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The future of life on earth

Evolutionary domains

Natural world, including Mk 1 humans Make new organisms & Ecosystems Alternative biochemistry

NBIC enabled organisms, including transhumans

Blurred

Cyberspace life, *boundary* including conscious machines

Evolution toolkit - NBIC

- Synthetic biology
- Electronically enhance functionality
- Add cyberspace duality
- Blur boundaries between individuals
- Group life forms
- Modify genomes
- Machine intelligence
- Hybrid organic-electronic organisms

Active skin



	Wearable layer		
	Detachable layer		
Epidermis	Transfer layer		
	Mid-term layer	Skin	
	Permanent layer	S IXIII	
D .			

Dermis

video tattoo

TATTOO'S CAN BE APPLIED TO THE SKIN TO PROVIDE FULL INTERACTIVE & TOUCH SENSITIVE PAPER. THIN VIDEO DISPLAYS -----

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USERS MAY INPUT THE DEVICE DIRECTLY ON SCREEN OR THROUGH A VIRTUAL KEYBOARD SEEN IN THE USER'S FIELD OF VIEW. THIS CAN BE ACHIEVED BY USING ACTIVE CONTACT LENSES

Virtual worlds adding value to the real world



DUAL ARCHITECTURE SHOWS OVERLAYS OF VIRTUAL ENVIRONMENTS, CHARACTERS & INTERACTIVE GAMES, WHICH CAN BE PLAYED IN REAL ENVIRONMENTS SUCH AS SHOPPING CENTRES AS SHOWN HERE Nervous system link will give full sensory experience

Making other organisms smart

Biotechnology

Smart chimps, dogs, cats, worms?

Hybrid animal brains that contain synthetic processing and memory but exist and compete in both natural world and cyberspace

> Artificial Intelligence

Nanotechnology

Smart bacteria

Transhumans will be obsolete before they arrive



Molecular circuit assembled by cell

Bacteria linked together to make sophisticated self organising circuits

Networked organisms

- Using active skin or cellular implants, we can connect directly to the nervous system or biological processes of any organism.
- Truly hybrid real/virtual organisms
- Animals could find mates via dating sites and satnav
- Can make collective organisms
- Global collective organisms could exist



Parents can now select embryos without certain genes. How long will it be before parents are considered irresponsible if they don't give their children the best possible genetic start in life?

Linking minds into cyberspace

- We already have basic thought recognition today
- Billions going on programmes to enhance human performance by linking our brains to electronics
- We will have vastly superhuman machines that can support emulation of many human minds at once
- We will eventually have genetically optimised hybrid human-machines with minds that run partly in the brain and partly on computers – homo hybridus

Human-machine Convergence



The Medium, 2075-2200



A global environment linking together all the minds of people and sentient machines in a global consciousness Shared consciousness & awareness Shared personalities? Link nervous systems together Fuzzy boundaries between people Personality modification Telepathic linking via bionic implants Shared dreams Shared bodies Hacking into someone else's body to experience their experiences Mental hijacking, Big Brother, oppression

The death of death -Under 35s may live forever

Networked back-up

- Make endless replicas of yourself
- Death can only be partial
- Upload into android
- Emigration into cyberspace to retire



Machine intelligence OB1 - optical brain mk1



Optical 'hormone'

trillion neurons in 100ml gel
billion times more powerful than brain, with up to 2 million emotions & unlimited senses
Could be conscious
Could be criminal
Can be linked to other devices via the net



Neural interference processing vortex



Cyberspace evolution

- AI entities will have their own cultures and civilisation and will cross fertilise with our cultures
- Sims will get much smarter!
- Some Als will migrate from cyberspace into the real world
- Some people might move into cyberspace – retirement or suicide by digitisation?
- Cyberspace fauna and flora





- Evolution techniques work just as well for criminal software
- Can make use of distributed computing platform, with or without permission
- Emergence encoded software
- Fraud engines using ecosystem adaptation
- Blackmail engines, using surveillance



Robotics









Or a backward step?

 Should we allow sentient beings in computer games controlled by children, who would be like their gods

 How long will it be before 'Robot Wars' transforms into an android version of the Roman Coliseum with synthetic blood?

E-bay-bies?

sentience				Machine-designed humans	
Sentience	Optional genetic Assembly Physical birth				
Human equivalence	DNA mix digital conception	Computer Simulation E-birth	Parents can b	e of any gender	
0 2005		2020	2040	2050	
At	what stage of e embly does a c	electronic emu child become le	lation or ger egally huma	netic n?	

Technology racing ahead need more basic science







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