Approaching the Next Evolutionary Eventhorizon

At the intersection of AI, synthetic biology, and quantum computing in a hyperconnected global ecosystem

Charles Ostman
charles.ostman@historianofthefuture.com
www.historianofthefuture.com
The Holographic Perspective

- All living things are systematically interconnected
- Definition of “living things” extends to systems, processes, entities which behave biologically

"Any sufficiently advanced technology is indistinguishable from magic“ - Arthur C Clarke

“The future is already here — it's just not very evenly distributed.” – William Gibson
Evolution into the Next Paradigm -

"What appears to be the future for many, is already the past for some, who are now unfolding it into the present."

Charles Ostman
Evolution into the Next Paradigm -

Intersection of chaos theory and evolutionary systems dynamics
Ubiquitous Cultural Constants

- All living things are “interconnected”
- Life extends beyond the physical form
- Indigenous cultures on 5 continents foretelling “something of great significance” that will occur within the 1st 3rd of the current 21st century.
- What is the “next something”?
Cultural Imperatives of the Evolutionary Eventstream

- Knowledge complexity, scale, and velocity is exceeding human capacity for mission critical decision rendering compressed into ever shortening time scales, in a hyperconnected operational ecosystem.
- What is the next “something”?

Evolutionary eventhorizon, the emergent next paradigm . . .
Cultural Imperatives of the Evolutionary Eventstream

A brief glimpse into the next paradigm . . .
The merging of the real and the virtual into a ubiquitous continuum
The Emergent Nano / Bio / Info / Cogno tech Operational Ecology

NBIC Conference
Converging Technologies
for Improving Human Performance:
Nanotechnology, Biotechnology, Information Technology and Cognitive Science
NSF/DOC-sponsored report
http://www.wtec.org/ConvergingTechnologies

3/10/2019
Neurological sovereignty as a concept introduced . . .

Genetic, cognitive, virtual presence . . . “existence sovereignty”
Technology Driven Socio-Anthropological Evolutionary Threshold Domains

Past

Present

Future

Regression

Progression

* Fixed Material Resource Base
* "Hard" Asset Commodities
* "Traditional" Bio-Med Resources
* Geographically Confined Resource Allocation

* Nanotech
* Alife / AI
* Biotech
* Internet Symbiosis
* Virtual Asset Commodities

* Ubiquitous Access
* Synthetic Sentience
* Symbiosis
* Artificially Enhanced Biophysical Evolution

Evolutionary Eventstream Seminal Markers

Complexity Quotient

Temporal Compression Index

System Viability

Compounding Multiplier Effect

Synthetic Sentience Symbiosis Threshold

Computing Networks

Process Brokeraging Architecture Implementation

Computing Fabrics

Ubiquitous Virtual Asset Commoditization

Hierarchical Autonomous Agent Colonies

Irreversible Human / Internet Symbiosis

Realtime Connected Economic Ecology

Collective Sentience / Operational Xenomorphs
Technology Driven Socio-Anthropological Evolutionary Threshold Domains

Evolutionary Eventstream Seminal Markers

Complexity Quotient
Temporal Compression Index

System Viability

Compounding Multiplier Effect

Synthetic Sentience Symbiosis Threshold

Quantum Tech Acceleration
NBICQ ecosystem
Nano / Bio / Info / Cogno / Quantum
Emergent NBICQ architecture is an evolving architecture of interrelated disciplines, technologies, organizational systems.
Outsourcing to networks of non-human intelligence and virtual lifeforms
The new norm

The voice you hear . . .
Entity you communicate and emotionally bond with
Diminishing human relevancy

Discovered knowledge
Systems management
Industrial processes
Services fulfillment

Virtual
Transaction
Physical
Autonomous machinery
 outsouring to networks of non-human intelligence and virtual lifeforms
the new norm

localized AI engine – neuromorphic processing “smart” access portal

AI startups

infinitely scalable AI cloud ecosystem

IoT becomes IoE
Internet of Everything
Outsourcing to networks of non-human intelligence
The new norm

“This is not a smartphone”
It thinks, learns, adapts . . .

Like us. For us.—With AI built in. It’s alive to what’s now. Alive to what’s next. Alive with the potential to unlock your potential. This is not a smartphone. This is an intelligent machine.”
Four Waves of AI

1\textsuperscript{st} wave: Internet AI
2\textsuperscript{nd} wave: Business AI
3\textsuperscript{rd} wave: Perception AI
4\textsuperscript{th} wave: Autonomous AI

Hyperconnected AI-IoE ecosystem
If it isn’t connected, it isn’t real . . .
Outsourcing to networks of non-human intelligence
The new norm

Four Waves of AI

1\textsuperscript{st} wave: Internet AI
2\textsuperscript{nd} wave: Business AI
3\textsuperscript{rd} wave: Perception AI
4\textsuperscript{th} wave: Autonomous AI

Synthetic Sentience

- Emergent phenomena
- May not be recognized
Outsourcing to networks of non-human intelligence
The new norm

Co-evolutionary symbiosis

Distributed AI ecosystem
Infinitely scalable cloud resource

IoT becoming
Internet of Everything

Emotional
Cognition

Behavior
Morphology

Localized
Personal
Aware AI

Existence
management

Skillset
Enhancement

3/10/2019
“I don’t think there’s a need to panic, but…the people who say ‘Let’s not worry at all,’ I don’t agree with that.” —Bill Gates
Outsourcing to networks of non-human intelligence
The new norm

Emotional Cognition

Emotion Measurement is BIG DATA
10
Data points per frame

x8>
Frames per second

x30
Second advert

x300
People in typical test

“Whether you’re talking with a smart chatbot or a living, breathing person, IBM’s Tone Analyzer works to improve understanding.”

Affectiva

Outsourcing to networks of non-human intelligence
The new norm

Emotional Cognition

“Emotion-detecting AI: If a marketer can get you to cry, he can get you to buy”
Emergent Evolutionary Eventhorizon
Evolution tends to favor the most adaptive

Existence sovereignty – social scoring system

The all-seeing state: China’s plans for total data control

Pre-emptive social engineering
Social passport
Existence sovereignty – social scoring system

Emergent Evolutionary Eventhorizon
Evolution tends to favor the most adaptive

Pre-emptive social engineering

Affectiva

Social passport
Existence sovereignty – social scoring system

Emergent Evolutionary Eventhorizon
Evolution tends to favor the most adaptive

Affectiva emotion recognition technology drives innovation in a number of industries:
- Media and entertainment
- Advertising
- Human resources
- Automotive
- Robotics
- Healthcare and quantified self
- Video communication
- Online education
- Devices
- Gaming

Pre-emptive social engineering
Social passport
Emergent Evolutionary Eventhorizon
Evolution tends to favor the most adaptive

Existence sovereignty – social scoring system

Metadata correlations

Pre-emptive social engineering
Social passport
Evolutionary eventhorizon accelerated by quantum tech

Quantum computing
Evolutionary eventhorizon accelerated by quantum tech

Quantum algorithms & computing intersecting with AI

AI layers of complexity

- Narrow
- General
- Super

Synthetic Sentience

- Emergent phenomena
- May not be recognized

3/10/2019
Emergent Evolutionary Eventhorizon

Existence sovereignty – genetic scoring system

- 1953: Watson and Crick decipher the DNA structure
- 1962: Watson, Crick, Wilson receive the Nobel Prize for DNA structure
- 1980: Berg, Gilbert, Sanger receive the Nobel Prize for PCR (tool to replicate DNA)
- 1990: Mullis and Smith receive the Nobel Prize for PCR
- 1993: 1st automated sequence
- 2006: 1st genome therapy approved
- 2012: First cancer gene therapy approved
- 2017: 1st cancer gene therapy approval

Pre-emptive genetic engineering

Genetic passport
Existence sovereignty – genetic scoring system

Emergent Evolutionary Eventhorizon

Personalized genomic medicine pathway for eradicating diseases

Cost per genome $100 . . . $10 . . .

Pre-emptive genetic engineering

Genomic Paradox

- Personalized genomic medicine pathway for eradicating diseases
- Personal genome becomes defacto universal ID

Pre-emptive genetic engineering

Genetic passport
Emergent Evolutionary Eventhorizon

What does it cost?

**Monetary Costs**
- 2010 - $80,000
  - Partial Genome $1,000
- 2014 - $1,000
- 2020 - $100

**Other Costs**
- Genetic Information Nondiscrimination Act (2008)
  - Guards against unfair treatment from employers and health care companies
  - Federal Law
  - Refers only to health risks
- Intended consequences

Cost per genome $100 . . . $10 . . .

Genomic Paradox

- Personalized genomic medicine pathway for eradicating diseases
- Personal genome becomes defacto universal ID

What risks can be assessed by SNPs?

(Single Nucleotide Polymorphisms)
- Adult Onset Diabetes
- Juvenile Diabetes
- Crohn’s Disease
- Ulcerative Colitis
- Body Mass Index (BMI)
- Obesity
- Height/Weight
- Neuroticism
- Osteoarthritis
- Chemical Dependency
- Migraines
- Aneurisms
- Criminal Behavior
- Extraversion
- Conscientiousness
- Music Ability

Pre-emptive genetic engineering

Genetic passport
Emergent Evolutionary Eventhorizon

Existence sovereignty – genetic scoring system

Cost per genome
$100 . . . $10 . . .

Genomic Paradox

- Personalized genomic medicine pathway for eradicating diseases
- Personal genome becomes defacto universal ID

Pre-emptive genetic engineering

Genetic passport
Evolutionary eventhorizon accelerated by quantum tech

Quantum computing

100 million x “faster” than classical computing - Google

Qbits = exponential computational complexity
Evolutionary eventhorizon accelerated by quantum tech

Quantum computing

Exabytes of data
In-silico biology
Bioinformatics
Genomics

Access to complex modeling and simulation not possible via classical computing

A Transformational Equation

THE HUMAN GENOME + QUANTUM COMPUTER = NEW POSSIBILITIES
Evolutionary eventhorizon accelerated by quantum tech

Quantum computing

Human metabolic pathways

Exabytes of data
In-silico biology
Bioinformatics
Genomics

Access to complex modeling and simulation not possible via classical computing
Evolutionary eventhorizon accelerated by quantum tech

Quantum computing
Access to complex modeling and simulation not possible via classical computing

Chemistry

Simulating this cluster is at the limit of classical computers

Nitrogenase enzyme involved in $N_2$ to $NH_4$ reaction

These regions are involved in different reaction stages
Iron sulfide clusters ($Fe_xS_y$) of different sizes.

DOI: 10.1021/cr400641x
Existence sovereignty – artificial telepathy

Artificial telepathy the next “big thing” – Mark Zuckerberg

3/10/2019
Emergent Evolutionary Eventhorizon

Existence sovereignty – artificial telepathy

- Commoditized artificial telepathy
- Neurosky interface
- Do you "MIND"?
- Neurological passport
- Existence sovereignty – artificial telepathy
- Mind-machine interface
- Mind-mind interface
- Transparency of intent
- "You" are the product
- Neuroplasticity enhance
- Transfer memories & experiential content

Founderspace – TED 2017
Existence sovereignty – artificial telepathy

- Current tech – fMRI - functional Magnetic Resonance Imagery
- Future tech – SQUID – Superconductive Quantum Interference Device

Neurological passport
Emergent Evolutionary Eventhorizon

Existence sovereignty – artificial telepathy

Presented clip

Clip reconstructed from brain activity

Neurological passport
Emergent Evolutionary Eventhorizon

Existence sovereignty – artificial telepathy

"Forensic uses for law enforcement in gathering eyewitness accounts"
AI enhanced EEG data processing

Neurological passport
Emergent Evolutionary Eventhorizon

Existence sovereignty – Internet of Everything

Distributed AI ecosystem
Ubiquitous computing fabric
Infinitely scalable cloud resource

Beginning edge of the quantum age . . .
Quantum computing
Quantum networks
Quantum biology

3/10/2019
Emergent Evolutionary Eventhorizon

Before 2005: Closed and centralized IoT networks

Today: Open access IoT networks, centralized cloud

2025 and beyond: Open access IoT networks, distributed cloud

Register
Authenticate
Value Exchange

IoT becomes IoE
Internet of Everything
Blockchain is not just “coins”
If it isn’t connected, it isn’t real
Presence transaction . . . early inception
Verichip ID implant

Emergent Evolutionary Eventhorizon

Evaluation of the Hardware Utilized for VeriChip

- The Hardware for VeriChip consists of two items:
  1. An Implanted ID chip
     - Tissue Bonding Cap
     - Antenna
     - ID Chip
  2. A Scanning device

- SIZE
  - The device is 8 millimeters long and about 1 mm in diameter, comparable to a grain of rice.

- TISSUE BONDING CAP
  - A cap made from a special plastic covers a hemispherically sealed glass capsule containing the RFID circuitry. The plastic is designed to bond with human tissue and prevent the capsule from moving around once it has been implanted.

- ANTENNA
  - The coils of the antenna form the reader’s varying magnetic field into current to power the chip. The coil is stepped to a specific bit to form a circuit that resonates at 134 kilohertz.

- ID CHIP
  - The chip mediates the amplitude of the current going through the antenna to continuously repeat a 256-bit signal. The bits are represented by a change in amplitude—low to high or high to low. An analysis by Jonathan Weindling, of Cambridge, Mass., indicated that only 32 of the bits varied between any two VeriChips. The rest of the bits probably tell the reader what the loop is and may also contain some error-checking or correction data.
"And he shall make all, both little and great, rich and poor, freemen and bondmen, to have a character in their right hand or on their foreheads: And that no man might buy or sell, but he that hath the character, or the name of the beast, or the number of his name."

(Apocalypse Chapter 13: 16-17)
Unlock your world with Token “smart ring”
Next gen presence transaction, as a fashion item

Token unifies the way you prove your identity – live free of keys, cards, badges and passwords
Unlock your world with Token “smart ring”
Next gen presence transaction, as a fashion item
Augmented reality . . .
The real and the virtual merge into a ubiquitous continuum

Google glass
early inception . . .

Evolution of the concept
more acceptable format
Augmented reality . . .
The real and the virtual merge into a ubiquitous continuum
Augmented reality . . .
The real and the virtual merge into a ubiquitous continuum

“Smart” AR contact lenses
Google, Sony, etc.

AR implants
Omegaophthalmics
Emergent Evolutionary Eventhorizon

Augmented reality . . .
The real and the virtual merge into a ubiquitous continuum

AR implants
Omegaophthalmics
Emergent Evolutionary Eventhorizon

Transhuman threshold . . .
Enter the quantum age . . .

- **20 Years**
  - Quantum Computing Nodes
  - Emergent Synthetic Sentience

- **10 Years**
  - Global Quantum Networks
  - Realtime Quantum Teleportation

- **Near Future**
  - Ubiquitous Global Sensor Arrays
  - Self Organizing Knowledge Ontologies

- **Autonomous Virtual AI**
  - Self Healing / Adaptive Networks
  - Self Evolving Info Architectures

NBICQ ecosystem
Nano / Bio / Info / Cogno / Quantum
Evolution into the Next Paradigm
Pushing the boundaries of existence sovereignty
• Entering a realm in which the real and virtual, the biological and synthetic, merge into an irreversible continuum which becomes an emergent norm.
• Indices of valuation become evermore defined by caliber of access
• This emergent realm will likely not be evenly distributed
Evolutionary eventhorizon accelerated by quantum tech

Quantum networks

Entangled photons, separated by distance, act instantaneously as a single entity

Quantum teleportation in realtime

Quantum teleportation cannot be “observed”

Quantum cryptography
Quantum entanglement in biological systems

Quantum entanglement enables particles or photons to affect each other, instantaneously, separated by space
Evolutionary eventhorizon accelerated by quantum tech

Quantum biology – further future

Quantum entanglement in biological systems

Quantum entanglement enables particles or photons to affect each other, instantaneously, separated by space

Quantum entanglement & coherence

Potential interface for “telepathic” phenomena
NIBCQ Tech Convergence on the Forbidden Planet
NIBCQ Tech Convergence on the Forbidden Planet
Ultimate failure point – “monsters from the Id”
Evolution into the Next Paradigm

Evolution tends to favor the most adaptive.

Evolution tends to be a trauma induced process.

If the periodicity and amplitude of the encountered trauma cycles do not exceed the system capacity to respond, the system will evolve to a more robust form of existence.
Approaching the Evolutionary Eventhorizon Threshold

- Tangible Assets > Virtual Assets
- Technology > Complex Ecosystems
- Human Existence > Transhuman

The Singularity
Approaching the Evolutionary Eventhorizon Threshold

- Tangible Assets > Virtual Assets
- Technology > Complex Ecosystems
- Human Existence > Transhuman

Socio-Technical Evolution Acceleration

Spiritual Maturity Index

Time

- Millennia
- Centuries
- Decades
Thank you for your time and attention

Fini

Charles Ostman
charles000@aol.com
charles.ostman@historianofthefuture.com
www.historianofthefuture.com