

The future of science

(and Biometrics)

Dr. Eric Haseltine

*“Prediction is difficult..especially
of the future”*

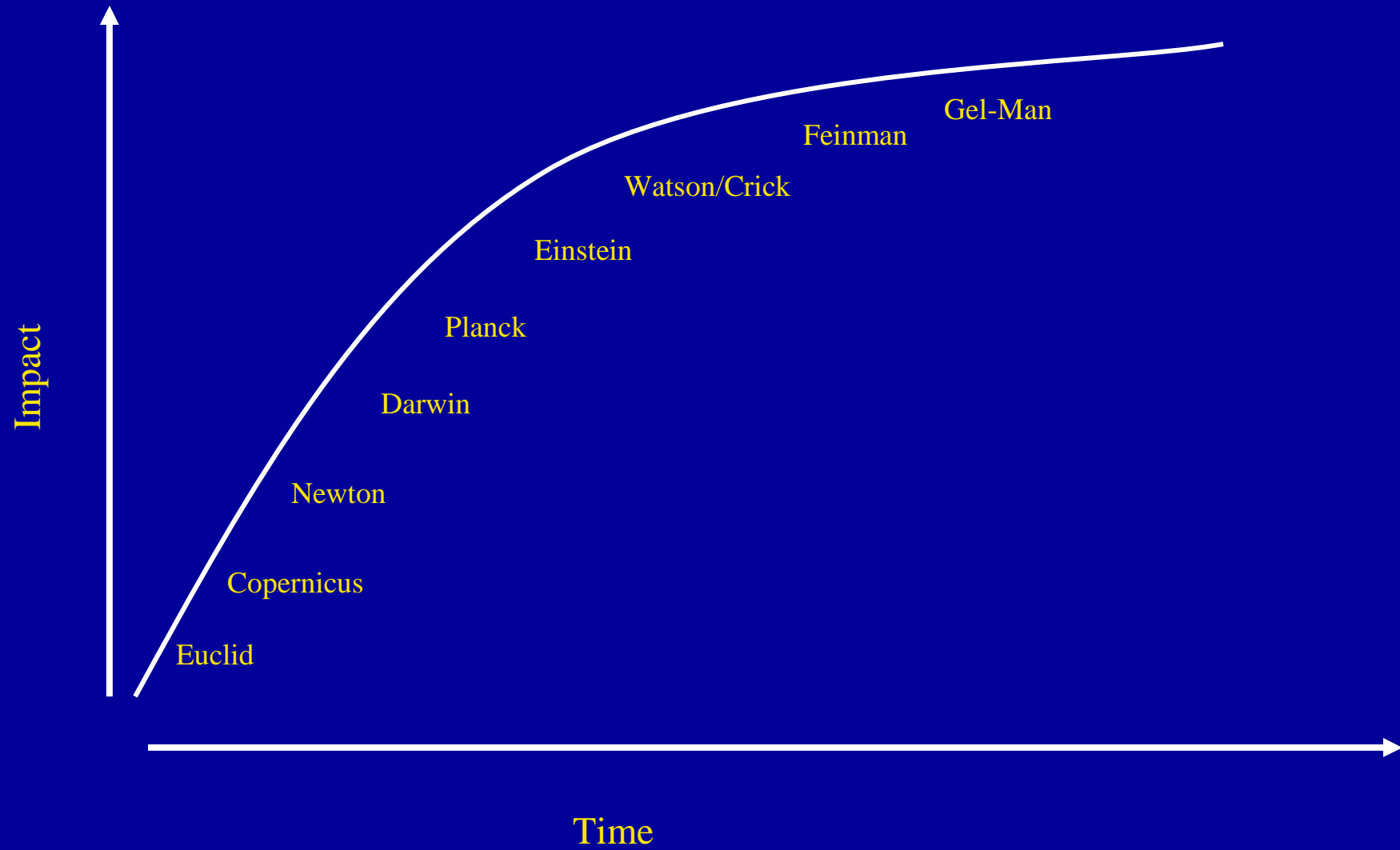
Niels Bohr

- Does science have a future?
- Mining the past for clues
- Past as prologue

Is science dying?

- Horgan
 - Low hanging fruit plucked
 - Cost growing rapidly
 - Diminishing returns
 - Incremental vs. Fundamental





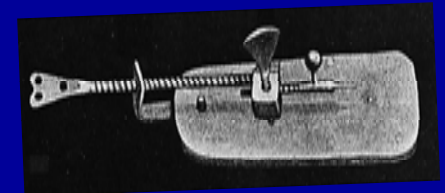
Yes, but...

- Demise predicted before
 - Michelson 1900 “polishing decimal points”
 - Quantum physics and Relativity followed a few years later

Mining the past

Signatures of historic breakthroughs

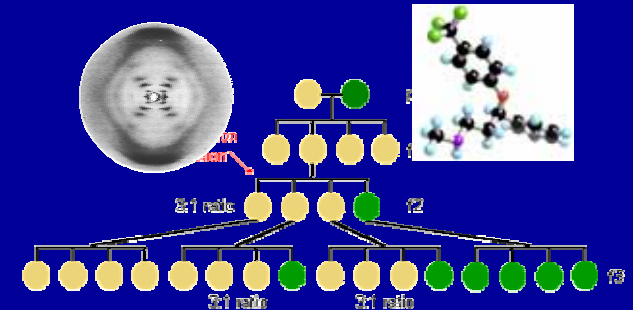
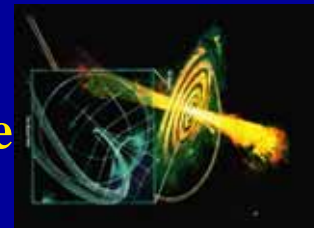
- Galaxies & microbes:
revolutionary instruments



- Microbes & disease: **fringe theory**



- Relativity & DNA: **convergence**

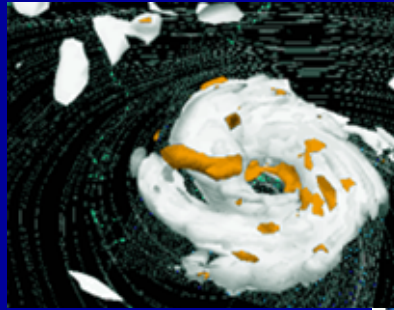


- Helio-centrism & evolution:
remove humans from center of creation

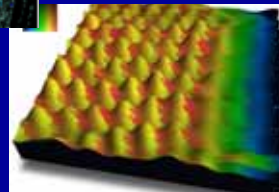


Revolutionary Instruments

- Supercomputers



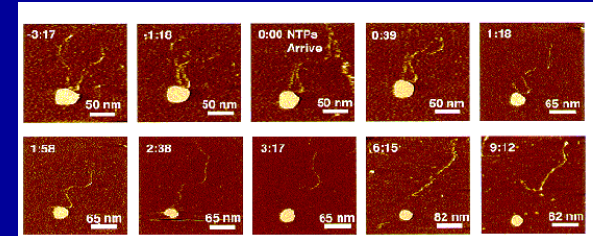
- Atomic Force Microscopes



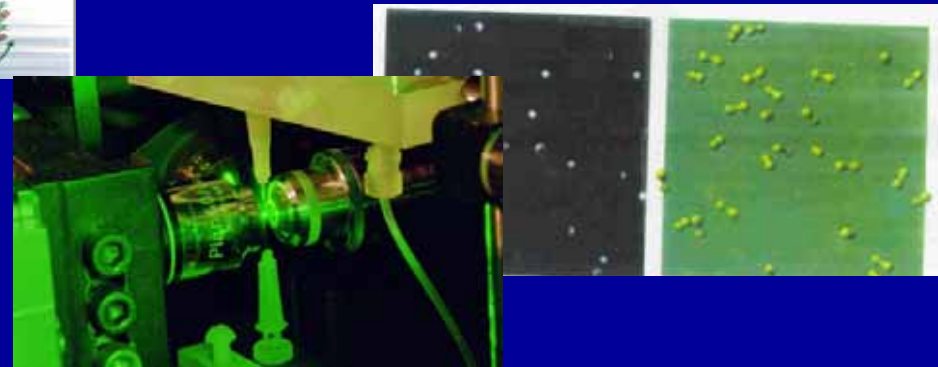
- Ultrafast Lasers



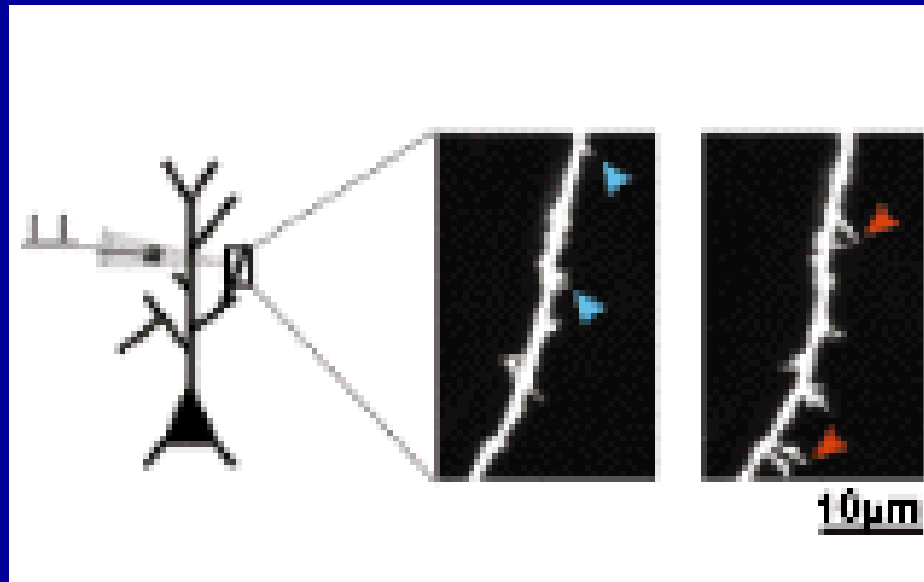
- Single Molecule Detectors



- LIGO



Revolutionary instruments



Long term in-vivo imaging of single neurons during learning

“Fringe” theories

- Fossil fuels... aren't



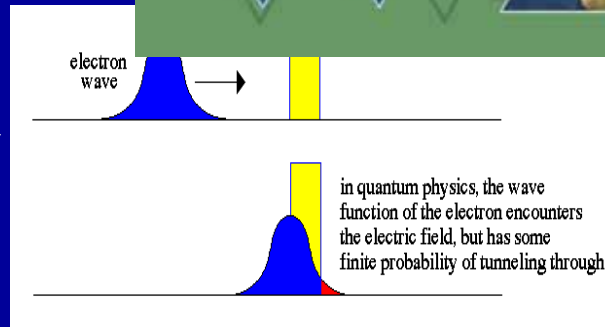
- No time



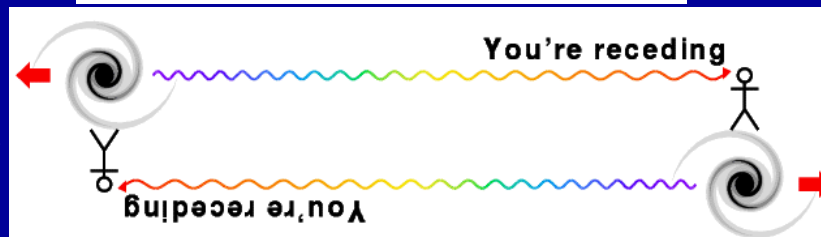
- Many worlds



- Superluminal Travel

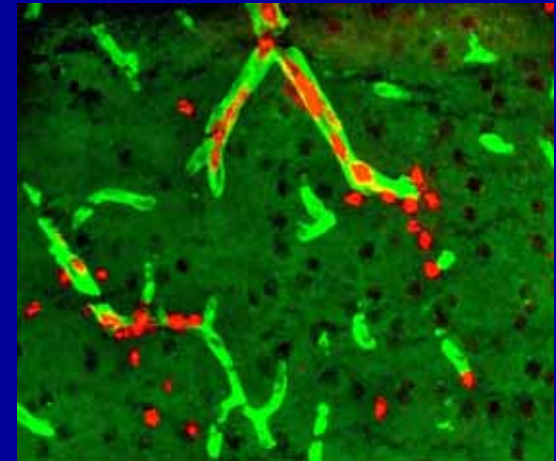


- Redshift is a hoax

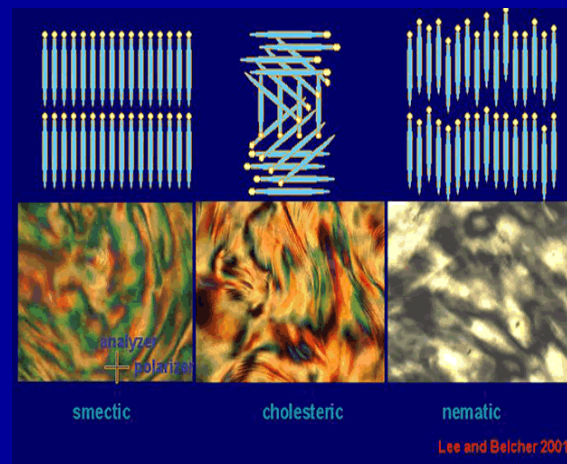


Convergence

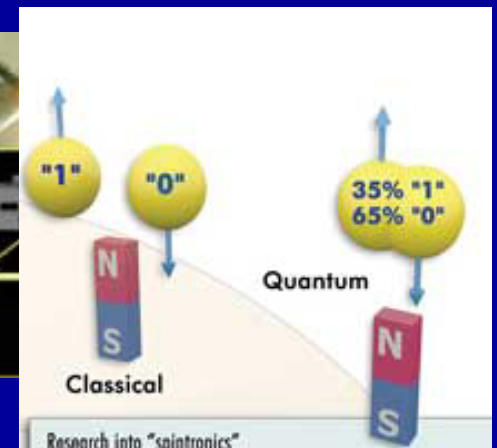
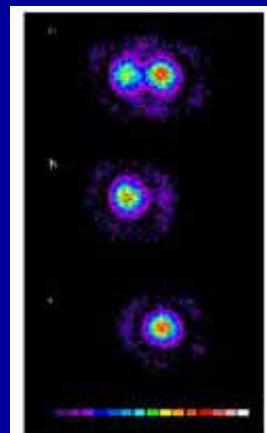
- Psychoneuro-immunology



- Nanoscience

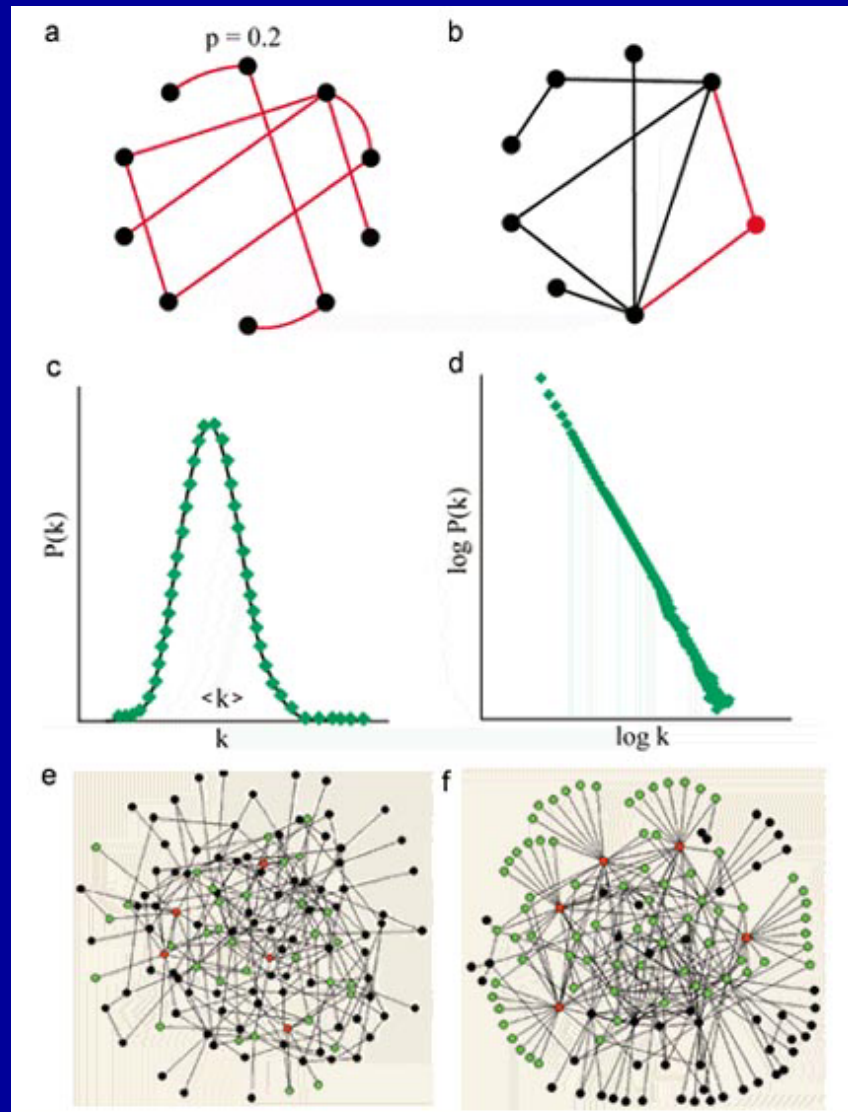


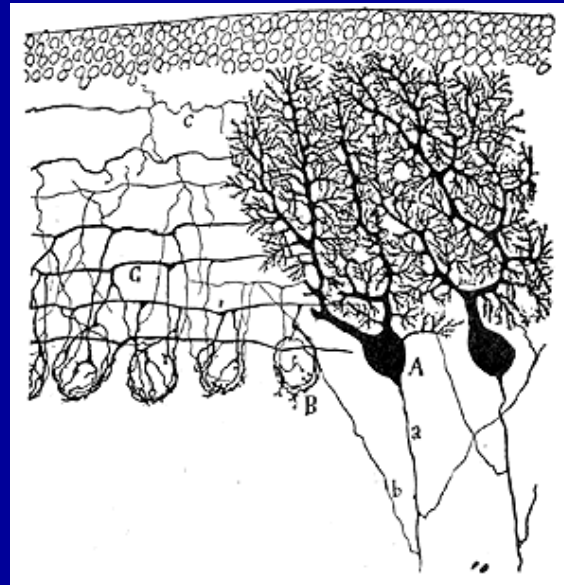
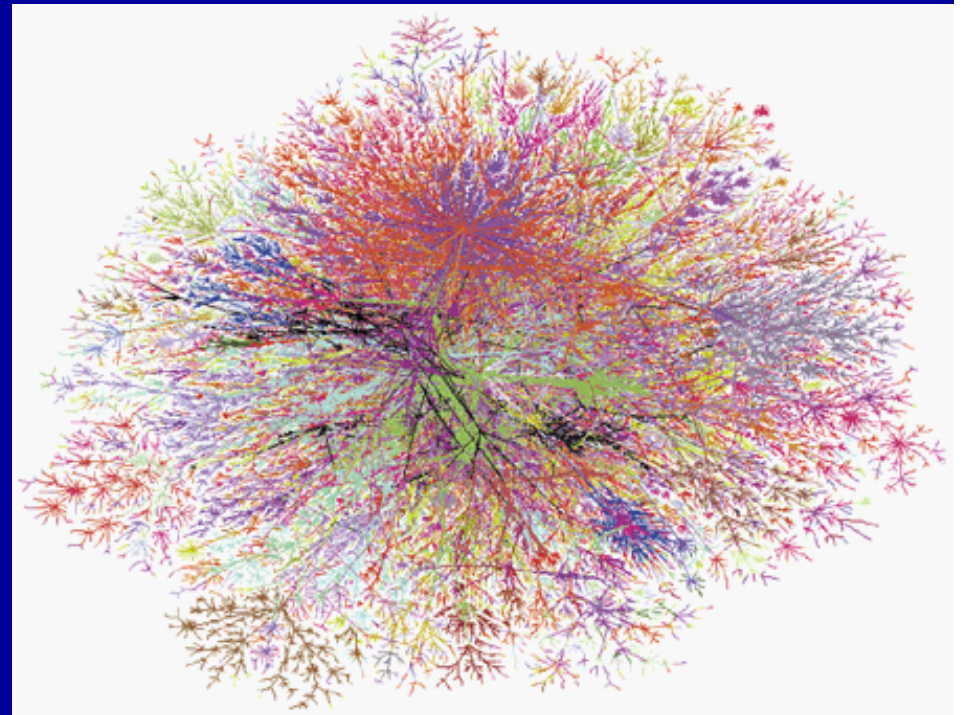
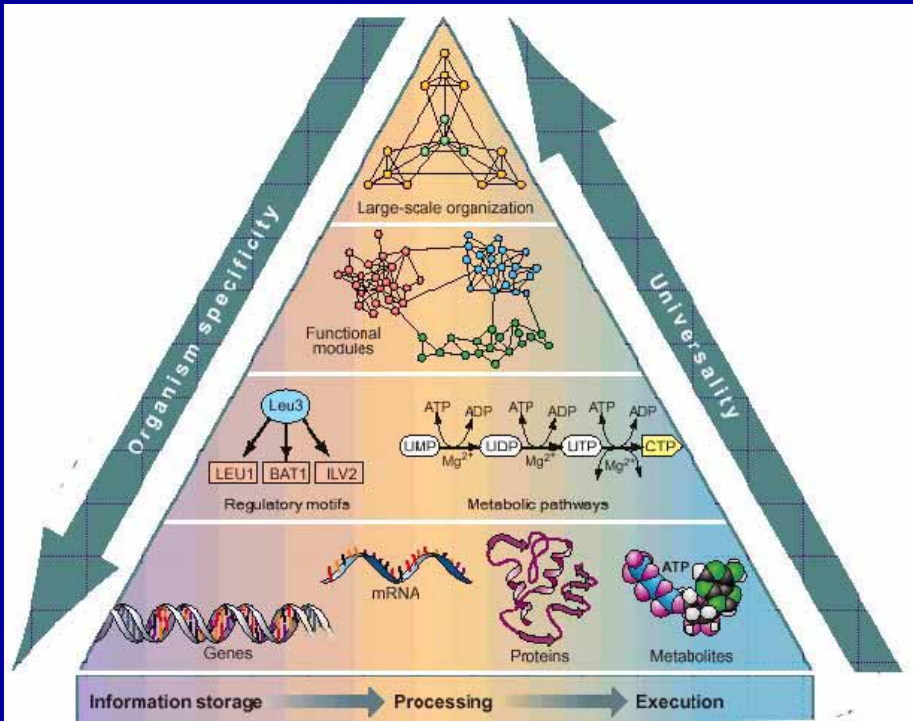
- Quantum computing



Convergence

Power law Networks





Demoting humans

- Gaia



- Multiple universes



- Self-aware animals



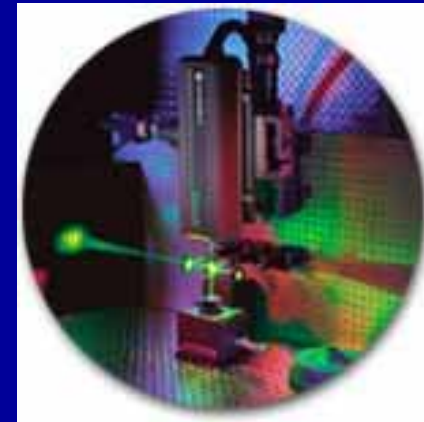
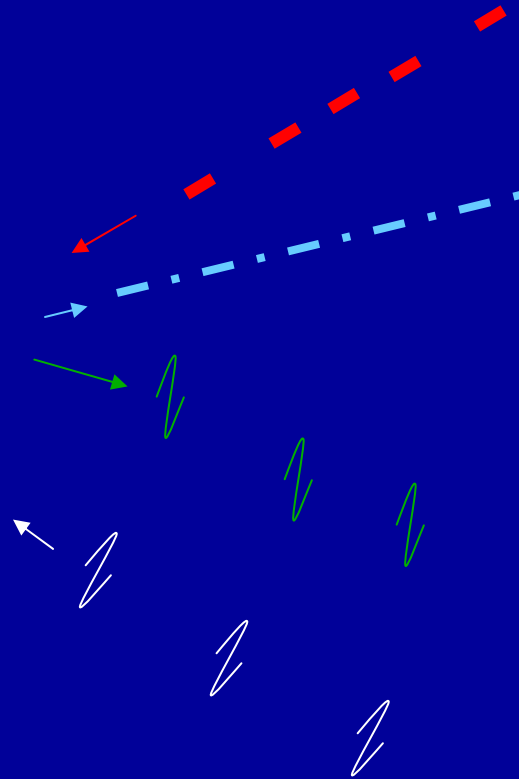
Humans 2.0



Implications for Biometrics

- New instruments
- Fringe theories
- Convergence
- Displacing humans from center of universe

New instruments

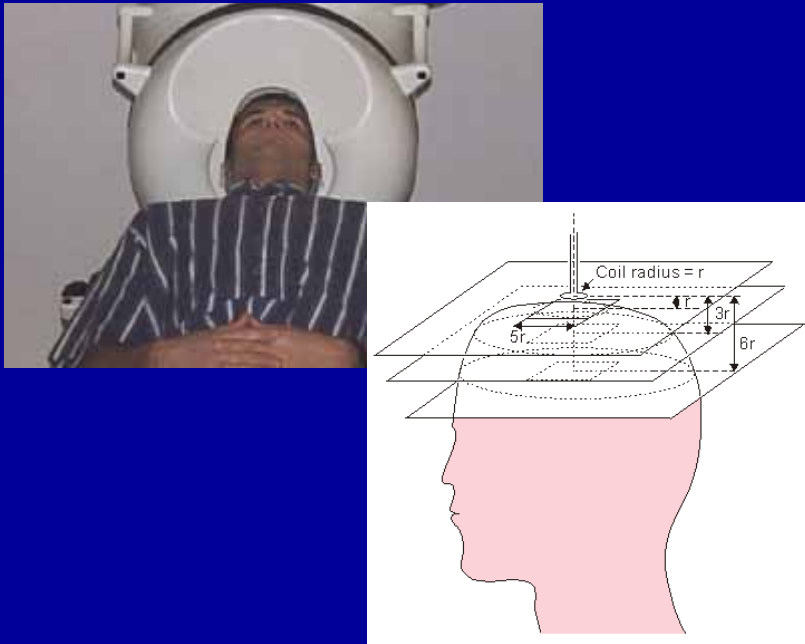


LIDAR

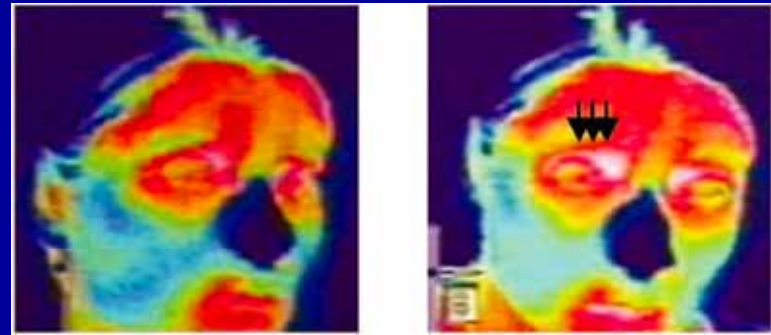


UWB

Fringe theories

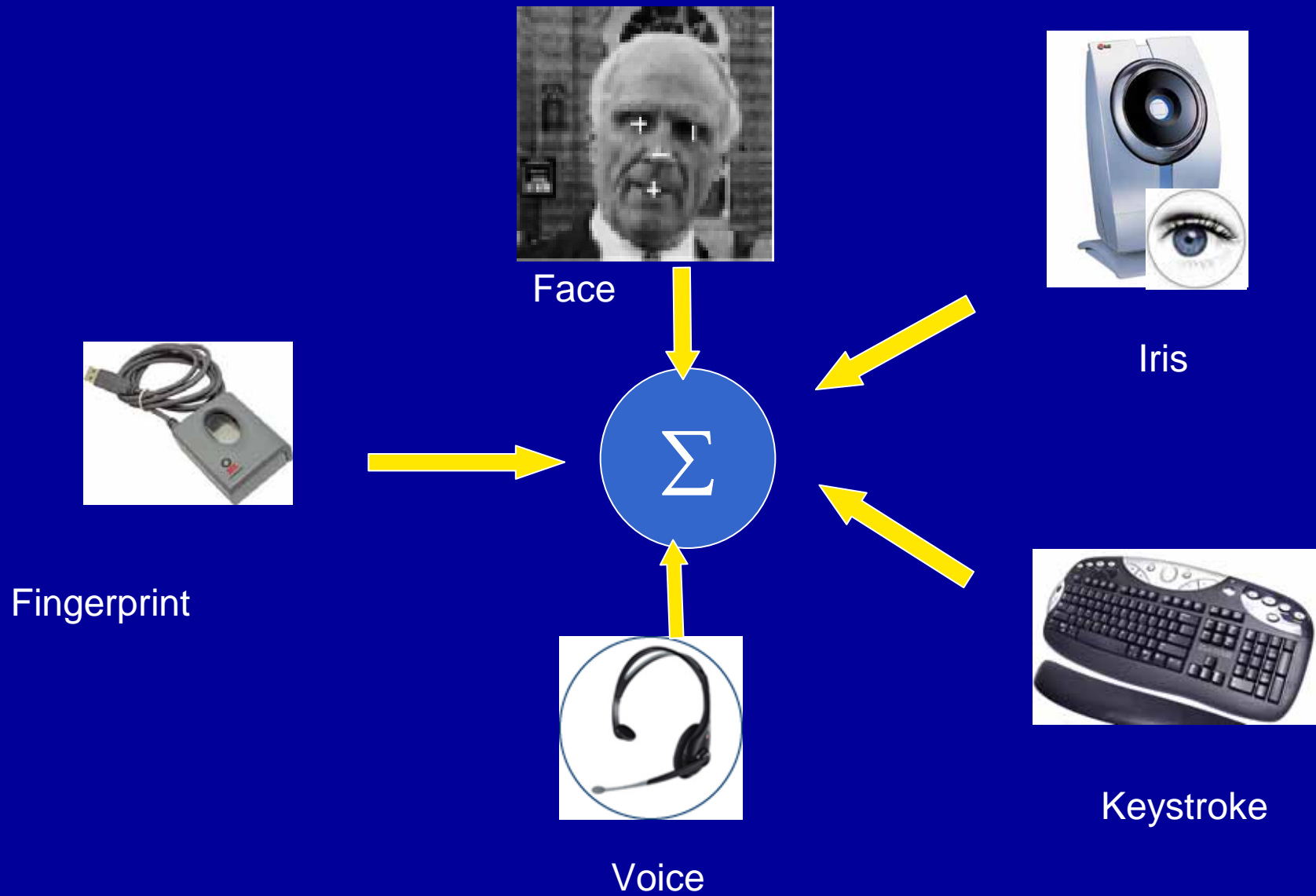


Mind reading
(Magneto encephalography)



Thermal polygraphy

Convergence

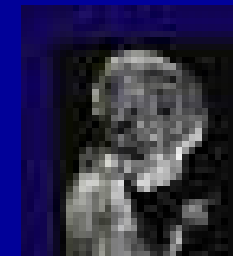
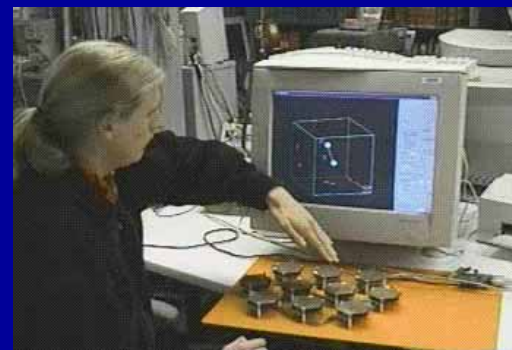
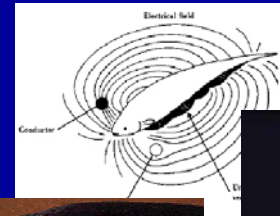


Displacing humans

Human metaphor



Animal metaphor



E-field sensor

Ultrasound

e-Nose