Public Transit: What is the question?

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What is the transit question?

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Isn't this the question?

Focusing on choosing vehicles and technologies ...

• ... is easy because everyone has emotional reactions to vehicles ...
• ... is a false analogy with choosing personal vehicles.
• ... presumes that people care about the vehicle more than about getting where they’re going.
<table>
<thead>
<tr>
<th>Technology as Goal</th>
<th>Technology as Tool</th>
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<tbody>
<tr>
<td>1. What a great vehicle!</td>
<td>2. What vehicle best provides that?</td>
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<tr>
<td>2. Where should we run it?</td>
<td>1. What kind of service and capacity do we need here, to serve transit's essential task?</td>
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- What is transit's essential task?
What's the essential task of police?

Police participate in community programs, fundraising for good causes.
Police provides dramatic content for film, TV, video.
Builds confidence in city as investment and place to live.

Sirens make city sound exciting.

Law Enforcement

What is the essential task of transit?

These are benefits.

But what's the core task or goal of transit, that achieves these benefits?

Economic growth with less congestion.
Social justice, social inclusion, meeting "needs".
Support for sustainable urban form.
Fun.
Environmental outcomes.
What is the essential task of transit?

**Abundant access** without personal vehicles, over distances too far to walk.

Given a fixed budget ... Abundance = Efficiency!

Not just "more for me," or "for everyone" but the most abundance for the most people ...
- Hence focus on areas of high demand.

Access here includes mobility.

Transit delivers pedestrians beyond their walking range as *pedestrians*. Even a bicycle can be an encumbrance at times.

A key to efficiency, and hence abundance. Transit’s synergy with walking. Transit also exceeds most cycling in the range of trip distances served.
What if we could see our own access and mobility?

Portland, 9:00 AM

This is a map of your freedom!

Useful for location decisions.
What if transit’s task were to grow these blobs for the greatest number of people?

Not just the area, of course, but the amount of stuff in them.

What % of the city’s jobs, nightclubs, shops, parks, potential friends, etc can I get to in 15 or 30 minutes?

How much of the city, in all its richness, is available to me?

Technology and vehicle are irrelevant here, except as they deliver abundant access.

Useful for location decisions.
Listen to your tools: They ask the real questions!

The public transport tool asks you questions about your goals.

Answer these questions, and the resulting direction can actually be implemented!

- Connections or complexity?
- Ridership or Coverage?
- Peak-first or all-day?

These questions are geometrically inevitable.
Connections (and frequency, and many destinations) or Complexity?

Direct Service Option
For any given trip, only a small number of vehicles are useful.

Connective Option
With connections, more vehicles are going where you want to go.

This tradeoff is a fact of transit geometry!

Peak or All Day?
All-day planning produces most durable sustainability outcomes, but commuter express service can make sense when busy.

Given a peaking pattern, do we think of the peak as our main product?

... or do we think of the all-day network as our main product?
Ridership or Coverage?

At each stop, density is market size.

1. Transit serves stops.
2. Stops cover a fixed radius, thus a fixed area.
3. The amount of activity (pop, jobs etc) in that fixed area is the potential transit market

Density – understood very broadly – is at the heart of transit demand.
Claims that density doesn't matter mostly rely on confusing measures.

Ridership or Coverage?

Ridership Goal
- Frequent, connective urban network plus crowded peak commute services.
- Competition with car.
- Sustainability outcomes.
- Fare revenue (BCA)
- Positive feedback effects over long term, esp via influence on city form.

Coverage Goal
- "Minimum Service Levels"
- Infrequent local routes covering low-density areas.
- Social inclusion
- Self-interest of low-density areas.

Each of these goals is self-reinforcing, but the conflict between them is inevitable.
How the questions align …

Coverage

Ridership

Peak-first
All-day

Connections

Network design for frequency and simplicity.

Complexity, "single seat ride"

Be on the way!
The "Be on the Way" Principle

Ideal for transit:

Toxic to transit:

Early, vivid example: Laguna West

Eric Orozco, from Calthorpe Assoc. design
Laguna West: An example at citywide scale …

- One of the first official “Transit Oriented Developments”
- Town Centre intended to be major transit node, but is still unfinished

But look at citywide structure

- Town Ctre is not on any radial corridor
- Faces a crosstown corridor that is too short to build strong market.
- Can only be served by its own dedicated services.
- Effectively a cul-de-sac!

(Satellite image of Laguna West with Town Centre and surrounding area marked.)
Questioning the "T"

- Three-point intersections require transit to overlap or branch
- Almost guarantees inefficiency.

Deadly triangles: SFO BART

This looks like it does everything!

But the geometry of transit says that branching divides frequency, so it will really be one of these:

(Narrow line has half the frequency of wider line.)
So if you want transit to work … quit building this!

Car-based commercial streets can be redeemed …

There’s often plenty of density in an ideal linear form. Only the pedestrian environment makes them unwalkable or unsafe!
What's outside this circle?

Abundant access without personal vehicles, over distances too far to walk.

Social justice, social inclusion, meeting "needs"

Services for small numbers of people in expensive-to-serve places
- special needs
- "coverage" services
- Necessary, but a conflicting purpose ...

Thank you!

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What's outside this circle?

Leading development through transit – included as “long-range abundance” strategy

Abundant access without personal vehicles, over distances too far to walk.

Support for sustainable urban form.

Specialized services.

Expensive technology choices not driven by demand.

“Symbolic transit”

Why invest in transit?

Abundant access without personal vehicles, over distances too far to walk.

Services useful mainly as pleasure or recreation

Fun
Analyzing Technology Love

Causal links

Symbolic link

Expected mobility outcomes
Pure love of technology
Hoped-for redevelopment

The Project

Mobility and access outcomes

Better access to the city for a redevelopment’s customers.

“Symbolic transit”

Attraction of development customers.

Reasons to support project