ll systems are the same,

ut not CS.

6.033 Lec 2 2/13/06

Today

- $\frac{d\,tech}{dt}$ is large in CS
- Unbounded composability
- ~~complex~~ Easy to build (too) complex

① **Digital HW**

- No limits to composing transistors
  - static discipline
- Moore's law
  Cost effective to put on die

→ noise free

→ be tolerant of inputs and strict on outputs

(show law, through slide 15)

② **SW**

- No limits to composing
  - HW needed to run
  - Interfaces
- ~~[illegible]~~, tools.

⇒ Single person can build complex

6.170. ↓ ~~[illegible]~~, slide 15.

③ $\frac{d\,tech}{dt} \approx tech(t)$

$tech(t) \approx e^{t}$

6 hours ≈ 21,600s 10^4 → 2^{10} → 1000

main bound is human/imagination

↳ 19 yolds can make contribution.

~~[illegible]~~.

Effects

- ~~[illegible]~~
- Feature creep.
- Bugs → ~~Pervasive~~ slide 17 + 18
- ~~Never build [illegible]~~
- Embedded → slide 19

⑤ **Challenges**

① ~~Latency~~ ~~Robustness~~ Handling complexity

② Latency → ② Robustness

③ Energy

⑤ Humans → UI → weak link.

⑥ **Coping principles** + isn't enough

- modularity ~~[illegible]~~
- ~~design for~~ iteration
- keep it simple → adopt sweep simplicat
- ~~[illegible]~~
- think (dp1 + dp2)

had to figure right modularity

take small steps

↳ transactions.

Implications

~~[illegible]~~ Unlimited opportunity ~~feature creep~~ Too much

Perf optimal.

- ~~[illegible]~~
- ~~[illegible]~~
- Pervasive ← slide 17 + 18
- Embedded → slide 19
- ~~Incommensurate scaling~~ ~~[illegible]~~

⑤ **Challenges**

- ~~Handling~~ complexity → feature creep.
- Robustness → weak link.
- ~~Latency~~ Humans < UI (Minerva) / ~~[illegible]~~
- Society + laws < legal time scales slow / tech can solve it (security).
- ~~Latency~~ Incommensurate scaling 26/29
- ~~Energy~~