How Should Planners Think About Autonomous Cars?

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What Do We Call Autonomous Cars?

- Autonomous
- Self-driving
- Driverless
- Robot
Promise of Autonomous Cars

• Safety improvements
  – 33,000 deaths annually on the road

• Congestion reduction

• Reduced parking demand
  – Reduced parking supply

• Shared rides/taxis

• More productive travel time
AVs on the Road: Trucks in Europe
Self Driving Campus Shuttles
CES: New Entrants to Planning
Autonomous Drone People Carrier
Driverless Cities?

• “We’re looking at the broader urban effects—and urban opportunities—of this technology,” says Illinois Tech architect Marshall Brown, one of the team members in the Chicago school’s Driverless Cities Project. “It’s in the news a lot, but nobody’s been discussing what it will actually do to cities.”

• Wired April 6, 2016
What will driverless cars “do” to cities?

• New technologies don’t “do” anything
• Adoption and use of new technologies depends on multiple factors:
  – Cost
  – Ease of use
  – Usefulness
  – Solves a problem that can’t otherwise be solved
Planners Realm

- Street design
- Network design
- Road pricing
- Parking requirements
- Curb management
Engineering Streets
Implications for Wayfinding

Readers React

How an app destroyed their streets: Readers count the Waze

Related Coverage

Time to rein in California's traffic ticket surcharges
MAY 1, 2015

In Case You Missed It

Waze, L.A. to share data on traffic, hit-and-runs, kidnappings
APR. 21, 2015

Vehicles crowd the intersection of Cody Road and Woodcliff Road in Sherman Oaks on Jan. 5. Residents say the worsening traffic on side streets is partially to blame on Waze. (Los Angeles Times)
Street Designation

• Autonomous cars and routing software are optimized for either shortest distance or shortest time

• Routing through residential (or other) neighborhoods may diminish quality of life?

• Return of the cul-de-sac?

• Private streets?
Street Hierarchy

- Local street
- Through street
- Boulevard

Through Traffic Movement and Speed:
- Freeway
- Arterial
- Collector and Distributor
- Local

Access to Property
Allocating space
Competition at the curb
Street Design

• Designate street type

• Street engineering and design
  – Support cars (orderly)
  – Support people (not orderly)

• Continuous sidewalks

• Space for quick stops/taxi stands
Street Types: Transport for London
Physical Adaptations to Streets
Continuous Sidewalks
Pricing

• Key Point: Until we know how much autonomous and/or shared cars will cost to buy and operate, we do not know how they will be adopted or used

• Planners do not have influence on production costs, but are able to use road prices to affect behavior
The Low, Low Cost of Automobility

- Parking is required everywhere, which causes the price for off street parking to be free in most places
- Road access is free in most cases
- Gas taxes have lagged inflation and investment needs for decades

- *If driving remains cheap, then people will still drive everywhere*
If driving remains cheap?

- People may buy autonomous cars
- Incentive to share rides is low
- Scant reduction in traffic, though flow may improve on the margins
- People may favor longer distance commutes
  - No stress of driving

- Prediction: status quo is durable
Should driving be more expensive?

• Road access fees
• Vehicle miles traveled fee
• Parking fees
• Fuel taxes
• Carbon taxes
If driving is expensive?

• People will switch to other modes
• People will travel less overall
  – Telecommuting
  – E-commerce and delivery
  – Satellite offices

• Will people share rides with strangers?
  – Will users have to register and pass background check?
Looking forward

• Technological advances and financial constraints are changing travel options and costs

• Local planners are at the center of shifts in policy
  – Transportation Demand Management
  – Parking requirements
  – Allocation of street space
What Should Planners Do?

• Reorder street hierarchy
• Implement street designs that a robot can understand
• Create space on streets for pick up and drop off
• Design buildings and parking to be adaptable to new uses
  – Changes in land use regulations based on service levels will be difficult
• Use prices to affect behavior