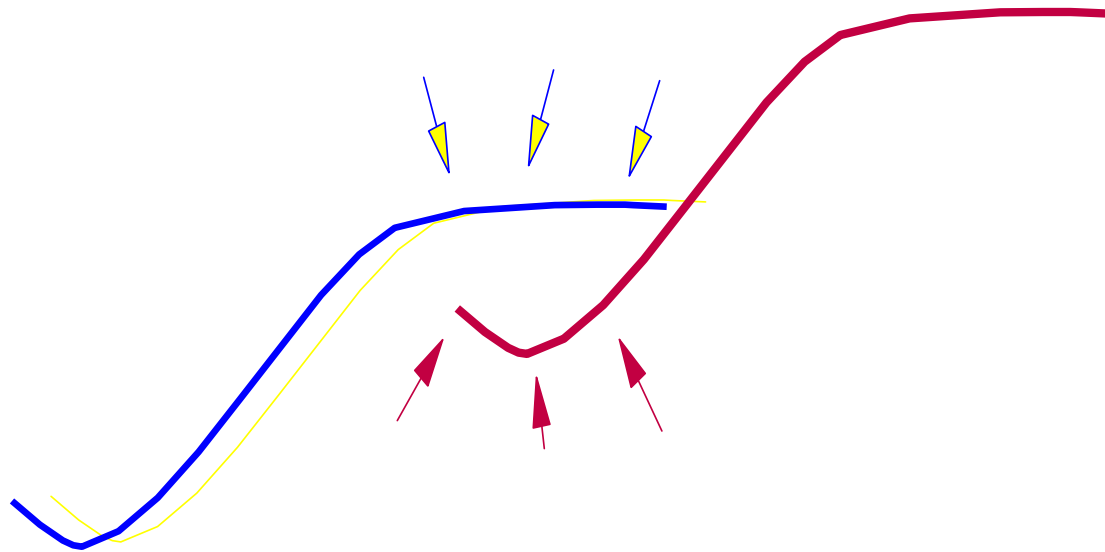
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- Action and reaction:
 - Same dosage, different reaction
 - Learning and adapting
 - Space and time non-linearities
 - Latent demand
- Facts and perceptions:
 - Elected officials believe that voters...
 - Voters believe that...

Do we need a new mental model?

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- Former Strasbourg Mayor Ms Catherine Trautmann insisted that transit was an excellent excuse to change our mental model regarding the car-city nexus



Transportation: In a nutshell

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First, we'll fix the access to the thruway, then
we'll fix the city...

New Trends

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Old

Independent Modes

Local Economies

Independent Jurisdictions

Users

Build

New

Intermodal

Regional/Global Economies

Coalitions/Seamlessness

Customers

Manage

Transportation: In a nutshell

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- Means to an end, not an end by itself
- Optimizing a sub-system?
- What is then our goal?
 - The daily life of our citizens?
 - Who are the transport actors?
 - Is it the most tractable urban problem?
 - Is it a governance model for other areas?

This course: All lectures w/o numbers???

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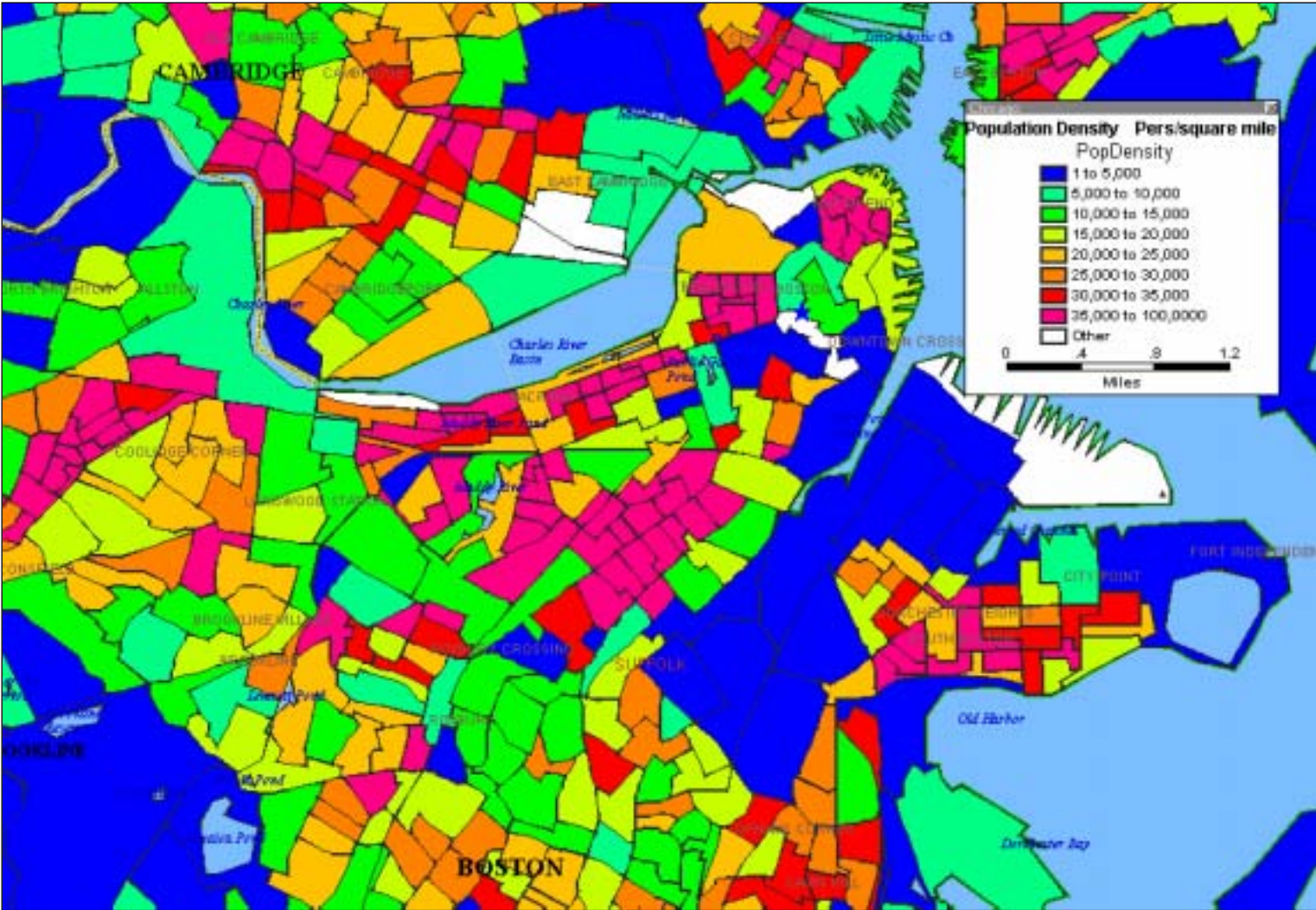
- You will be asked to:
 - Count traffic volumes and pax flows
 - Compare cities transport “numbers”
 - Use a GIS to visualize travel patterns
 - Analyze a travel survey
 - Come up with improvement proposals
 - ... and during IAP, use several models

- Big numbers versus *little* numbers



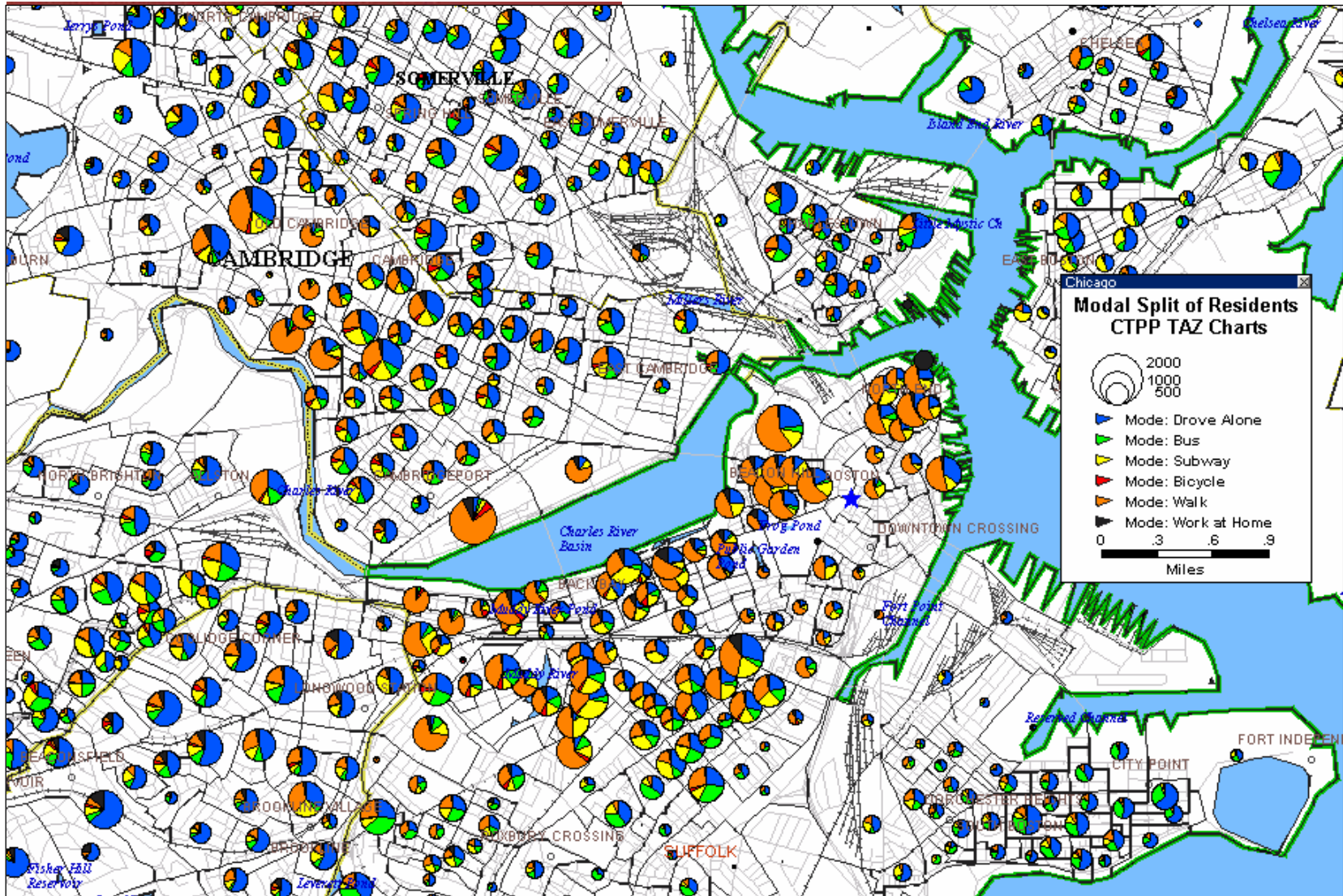
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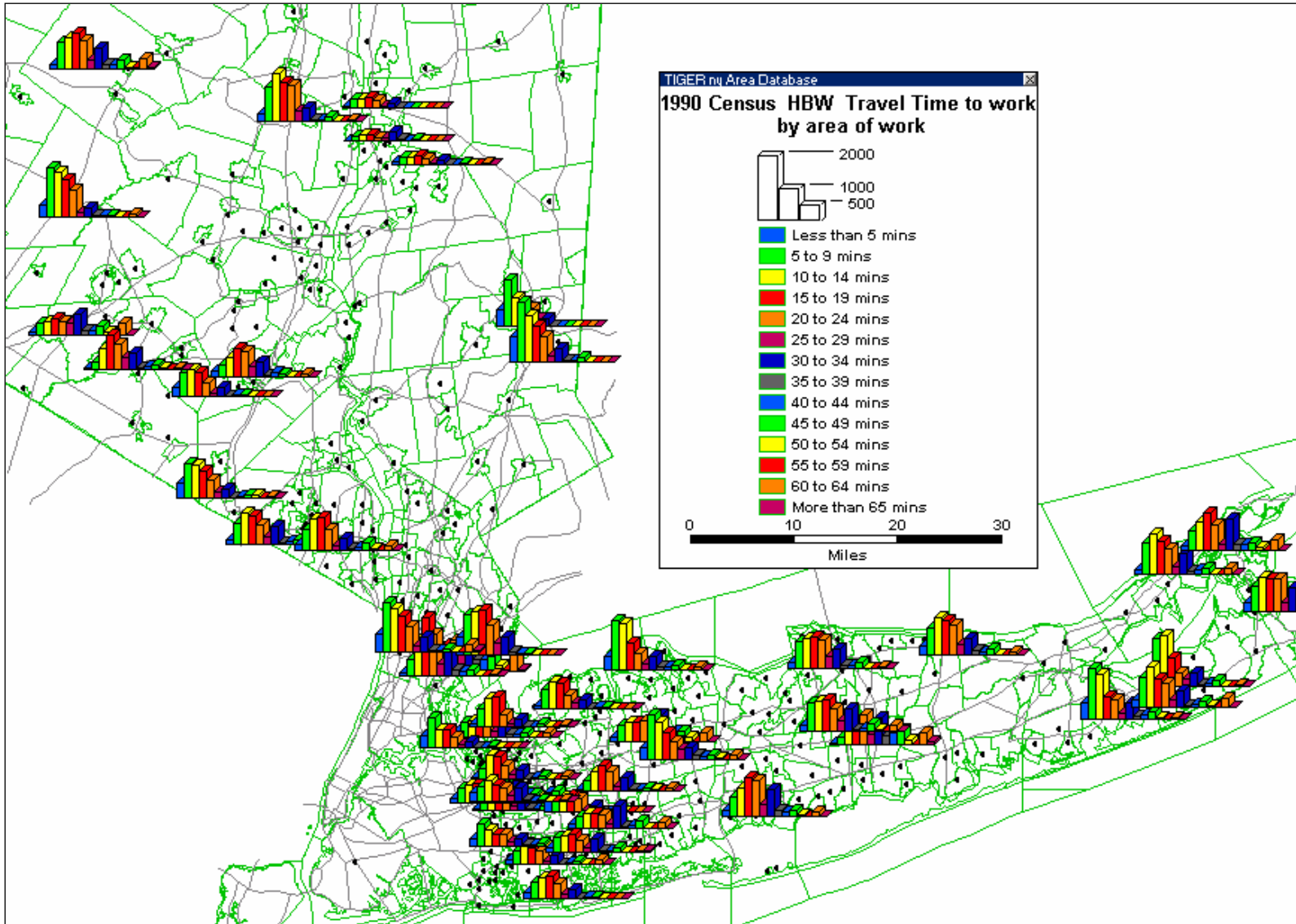




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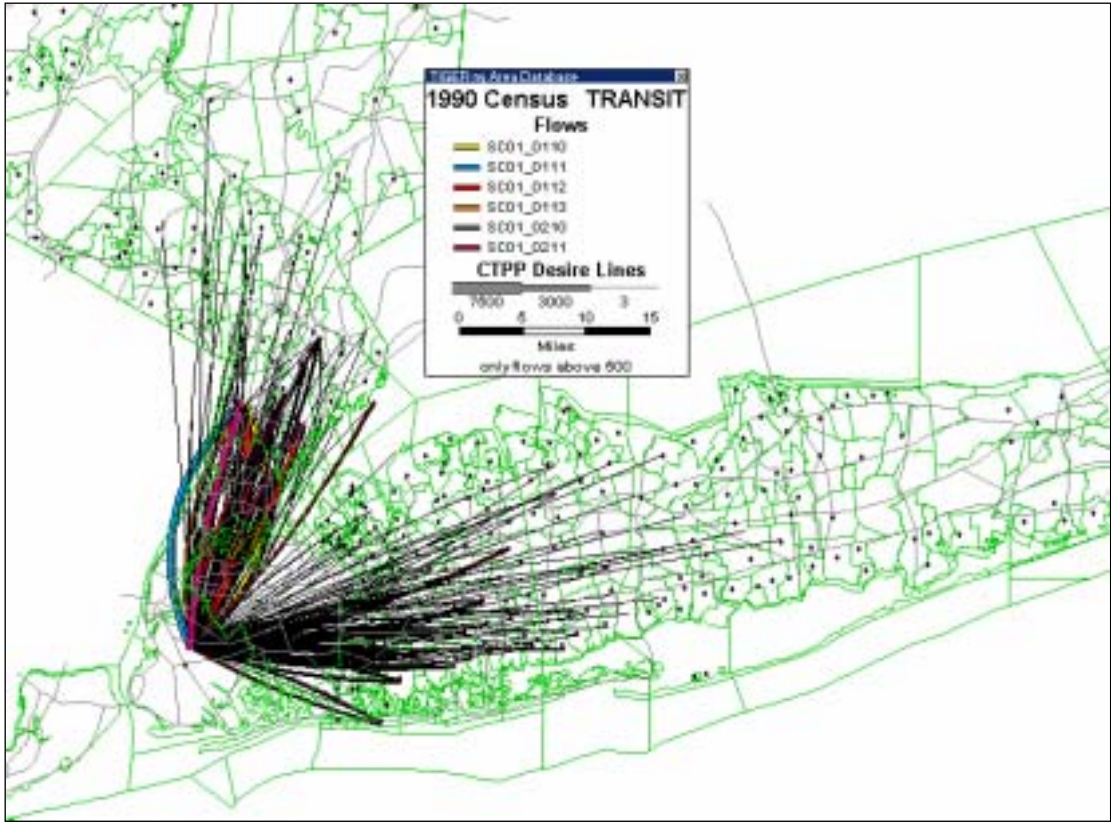
This course: All lectures w/o numbers???



This course: All lectures w/o numbers???

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Big numbers versus *little* numbers



Some Tuesday... and final two weeks of IAP

Transportation: In closing... a story

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RADICAL changes

**Known
Solution**

**Unknown
Solution**

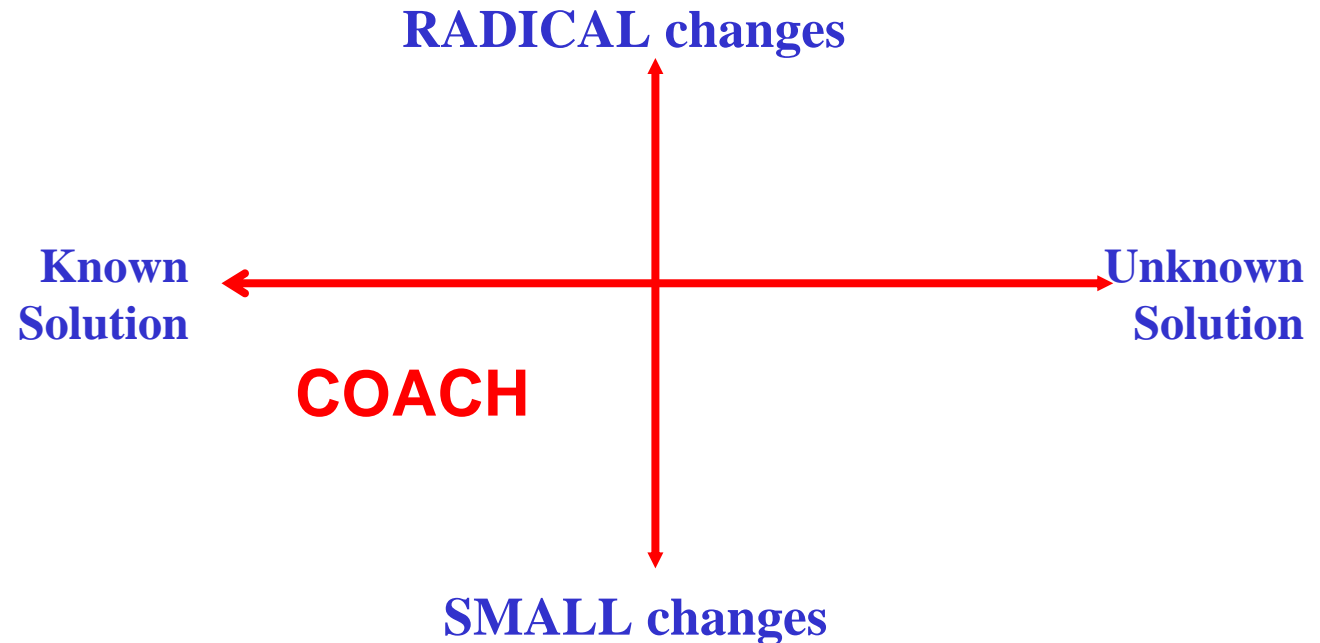
Problems Typology

SMALL changes

Adapted from a presentation
by Marc J. Roberts
Harvard School of Public Health
Day 1

Vision... and Leadership

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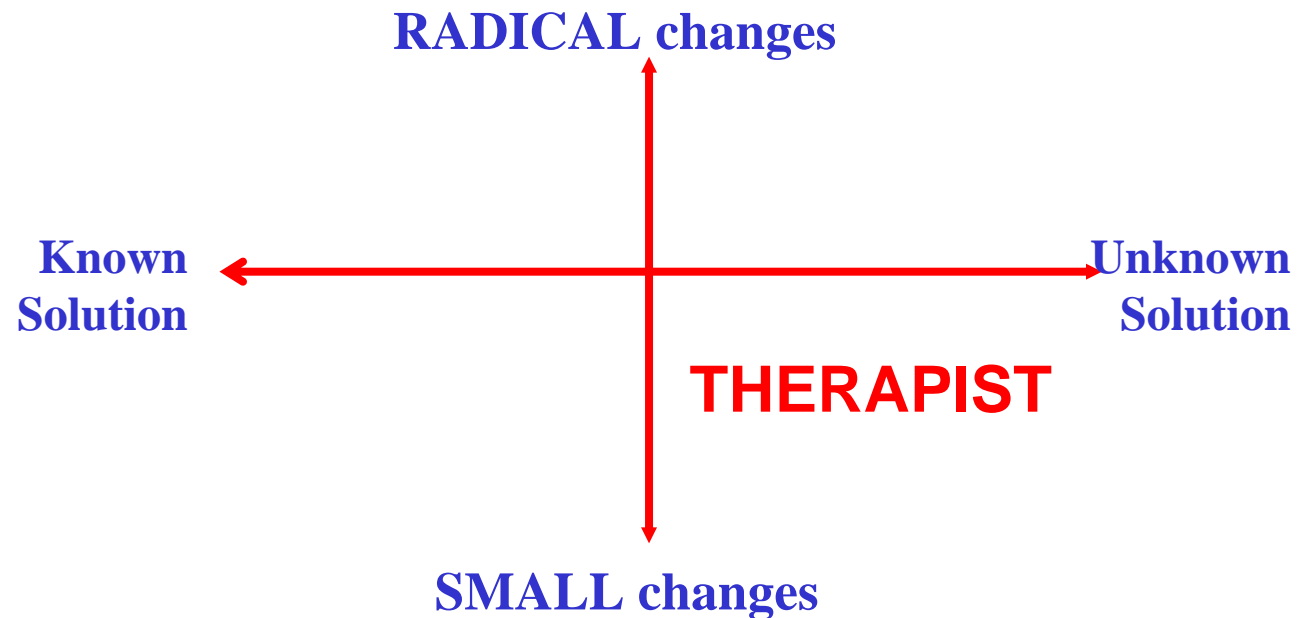


Coach:

- He/she knows the rules of the game
- People accept her/him as an expert
- Leadership is easy

Vision... and Leadership

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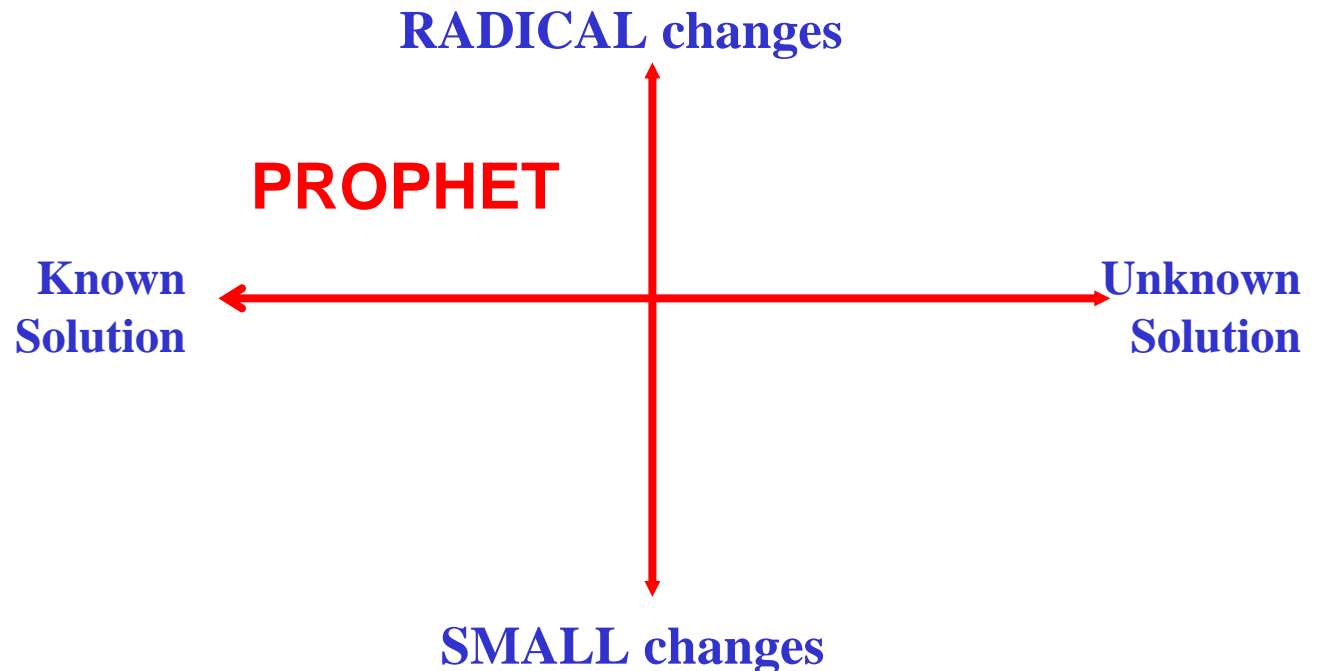


Therapist:

- He/she possesses certain expertise
- Still it requires a joint search for the solution
- As a leader, you delegate on the organization

Vision... and Leadership

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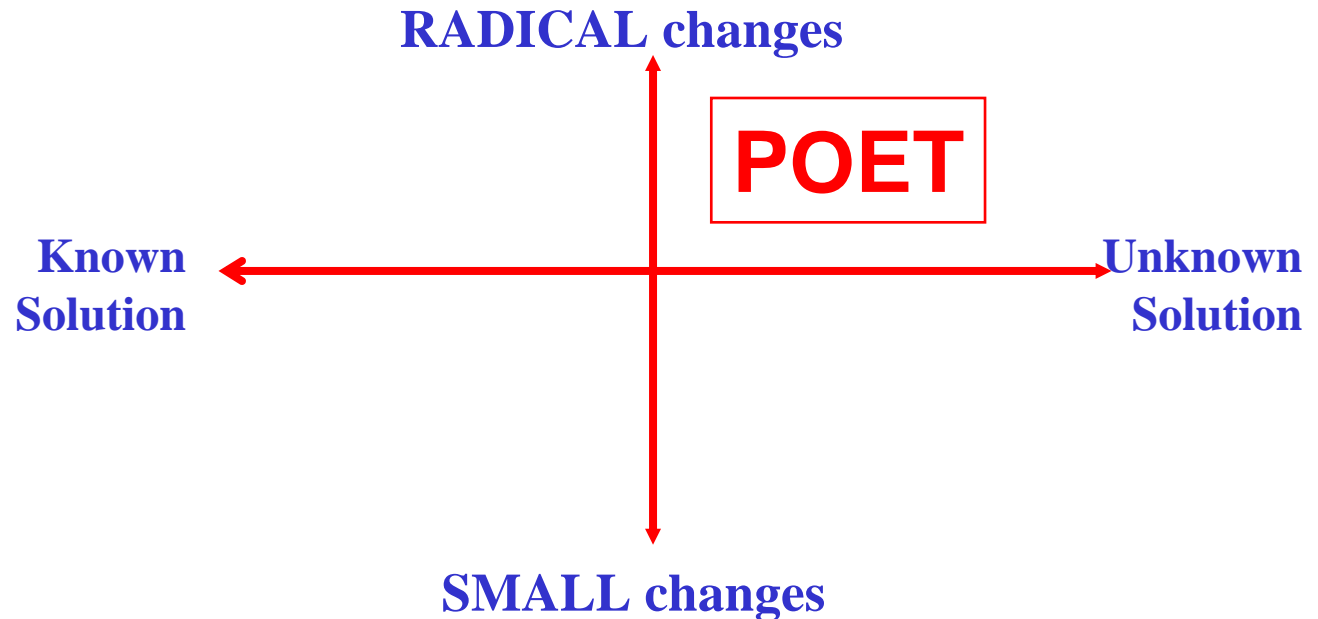


Prophet:

- "I know what to do and I am convinced"
- "Those who question me are heretics"
- A leader who does not accept interpretations

Vision... and Leadership

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A Poet:

- Different people see the world differently
- Most of our understanding is imperfect
- Many options to accomplish a vision
- Ambiguity and the embracing of contradictions