Rethinking Street Design

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Old Paradigm: Streets as Single Purpose Spaces

Worst Case LOS = B
-- Ballpark EIR
The Great Opportunity

- 25-30% of U.S. urban land is streets, sidewalks, and alleys.
- Largest portion of undeveloped urban land
- Already publicly owned
- Judicious re-allocation can address many unmet needs
- Better urban design has high ROI, at a time when cities need it most.
The Challenges

1. Variety of users (travelers, utilities, emergency responders, arborists, merchants, historic preservationists).
2. Traffic engineers are asked to address only vehicle movement.
3. Opening the door: Lots of interests to serve. Lots of cats to herd.
4. High costs, incremental changes
Streets As Opportunity

- Deficit of urban parks and “3rd Places”
- More amenities (seating, restrooms, shade, carts)
- Stormwater runoff alternatives
- Carbon capture – Urban forests
- Renewable energy; albedo & heat island effect
- Urban agriculture
- Improved aesthetic – Street as canvas
  - Economic Development
  - Health and Mental Health
  - Community Cohesion
  - Crime Prevention
CO₂ per Household

- SB 375 “Requires” Reducing total CO₂ from passenger vehicles.

Yellow: 0-3.3 tons/hh/yr
Red: 8.3+ tons/hh/yr

Source: Center for Neighborhood Technology
Street Design & Obesity

- 10% of healthcare costs in 2009.
- 21% of healthcare costs by 2018.
- Walking is #1 form of exercise
ReThink: Traffic Level of Service

- A = free flow; F = stop ‘n’ go traffic
- “Maintaining LOS” = Wider streets, lower density, ever increasing vehicle use
- Significant driver of sprawl and CO₂ emissions
- Primary cause of traffic fatalities
This street meets LOS, but where’s the pedestrian?
This street meets LOS, but where's the pedestrian?
Busy Streets Can Be a Good Thing
New CEQA Approach

- March 18- New CEQA Greenhouse Guidelines Become Effective
- **Appendix G** – Transportation impact metrics are up to the reviewing agency
- LOS and accommodating traffic are no longer paramount
San Francisco’s Approach

- Reduce vehicle trips, not relieve congestion
- Mitigation may be pedestrian, bicycle, or transit improvements, carpooling, telecommuting, etc.
Complete Streets
AB 1358: Complete Streets Act

- Signed into law in 2008
- Applies during General Plan or Circulation Element updates
- Requires accommodation of all users of the circulation system
- State will issue guidance document
Implementing Complete Streets

1. Revise street design guidelines and policies
2. Revise decision process to include ALL users
3. Staff training
4. Collect *imperical evidence of effectiveness*
5. Evaluate and innovate
6. Repeat
“Current safety objections to the use of livable street treatments are not based on empirical evidence, but are instead the result of a design philosophy that systematically overlooks the real-world operating behavior of road users.”

– Eric Dumbaugh, PhD, PE
“More than 56% of the 6,367 pedestrian deaths in urban areas...occurred on arterial roads.”

- Dangerous by Design, 2009
“Forgiving Highways” Approach Adopted for Local Streets

“What we must do is to operate the 90% or more of our surface streets just as we do our freeways.”

- Kenneth Stonex, General Motors
1966 National Highway Safety hearing
Traffic Safety Studies

- Ignore confounding variables
  - demographics
  - medical care
  - seatbelt use
  - alcohol use

- Factoring out the confounding variables: current safety approaches result in slightly more crashes, not fewer.

Source: Noland 2003
Vehicle Crashes Increase With...

- Lane widths > 9-11’ (Noland 2003)
- Added lanes (Fridstrom and Ingebrigsten 1991)
- Eliminating curves (Shankar 1995)
- Increasing design speed on curves (Shankar 1995)
- Larger shoulder widths (Ivan et al. 2000)
- Cul-de-sac neighborhood form (Marshall and Garrick 2008)
- Increased speed (many studies)
  - Pedestrians are most often killed on arterial roads (NHTSA).
Max. Safety = 24’ Width

Source: Swift, Painter and Goldstein, 2006
Dutch Approach

1. Rejected wider, straighter, faster for urban arterials
2. Equal emphasis on walking, bicycling, and driving
3. Strict access controls on arterials

Result: 40% lower fatality rate, even though they started out 20% higher than U.S.

= 22,000 U.S. lives saved per year
ReThink: Pavement

“Depaving” in Portland, OR
Seattle

“Street Edge Alternatives” Pilot

- 11% less impervious surface
- 99% less stormwater runoff
- 20% lower cost to build
Chicago Green Alleys Program

- Permeable pavements reduce runoff 80%
- Reduce standing water
- High albedo surface reduces heating
- Use of recycled materials
- 80 projects as of 2008
Portland, OR
Green Streets Program
Sustainable Streets: Examples
ReThink: Purpose of Streets
Dual Bike Lanes - Sacramento
Street Redesign, Hamburg, NY
New York City
Street Design Policy

1. **Safety**: Move people and goods safely.

2. **Access and Mobility**: Accommodate all street users, giving priority to the most energy- and space-efficient modes.

3. **Context**: Respond to neighborhood character.

4. **Livability**: Create a vibrant public realm with high-quality public spaces.
New York City
Street Design Policy (cont.)

5. **Sustainability**: Contribute to a healthier and more sustainable environment.

6. **Visual Excellence**: Create coherent and harmonious streetscapes.

7. **Cost-Effectiveness**: Provide the greatest possible value to the public.
NYC Design Manual

- Plan entire ROW
- Detailed checklist of considerations
- What other opportunities does a given project present?
- What innovations can be tried?
- Sustainability opportunities?
“Accommodate all users”
“Safe...Healthy...Sustainable”
“Livability...Cost-Effective”
“Visual Excellence”
“Livability”
Urban Agriculture
US Adoption of the Livable Streets Approach

- *Smart Transportation Guide*, Pennsylvania DOT/New Jersey DOT
- Charlotte
- San Francisco
- Denver
- Savannah
- Portland

- Award-winning
- Emphasizes Context Sensitive Solutions
- A few innovations such as this one:
1. Full Separation of all Modes
- Which is preferred?
- Which is safest?

2. Partial Sharing - Bike/ Vehicle

3. Shared Bike/ Vehicle

4. Shared Ped/ Bike

5. Fully Shared - All Modes
Naked Streets (aka Shared Space)

No curbs
No markings
No signs
No certainty
No speeding
Eye Contact
Sustainable Streets
EPA & UC Davis

- **Movement** – Right-sized, speed-appropriate, serving all users safely and well, minimizing VMT.

- **Ecology** – Water recharge, landscaping, trees, reduced emissions, heat, noise, waste.

- **Community** – Identity, sociability, supporting compact development, local materials/designs, value, safety, environmental justice.
WANTED
Better Public Process

- Current process is broken
- NIMBY’s are not representative
- Who speaks for the public interest?
Perth Model

- Establish a volunteer “jury” pool
- For each project, draw 50 jurists
- Train them on the project & all issues
- They present their findings at public hearing after the Proponents and NIMBY’s have spoken
“The livability revolution has begun. There is no turning back.”
A Proposal

One year from today, San Diego APA issue a guidance document on how the region’s municipalities should revise their street design standards and practices to:

- Advance the promise of SB 375.
- Comply with the Complete Streets guidance.
- Increase walking and bicycling mode shares.
- Reduce traffic fatalities throughout the region.