Fear & Optimism about Our Future
I’ve been deeply worried about the implications of CLIMATE CHANGE and AUTONOMOUS VEHICLES
Globally: is this year hotter or colder than 20th C average?
Scientists tell us we will be +5-6°C with BAU.

Globally: is this year hotter or colder than 20th C average?

Scientists predict +5-6°C by 2100 under BAU.
THICKNESS OF THE ICE SHEETS
AT VARIOUS LOCATIONS 21,000 YEARS AGO
COMPARED WITH MODERN SKYLINE

CREDIT: RANDALL MONROE
“The infrastructure we build over the next 3 years will determine the fate of humanity.”

--Christiana Figueres
“It’s irrelevant to my city”

“It won’t happen in my city for decades.”

“Pilots are happening in my city right now”
We get to AV HEAVEN
By fixing NOW the problems that have us currently living in transport HELL
Mobility Principles for Liveable Cities

The future of mobility in cities is multimodal and integrated. When vehicles are used, they will be right-sized, shared*, and zero emission. These principles will guide urban decision-makers and stakeholders toward the best outcomes for all.

1. Plan cities and mobility together
2. Focus on moving people, not cars
3. Encourage efficient use of space and assets
4. Engage stakeholders in decision making
5. Design for equitable access
6. Transition towards zero emissions
7. Seek fair user fees
8. Deliver public benefits via open data
9. Promote integration and seamless connectivity
10. Automated vehicles must be shared

*Shared vehicles include all those used for hire to transport people (mass transit, private shuttles, buses, taxis, auto-rickshaws, car-sharing, and bicycle-sharing) and urban delivery vehicles.

SharedMobilityPrinciples.org #LiveableCities #10principles
- Transition to zero emission
- Encourage efficient use of space and assets
- Seek fair user fees across all modes
- Deliver public benefits via open data
Start with intensively used vehicles!

Buses
Taxis
Utility
Delivery

Have goals for all vehicles

When AVs arrive, shared ones would have to be ZEV; maybe personal ones too.

Transition towards zero emissions

POLLUTED AIR: 7 million premature deaths per year, 50% linked to transport
Encourage efficient use of space and assets

ROAD CRASHES: 1.2 million deaths per year
OBESITY linked to LACK OF PHYSICAL ACTIVITY: 2.8m adult deaths per year
Here are 200 people in 177 cars
space required to transport 60 people

car
bus
bicycle
space required to transport 60 people
(inefficient) USE OF SPACE TODAY
MAKING SPACE FOR EFFICIENT MODES WITH LANE ALLOCATION

<table>
<thead>
<tr>
<th>Mode</th>
<th>Capacity</th>
<th>Transportation Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>SHARED TRANSPORT</td>
<td>50 people</td>
<td>🚌</td>
</tr>
<tr>
<td>CYCLE</td>
<td>20 people</td>
<td>🚴</td>
</tr>
<tr>
<td>PRIVATE CARS</td>
<td>6 people</td>
<td>🚗</td>
</tr>
</tbody>
</table>

When AVs arrive,
If they are SOV, they will travel here.
(inefficient) USE OF CARS
undeniable proof that SHARING WORKS

• Is welcomed by mainstream city dwellers

• A viable business model

• Produces real CO2 reductions (& other city benefits)

• Is simple thanks to tech
Zipcar: 1 million people sharing 13,000 cars around the world,
Each car replaces 13 personally owned cars
(Removing 1,729,000 cars from cities!)

In Cambridge MA:

25% of Cambridge residents are members!
~200 zipcars
~2600 fewer cars!

2003-2016 a 22% decrease in parking registrations per household
TODAY: Weak wrong unfair pricing

- Road User Fees that cover costs!
- Honest Parking (curb access) fees
- Pollution/Air Quality fees
- Congestion Pricing
  - Per square meter?!
An analysis of New York City e-hailing (TNC) data

- net increases of 31 million trips and 52 million passengers over the past 3 years

- the addition of 600 million miles of vehicular travel over the past 3 years (+7%!)

- increased congestion
Solution is NOT to tax or ban e-hailing or taxis

Surge pricing IS congestion pricing with revenues going to company rather than government!

FAIR USER FEES ACROSS ALL MODES

And to use congestion pricing revenue to improve sustainable transit modes
HOV lanes with dynamic pricing (Lexus) lanes (!)  →  Urban HOV3+ lanes & paid
• Road User Fees that cover costs!
• Honest Parking (curb access) fees
• Pollution/Air Quality fees
• Congestion Pricing
  • Per square meter?!

When AVs come, we will already be getting revenue from pickup, dropoff, delivery curb management fees, so loss of parking fees won’t bankrupt us.

When AVs come, well-priced congestion pricing will disincentivise Zombie cars (zero occupancy).

*Shared vehicles include all those used for hire to transport people (mass transit, private shuttles, buses, taxis, auto-rickshaws, car and bike-sharing) and urban delivery vehicles.
8 Deliver public benefits via open data

*Shared vehicles include all those used for hire to transport people (mass transit, private shuttles, buses, taxis, auto-rickshaws, car and bike-sharing) and urban delivery vehicles.
Transportation networks tend toward monopoly

Monopolies (even regulated ones) innovate little. Global monopolies exclude local & startup companies
Ensure Competition & Interoperability

We must demand the use of Standard Open Data for Shared Rides (see OTP.org), and Metros & Buses (GTFS).
If we follow rules 1-9, ELECTRIC + SHARED + AUTOMOUS will happen naturally.

If we fail to execute perfectly this rule #10 will still make it happen.

No matter when AVs arrive, we will have made our cities better!
INFRASTRUCTURE IS DESTINY

EXCLUSION: roughly 1 in 6 people (1.3 billion) remain in extreme poverty
LET’S CREATE THE WORLD WE WANT TO LIVE IN
LET’S CREATE THE WORLD WE WANT TO LIVE IN

SharedMobilityPrinciples.org