

The cognitive consequences of the future of the car

Some notes from the discussion in lecture May 7, 2009. [Comments in brackets indicate obvious connections to steps on Vicente's Human-tech ladder. These lists are partial. There may be many more connections.]

Driving:

How do people learn to drive (remember your experience may not be typical)? Driver education is a big business. How will millions of new drivers learn in the future? [physical, psychological (what is learned and how is it learned), team (instructor-student interactions), organizational (schools), political (certification of schools, granting of licenses)].

All cars provide an interface to the car's functions. How will this change in the future? What should we do NOW to be sure that the interfaces are useful and safe? [physical, psychological, team (your passenger may be involved), ...]

Cars will become increasingly automated in the future. They may include a smart bumper, adaptive cruise control, lane keeping support, driver vigilance monitoring, and automatic separation from other vehicles, blind spot compensation, automatic braking, and even hands-off operation. [all levels]

Adding information technology to the car. Driver is an active agent. Driver distraction is a very interesting and rich topic. Adding information to the driver's environment could cause distraction, but perhaps it can be handled in a way that is not dangerous. [physical, psychological, team]

<http://www.sandia.gov/news/resources/releases/2007/smartcars.html>

This press release from Sandia National Laboratories describes a study much like the one described in class on May 7, 2009 (conducted in the lab I share with Professor Jim Hollan). The researchers tapped into the car's computer to monitor what was happening to the car, and instrumented the driver to monitor driver behavior. Putting the two together may allow the car to know when things are going wrong. This could be used to alert the driver to a problem situation or to manage the presentation of information to make sure the driver does not become distracted as a critical moment. [physical, psychological]

The issue of managing the presentation of information based on operator activity was encountered in aircraft design many years ago. In a modern airliner, warnings are prioritized. During critical operations, (the takeoff roll, for example) all but the most serious warnings are suppressed. [physical, psychological]

Roads: road design, roundabouts versus intersections, road markings, signs, signals, putting information in the road that can be sensed by the car. [physical, psychological, team, organizational, political]

The decision to drive:

What are the alternatives? (walk, bike, bus, train, plane, boat...) How is the space of alternatives likely to change in the future?

What are the purposes of driving? How do they affect the decision to drive? What about how your daily activity cycle intersects with the activity cycles of the various transportation alternatives?

[psychological, team, organizational]

Schedule, routes, costs (operating, parking, maintenance, acquisition). [psychological, organizational]

Our reliance on cars is partly a product of choices made over the past 60 years in urban planning (or lack of urban planning). We live in sprawling suburbs often far from our workplaces. These suburbs may be hostile to pedestrians or bikers and may not be served by public transportation. (There is an interesting film on how suburban sprawl has structured American life. I'm trying to remember the film's title.)

[political]

Choosing what to drive:

What factors enter into the choice of vehicle? How will the space of alternatives change in the future?

[psychological]

Consider the range of sources of energy being considered: Super efficient gasoline internal combustion, ethanol (check out what Brazil is doing with ethanol), other bio-fuel (bio-diesel), hybrid, all electric, fuel cell (note: NY Times story 5/7/09 reports that the Obama administration has suspended all funding for the development of fuel cell technology, declaring it impractical). How do people understand this space of choices? [psychological, organizational, political]

What can we learn about the intentions of the automobile industry by examining marketing and advertising? [physical, psychological, organizational]

The automobile is part of American culture. How will the role of the car change in the future? [I'm declaring a new level: Cultural]

Big oil companies make claims about environmental responsibility? How are they moving to anticipate the marketplace of the future? (Organizational and political). What are they doing to sway public opinion? [psychological, organizational]

Traffic:

Driving in traffic is a team sport. This would be a nice topic in which emergent properties could be explored. [psychological, team, organizational, political]