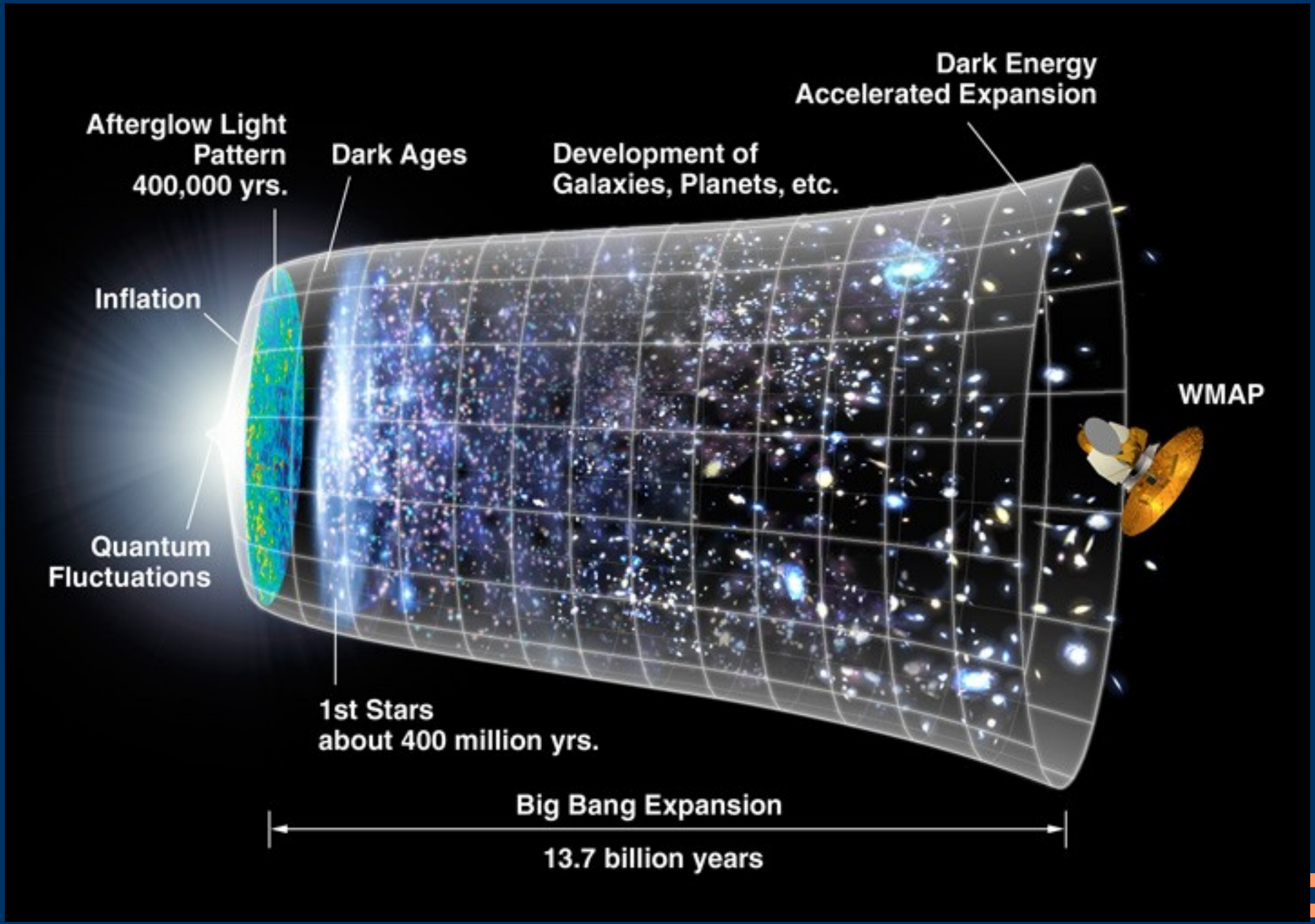
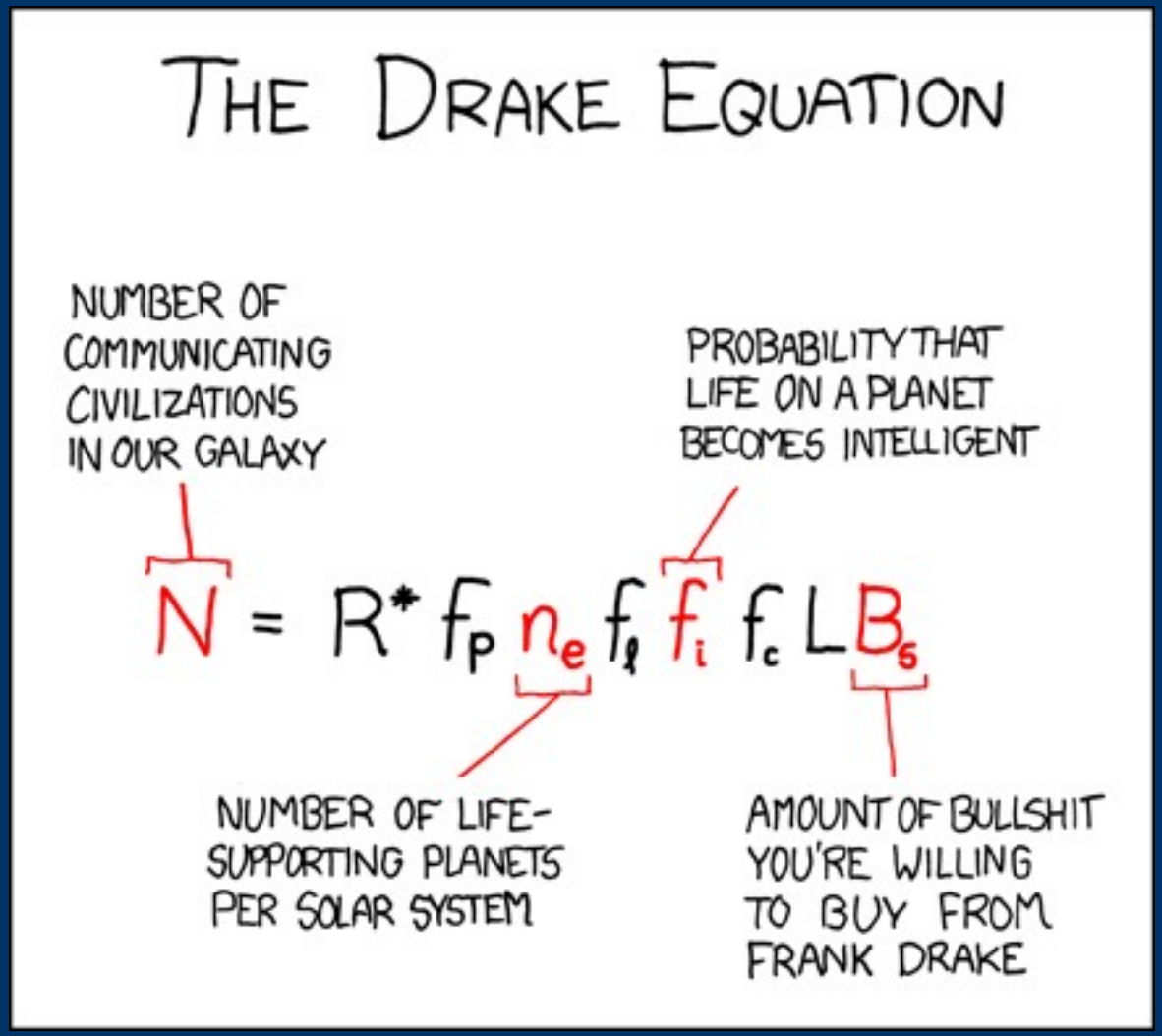

The Fermi Paradox
Where the hell is everyone?
Matthew Dockrey
May 30 2008


(Galaxies: Still ginormous)

Older than dirt (literally!)



The Drake Equation



The Drake Equation 2: Drake Harder

$$N = R^* \times f_p \times n_e \times f_\ell \times f_i \times f_c \times L$$

N – number of advanced civilizations in our galaxy

R^* – average rate of star formation in our galaxy

f_p – fraction of stars that have planets

n_e – average number of planets that can potentially support life

f_ℓ – fraction that develop life

f_i – fraction that develop *intelligent* life

f_c – fraction of technological civilizations

L – length of time such civilizations release detectable signals into space.

The Drake Equation 3: The Drakening

- Original numbers gave a value of 10
- Current estimates give 2.3 or lower
- ...these numbers don't mean much

Planets

- We can now see that lots of sunlike stars have planets
- Unfortunately, most of them are gas giants in very close orbits
- But that's very likely to be sampling bias, because those are the only ones we can detect
- Current conclusion: our solar system isn't particularly noteworthy, though maybe not common

Life

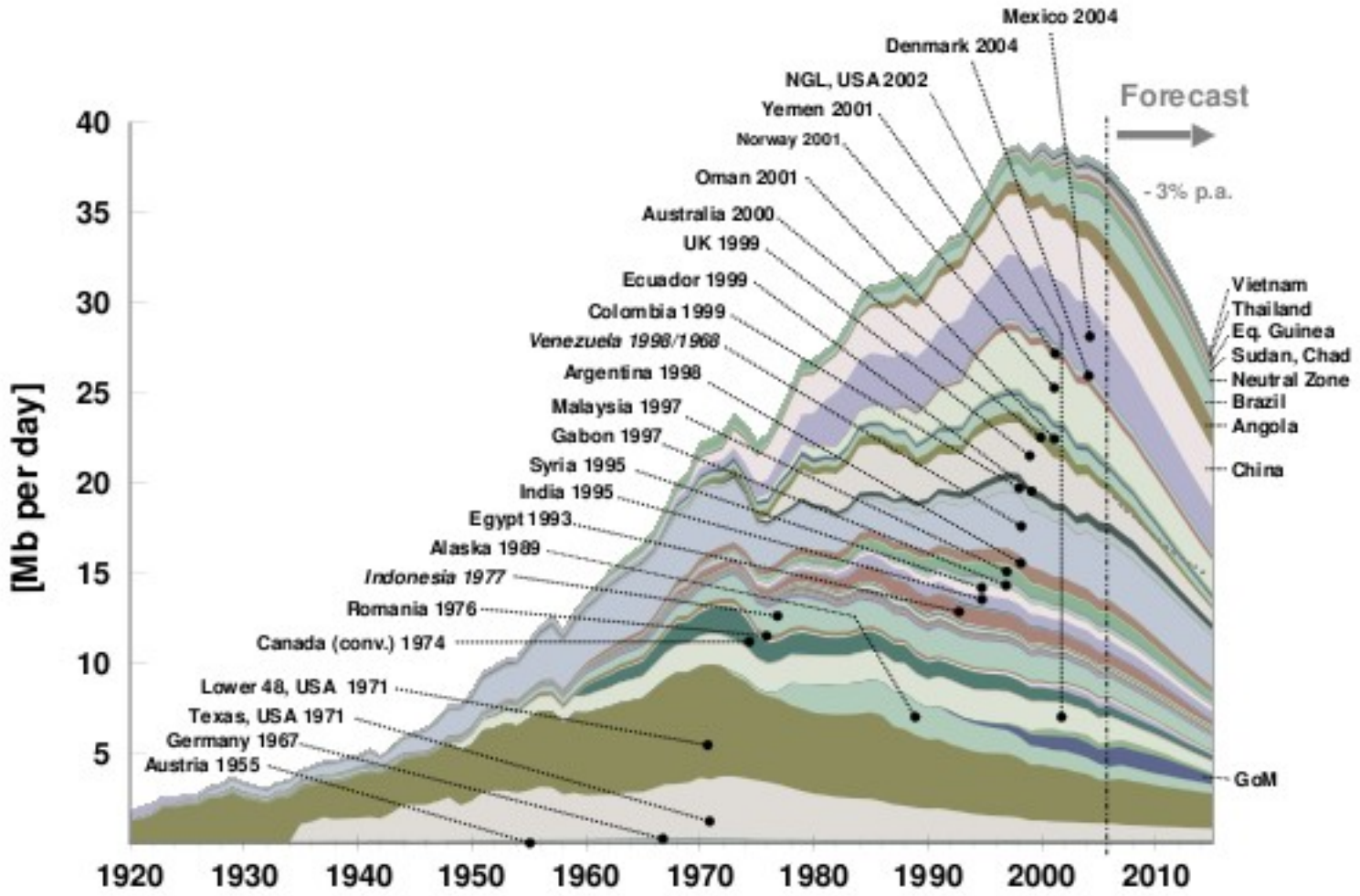
- Current theory suggests single-cell life develops about as soon as possible
- Multi-cellular life might be much harder
- This is why Mars and Europa are so important

Intelligent Life

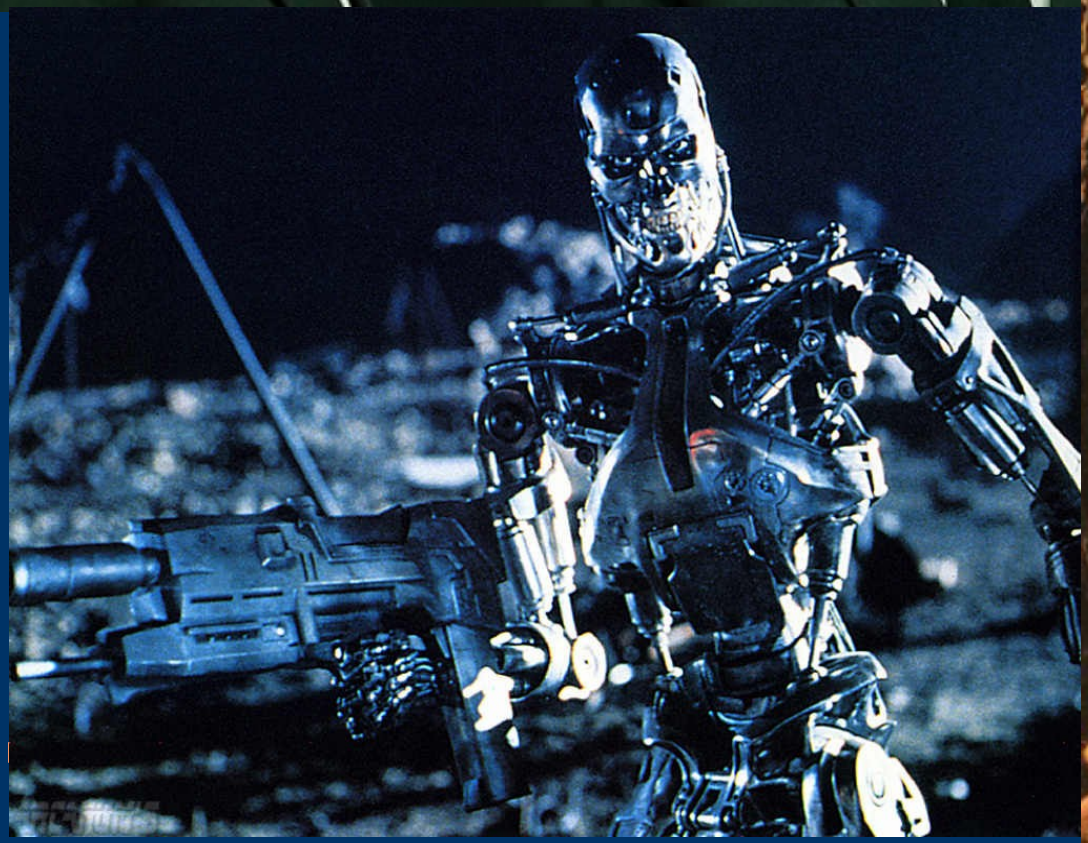
Technological Civilization

Duration: The Great Filter

Figure 5: Oil producing countries past peak

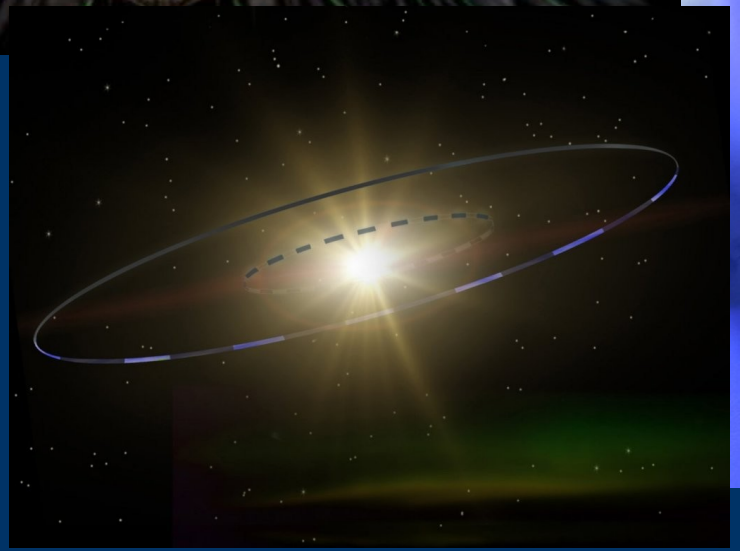


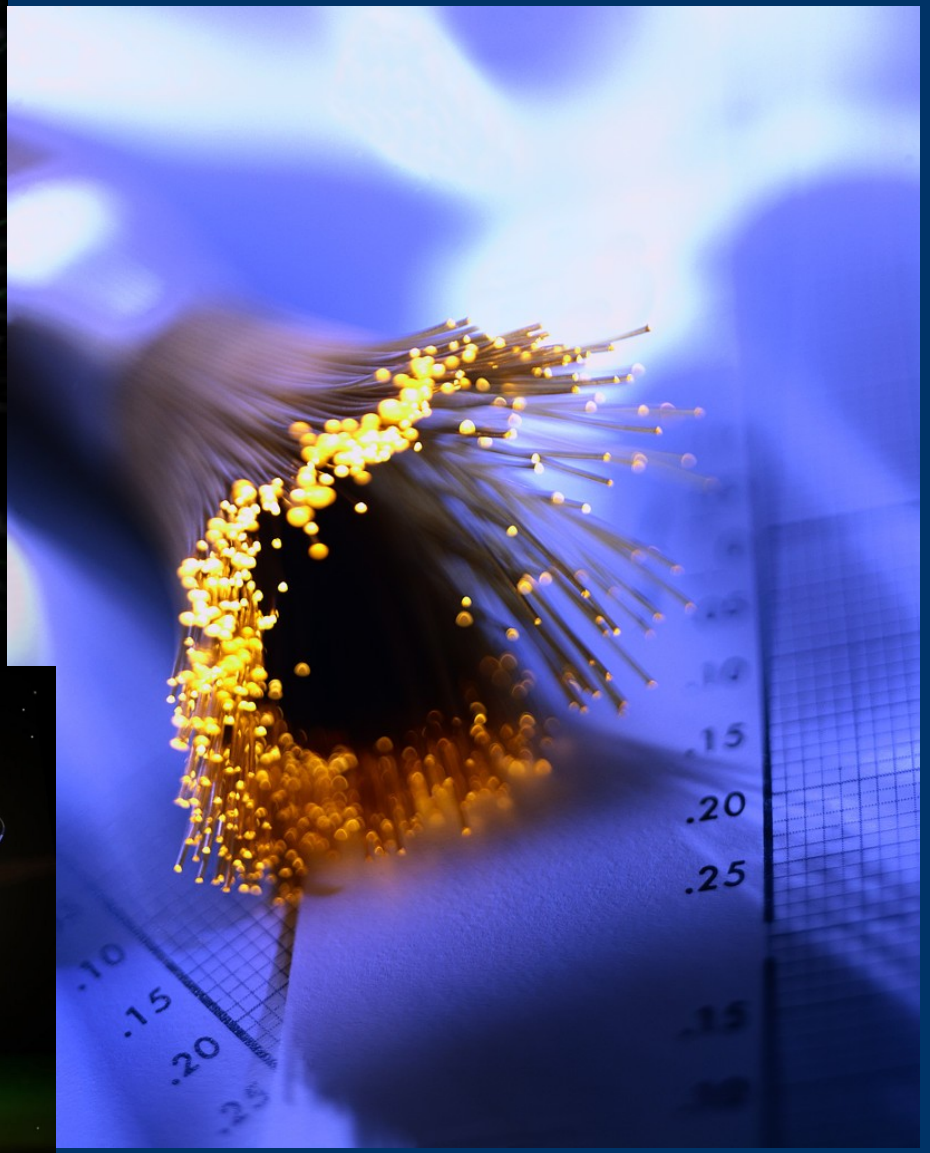
Ludwig-Bölkow-Systemtechnik GmbH, 2007
Source: IHS 2006; PEMEX, petrobras ; NPD, DTI, ENS(Dk), NEB, RRC, US-EIA, January 2007
Forecast: LBST estimate, 25 January 2007




We reject the Asimov rules for robots. We work for the rulers, not humanity.
Elaine Melnel Supkis

Not all doom and gloom... maybe





What does this all mean?

- We're either very improbable ...
  - It is up to us to give the universe meaning
- ... or technological civilization as we understand it doesn't tend to last.
  - At the moment, I'd say resource depletion
  - 30 years ago, I'd have said nuclear war
  - 30 years from now, who knows?
- Either way, rather daunting.

The End