

1) Sustainability (aka sustainable development?): “*development that meets the needs of the present without compromising the ability of future generations to meet their own **needs**.*” 1987 Brundtland Commission  
<http://en.wikipedia.org/wiki/Sustainability>

2) Why should humans persist ... why do we care? Why should the rest of the ecosystem persist?

3) What should be sustained (**needs**) and for how long?



3) AI as protector of humanity in Science Fiction

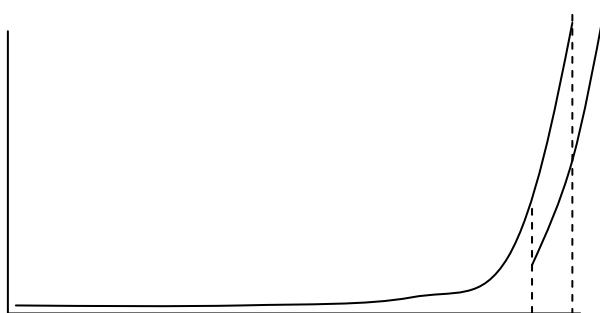
4) Science (Constructing systems that reason about and compensate for myopic human decision making)

What's our best? Recycling, typically **down**cycling (Vandy cup, cars, computers); energy savings/efficiency (hybrids)

AI and sustainability in the small: smart cars, smart highways, smart homes, smart buildings, smart grid, smart ?

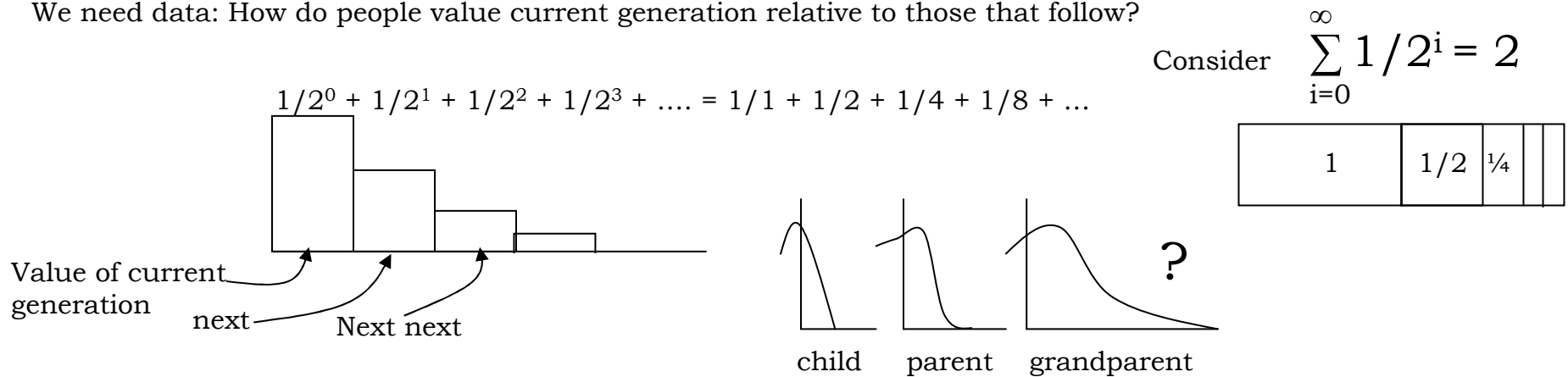
These strategies often limited to (materially-wealthy) subpopulations and constant-factor improvements  
“*Being less bad is no(t) good (enough)*” (Cradle to Cradle, McDonough and Braungart +(DF))

“ecological footprint” over time



Constant-factor improvements (e.g., everyone cuts energy use by 1/2, where 1/2 is the constant) doesn't slow things down enough in long term, but is critical/huge in near term

We need data: How do we value current generation relative to those that follow?



Is it right to give increasingly smaller values to future generations? At what rate? Do we want to maximize an infinite sum or something else, like a per generation average? In the infinite sum model, is there an fixed generation lookahead that will insure indefinite, long-term sustainability? (e.g., seventh-generation: *"In every deliberation, we must consider the impact on the seventh generation... even if it requires having skin as thick as the bark of a pine."* —Great Law of the Iroquois) How is *value* measured? (what is valued?)

AI (and computing) and sustainability in the large (1): help make everything local – regionally, temporally, socio-economically local. For example allow a parent to look into a possible future for their children and grandchildren; the implications of outcomes of the poor for wealthy; report ecological footprint of a YouTube video – AI as a pedagogical tool

AI as tool in reconceptualizing design – not cradle to grave, not limited (including 0) time reuse/recycling, but indefinite time reuse (e.g., Cradle to Cradle book: [http://www.greencleanbook.com/about\\_durabooks.html](http://www.greencleanbook.com/about_durabooks.html))

AI as a decision making aid (personal, corporate, government): from <http://www.climatecounts.org/> to regional government adaptation to climate change