

The Singularity Is Near

Chapter 6: Impact

NIH BCIG

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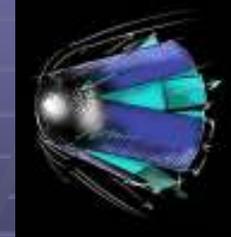
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Summary

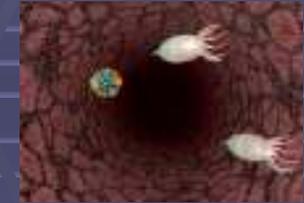


- Impact on the Body, Brain & Longevity
 - Theme: Transition to non-biological experience
 - Billions of body & brain based wireless nanobots
- Impact on Warfare
 - Remote robots, VR, smart dust swarms, nanoweapons & smart weapons
- Impact on Learning, Work & Play
- Impact on the Intelligent Destiny of the Cosmos
 - Drake equation & Fermi paradox, we are probably alone because we would have seen signals of others

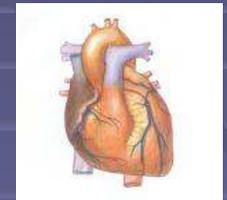


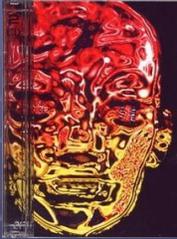


Human Body 2.0, 3.0



- Redesign, the digestive system is rebuilt
 - Auto-nourishment via clothing
 - Nanobots go in and out of the skin cycling nutrients and waste
 - Digestive system and blood based nanobots supply the precise nutrients needed
 - Eating becomes like sex, no biological impact, just for fun
- Redesign, the heart is optional
 - Obsolete organs, heart, lungs, blood; nanobots delivering oxygen to the cells, don't require liquid-based medium
- At this stage, all but upper esophagus, mouth & brain are left together with the skin, muscle, skeleton & their corresponding parts of the nervous system





Cyborg Brain

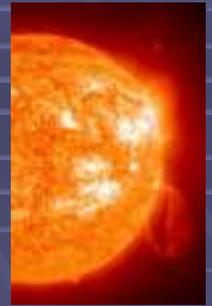


- Nanobots in close proximity to every sensory interneuronal connection
- In-brain nanobots regulate physical functions, serve as personal assistants (download new knowledge and skills) and provide continuous high-bandwidth connectivity and VR
- VR expands awareness and identity
 - Identity: become someone else, palette of personalities, overlays
 - Plug into someone else's sensory-emotional beam and feel what its like to be them. (Education/Diplomacy/Entertainment Apps galore)
- **Cyborg: Humans must physically interface with technology**
 - Biologic human thinking is limited and non-biological intelligence will predominate
 - 1. interface/integrate 2. software-based humans, mind files
 - New biological/non-biological hybrid networks created, completely non-biological networks created, interface with non-biological networks



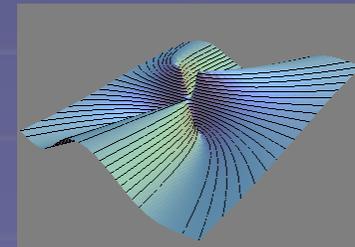
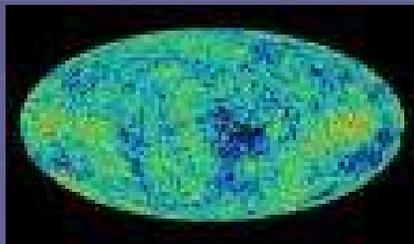
Impact on the Intelligent Destiny of the Cosmos / Fermi paradox

- Kardashev II 100-200 years after radio
- Goal of intelligence expand compute capability
 - Galaxy colonization speed at close to Light Travel
- Limits of computation
 - One human 10^{16} calculations per second, all humans 10^{26}
 - The ultimate cold laptop 10^{42} - 10^{50}
 - Earth-sized Zeus machine 10^{25} - 10^{61}
 - Solar System 10^{80} computational capacity
 - Universe-scale computer 10^{90} (if holographic, 10^{120})
 - **Exponential growth of computation to hit a wall during 22nd c**
- To keep expanding, intelligence refashions physics
 - Overcome c: adjust the speed, use/create wormholes/otherwise create/move to other universes; overcome gravity; use black holes as the ultimate computer





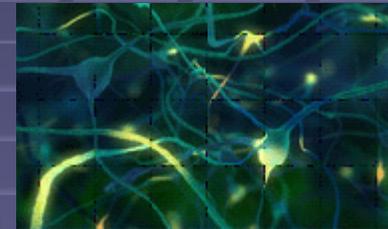
Dialogue Questions



Dialogue: Would you try Nanobot Neural Implants?



- “I would if...”
- Dimensions of consideration
 - Clear benefit, low risk/cost
 - Physical and mental fidelity
 - Control
 - Reversibility
 - Legal, economic domains
- What functionality would you want from implants?
- Will neural implants augment humans enough to compete/interact with fully non-biological intelligences?
- Would you take the next step, becoming a software-based human?
- Would you like multiple instances of yourself?





Dialogue: Terrestrial future

- Software-based humans, mind file
 - How much of yourself would you upload to a mind file?
 - Is it really “me,” the same experience, personality?
- Is there something fundamental about the body that would be lost in software-based humans?
- How will the definition of what is human expand?
- Will VR, 3.0 Human bodies and MNT-based manufacturing technologies trigger office building obsolescence and further dramatic reorganization of the physical world?
- How likely is human lifespan likely to exceed 150? (ignoring uploading)





Dialogue: Extending Intelligence in the Universe

- Will intelligence saturate?
 - What happens at the end of the double exponentiating computation curve?
 - What if intelligence cannot continue expanding?
- Could we really be alone?
 - Is it most likely that any other ETI/ Kardashev societies have moved into / created new universes?
- Will we be able to set the physical laws and constants in new universes or can we move intelligence into them more directly?

