CS 103: Lecture 6 Traffic at Equilibrium

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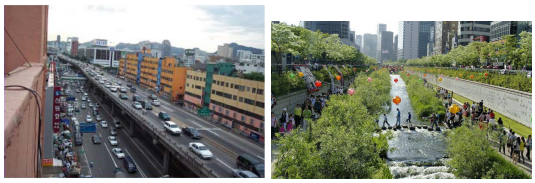
October 7, 2015

Announcements

- HW 2 due Thursday
- Office Hours
  - Dan Tuesday 4-5pm
  - Areeba Tuesday 7–8pm
  - Tiffany Wednesday 8–9pm
- Blog posts!

Braess's Paradox

Dietrich Braess 1968



- Seoul,South Korea, mid-2000s: Cheonggyecheon restoration project
- Congestion improved after major highway removed

Braess's Paradox

Board work: present equilibrium model and analyze Braess's paradox

Braess's Paradox

- NYC 2009: experimental road closures reduce congestion

Reflections on Braess's Paradox

How much worse can average commute time be for NE than the "social optimum"?

- social optimum = route choices that minimize average commute time
- the "price of anarchy"

Eva Tardos and Tim Roughgarden (early 2000s): if edge delay functions are linear ($x/100$, $10x$, $4.2x + 15$), then the price of anarchy is $4/3$.

- Average commute time of NE is at most $4/3$ times the social optimum