

Neuronet:

A COGNITIVE ECOSYSTEM FOR THE GENETIC AGE

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Overview



This report explains the global macroeconomic and technology trends leading to the emergence of a new asset class called *genetic capital*, and explores how leveraging this new form of wealth can help meet the impact investing community's needs.

GENETIC CAPITAL

01



Gene therapies are currently being developed to improve mental health and enhance cognitive ability. These therapies comprise a CRISPR biopharmaceutical agent and a client service delivery program. Since these treatments are designed to raise an individual's ability to contribute to society, they carry an economic value and are considered forms of capital.

VALUE

02



Forward contracts can be written on gene therapies and tokenized, with the token's value tied to the therapy's price. As gene therapy manufacturers complete their research milestones, token values are likely to appreciate.

IMPACT INVESTING

03



Preferential early access to genetic capital can be provided to the impact investing community as an innovative solution for accelerating its growth in assets under management.

NETWORK

04



A nodal network will connect investors, clients, gene therapy manufacturers, service delivery providers, and neuroscience professionals who specialize in developing mental health and cognitive enhancement applications. This distributed network, called a neuronet, will function like an internet for genetic cognitive engineering.

OI

Impact Investing Needs






Assets Under Management

On its

This6T.



➤ CHANGE FINANCIAL SYSTEM:

T.

Global Transformation

Needs Analysis

➤ ACHIEVE SUSTAINABILITY:

➤ ACHIEVE SUSTAINABILITY:

➤ MANAGE TECHNOLOGY RISKS:

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➤ **MANAGE TECHNOLOGY RISKS:**

Micro-processor power has been the driving force behind advances in science and engineering. Since there is no counterpart to Moore's Law in the humanities, the disparity between progress in the physical and human sciences is growing wider, creating a "wisdom gap." The blistering pace of scientific advances is outstripping humanity's ability to manage progress wisely, placing potent new technologies in the hands of policy makers who are fixated on short-term results without considering long-range impacts. This combination of scientific prowess and narrow-minded shortsightedness is creating growing risks of misusing ever-more powerful technologies. Humanity needs greater wisdom to safely manage the risks of runaway technology change.

➤ **CHANGE FINANCIAL SYSTEM:**

T

02 | Global Megatrends





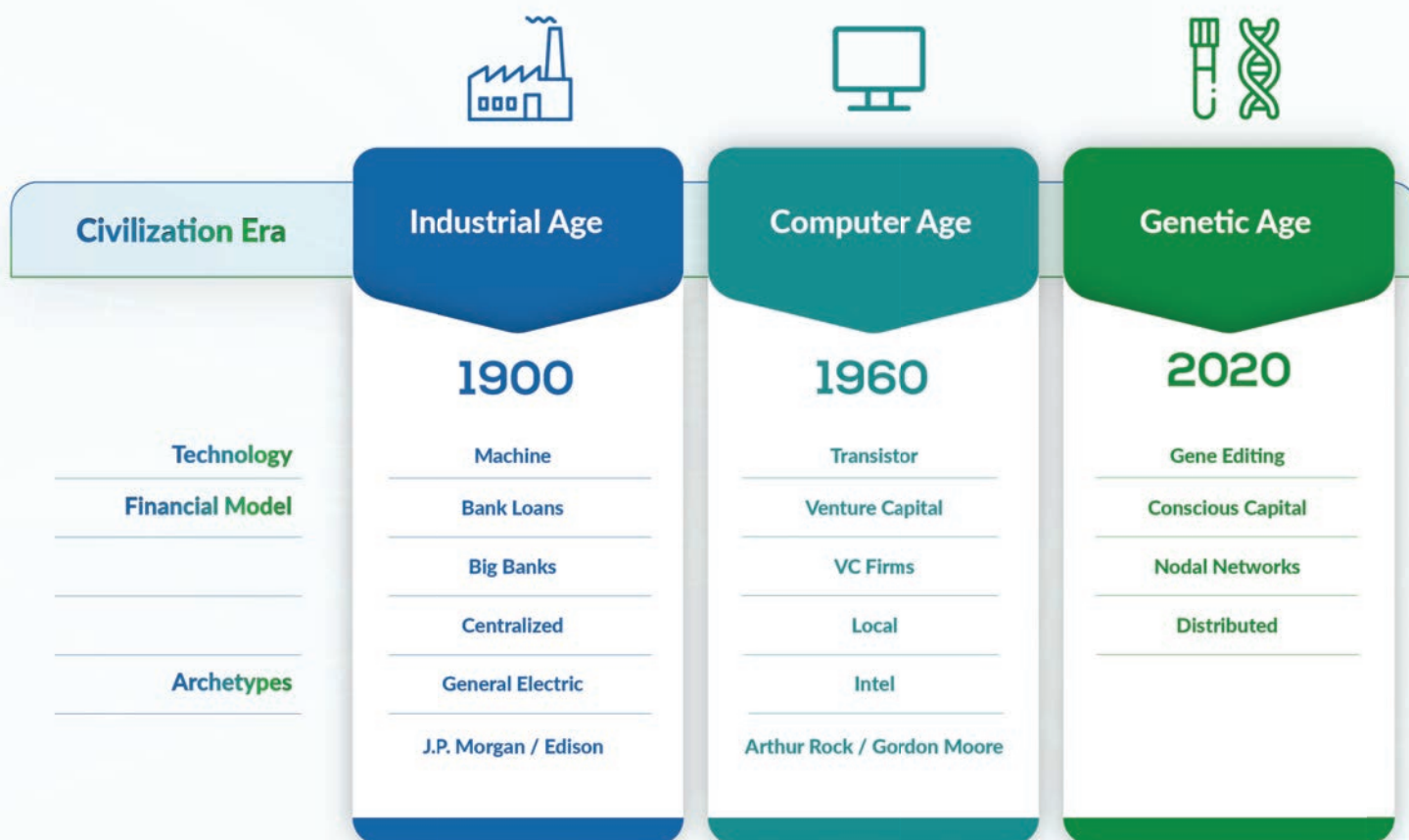
Technology Trends

Cognitive engineering's enabling technology at the neuron level is CRISPR, a new genome editing technique whose significance has been widely compared to the steam engine and the transistor. CRISPR's inventors, Jennifer Doudna and Emmanuelle Charpentier, received the Nobel Prize in 2020. In reporting the story, The New York Times called CRISPR "an invention that will transform the human race." The Times also asserted: "The development of CRISPR will hasten our transition to the next great innovation revolution. The past half-century has been a digital age, based on the microchip, the computer and the internet. Now we are entering a life-science era." ^[9]

Macroeconomic Trends

Throughout history, human beings have invented new kinds of capital which formed the basis for our progress through successive stages of civilization. Machines have been the backbone of the Industrial Age, and information has emerged as a new form of capital in the Computer Age. Today, a Genetic Age is dawning, and it will bring new financial models with it, as shown on the next page.





➡ INDUSTRIAL AGE:

At the dawn of the 20th Century, J.P. Morgan backed Thomas Edison's General Electric Company, exemplifying the centralized big bank financing of the era.

➡ COMPUTER AGE:

Mid-century, one of the first venture capitalists, Arthur Rock, backed Gordon Moore at Fairchild Semiconductor and later Intel. Small local VC firms have fueled Silicon Valley.

➡ GENETIC AGE:

Leading futurists predict the benefits of this new age will overshadow the Industrial Revolution and the Computer Age, offering unparalleled opportunities for impact investing. The trend towards decentralized financing will continue, with nodal networks supplying funding for genetic capital companies. Conscious capitalism will become ascendant in the Genetic Age. Deep impact investors will fund global sustainability and philanthropic initiatives using financial instruments which leverage genetic capital.

➤ COGNITIVE ECONOMICS:

In the next two decades, artificial intelligence and robotics will displace millions of workers across a wide range of industries. With increasing automation, our global economy places a growing premium on human-centered cognitive skills, such as self-awareness, emotional intelligence, creativity, compassion, and mental flexibility.


As these new technologies take hold, they will also create millions of high-paying, cognitively-demanding jobs. Brain capital research by Harris Eyre at the Rodeo Institute indicates that most new jobs in today's knowledge economy demand cognitive, emotional, and social skills, and innovation is a tangible deliverable of employee productivity. ^[6]

Leading European futurist Gerd Leonhard predicts that as our world becomes increasingly digitized and automated, human-centered skills which cannot be reduced to algorithms – such as imagination, creativity, ingenuity and intuition – will become extremely valuable.^[7] World-renowned Oxford scholar Naïf Al-Rodham believes that harnessing cognitive enhancement technologies can help nations engineer more focused and competent workforces; thus raising the overall output of their economies. ^[8]



03

Solution Strategy



The human race has now entered a Genetic Age which is spawning a new form of wealth called “genetic capital.” This asset class includes gene therapies which generate social and economic value by augmenting human capital. This section explains genetic capital and explores how it can be leveraged to multiply impact investing’s AUM.

New Form of Wealth

Genetic engineering can enrich human capital by improving cognitive abilities and traits which enable people to create greater social and economic value, such as imagination, creativity, mindfulness and emotional intelligence. Gene therapies which induce these characteristics in adults can be regarded as genetic capital. The emergence of genetic capital is an epochal event in the history of finance.

A genetic “limitless pill” can raise mindfulness, focus, creativity and mental acuity, supplying a lifelong cognitive boost which can elevate a person’s quality of life and ability to contribute to society. Cognitive gene therapies will expand a person’s capacity for creative innovation and learning new competencies, delivering the mental boost young people need to stay ahead of artificial intelligence and automation. Cognitively-enhanced young adults will have more focus, concentration and clarity for mastering key new skill sets critical for success today. These individuals will make ideal employees for companies competing in the 21st Century knowledge economy, since they will have enriched cognitive resources for developing creative solutions to business problems along with higher emotional balance and morale. Hence, the upgrades will have an economic value to workers and their employers.

Since cognitive gene therapies amplify human capital traits and talents which have an economic value in the workplace, they are treated as a form of genetic capital.

New Financial System

Genetic capital derivatives can be bought, sold and traded through a blockchain-based financial system. The blockchain can also control the distribution of the underlying assets and monitor their quality and efficacy when delivered to clients. The application of genetic capital to global transformation is the focus of this report

Early access to genetic capital could be made exclusively available through impact investing networks, creating a powerful incentive which could conceivably energize enrollment campaigns.

➡ VALUE:

Impact investors can buy, sell and trade tokens and other derivatives for gene therapies which improve mental health and enhance cognitive ability.

Each gene therapy has two parts: the CRISPR biopharmaceutical (a hard asset) and the client service delivery program (a soft asset). Forward contracts can be written these assets individually or bundled as a package.

Derivatives of these contracts can be tokenized. Token values are likely to appreciate as gene therapy manufacturers complete their preclinical research milestones and clinical trials. News reports of ongoing CRISPR breakthroughs will also tend to lift the token.

The token's value is tied to the gene therapy's price, which could be in the \$30,000 range, as explained in the next section.

➡ FINANCIAL SYSTEM:

The financial system for cognitive genetic capital shown on the next page uses a ten-part system architecture to manage all economic activity within a cognitive capital ecosystem. The design can serve as a blueprint for a system of the future.

The ability to access this capital can provide an incentive to motivate more traditional investors to shift into sustainable investing, helping the impact investing community accelerate its growth to meet the planet's biggest challenges.

THE EMERGENCE OF
GENETIC CAPITAL IS AN
EPOCHAL EVENT IN THE
HISTORY OF FINANCE.





Neuronet Financial System





GATEWAY

The impact investing community can provide an exclusive **gateway** into a cognitive capital ecosystem via a private OTC market, admitting those investors whose portfolios meet the community's sustainability standards.



INDUSTRY ASSOCIATION

The impact investing community can manage an **industry association** which sets rigorous standards for quality and excellence in cognitive enhancement product and service delivery. This body also oversees the cognitive capital market and the cognitive genetic edit registry blockchain. The industry association finances its operations via membership and blockchain transaction fees.



AUDIT

The association **audits** its members' portfolios and annually recertifies them. It also audits the ecosystem's suppliers, manufacturers and service providers to ensure they meet its industry standards and annually re-certifies those who qualify.



MARKET

A private OTC **market** serves as a forum for investors to buy, sell and trade genetic capital. Derivatives may include forward contracts, options, swaps, blockchain positions, tokens, bonds and other instruments designed by financial experts.



INVESTMENT

Early investors purchasing cognitive capital derivatives at their initial pricing can realize capital gains long before the first gene therapies are delivered. The value of these **investments** appreciates as key research milestones and clinical trials are completed.



BLOCKCHAIN

All activity in the cognitive ecosystem is recorded in a **blockchain**. The blockchain registry serves as the digital backbone for the ecosystem, providing end-to-end visibility, smart contracts and auditability for each cognitive upgrade administered. Auditability encompasses the supply chain, including manufacturing quality control, and the distribution network, including cognitive clinics and service providers.



SUPPLIERS

Impact investors can buy, sell and trade derivatives for genetic cognitive upgrades manufactured by approved **suppliers** certified by the industry association.



TRANSACTIONS

Revenue from cognitive upgrade purchases is captured in blockchain **transactions**. A cognitive cryptocurrency or "ico" can form the basis for all transactions in the ecosystem. Tokenizing the ecosystem in this way allows micro-investors to participate; democratizing the system.



ROI

When derivatives are redeemed through the sale, trade or delivery of cognitive upgrades, the revenue from the transactions flows back to investors, providing a **return on investment**.




COGNITIVE UPGRADES

The blockchain's flexible open systems architecture will support the buying, selling and trading of derivatives for 37 types of **cognitive upgrades**, as explained in the next section.

04

Cognitive Capital





World-renowned historian Yuval Noah Harari believes the human race is at the cusp of a genetic cognitive revolution which will open up a new chapter in human history. Based on cognitive anthropology, he suggests that just a few changes to our genome could be enough to elevate our species to a new level.^[10]

Dr. Harari's prediction appears to be coming true. There is evidence that combining recent advances in cognitive science and genetic engineering can produce sustainable expanded states of awareness and cognitive ability. The genes associated with cognitive capacity have been isolated and microbiology tool sets to access and modify them are currently being tested in the laboratory. In short, it appears to be feasible to genetically engineer greater cognitive capacity into human DNA.

Cognitive engineering technology can be applied to enhance an individual's cognitive capacity in many different ways, depending on the person's own particular needs and goals. Seven major types of cognitive upgrades are shown on the next page.

COGNITIVE ENHANCEMENT

Conscious Awareness

Mental Traits

Emotional Traits

MENTAL HEALTH

Psychological Conditions

Neurological Conditions

Psychiatric Disorders

Cognitive Impairment

COGNITIVE ENHANCEMENT



CONSCIOUS AWARENESS

Metacognition

Mindfulness

Attention

Presence

Clarity

Concentration

Focus



MENTAL TRAITS

Imagination

Creativity

ESP

Memory

Intuition

Mental Acuity

Reduce Mind-Wandering

Reduce Inattention



EMOTIONAL TRAITS

Optimism

Emotional Balance

Inter-connection

Compassion

Empathy

MENTAL HEALTH



PSYCHOLOGICAL CONDITIONS

Reduce Unwanted Behaviors

Increase Desired Behaviors

Lower Craving

Psychosomatic Issues



NEUROLOGICAL CONDITIONS

ADD/ADHD

Stress

OCD

PTSD

Anxiety

Depression

Insomnia

Memory



PSYCHIATRIC CONDITIONS

Personality Disorders

Schizophrenia

Bipolar



COGNITIVE IMPAIRMENT

Alzheimer's (Early)

Mind Cognitive Impairment

Other

➔ COGNITIVE ENHANCEMENT:

Genetic cognitive upgrades can boost creativity, imagination, mindfulness, and emotional intelligence, while raising conscious awareness, mental acuity, concentration, mindfulness, intuition, intelligence and emotional balance. The treatments can also reduce inattention, distraction, craving and mind-wandering. Each cognitive upgrade will combine gene therapy with supporting counseling and behavioral therapy to help individuals translate their newfound abilities into meaningful personal growth.

Research by Cognitive Genetics Institute indicates the US genetic cognitive enhancement market could reach \$1 trillion in the next two decades.^[11] Securitizing the underlying genetic capital could generate trillions of dollars in additional assets, helping the impact investing community to fill its AUM shortfall gap and reach critical mass.

Genetically-enhanced conscious awareness and cognitive abilities boost an individual's cognitive net worth by adding human capital assets. Ultimately, the ability to enhance cognitive traits and talents which carry economic value in the workplace – such as imagination, creativity, intuition, mindfulness, concentration and mental acuity – can generate significant financial dividends over the course of someone's lifetime.

Cognitive upgrades can supplement traditional undergraduate education to position young adults for success in tomorrow's challenging global economy. Candidates for upgrades make an investment in themselves which pays dividends throughout their careers in the form of higher salaries and faster advancement. For professionals, these rewards could be comparable to the value of a college degree, and for entrepreneurs, potentially greater.

“

WE ARE ACQUIRING THE
TECHNICAL ABILITIES TO
BEGIN MANUFACTURING
NEW STATES OF
CONSCIOUSNESS.

”

YUVAL NOAH HARARI

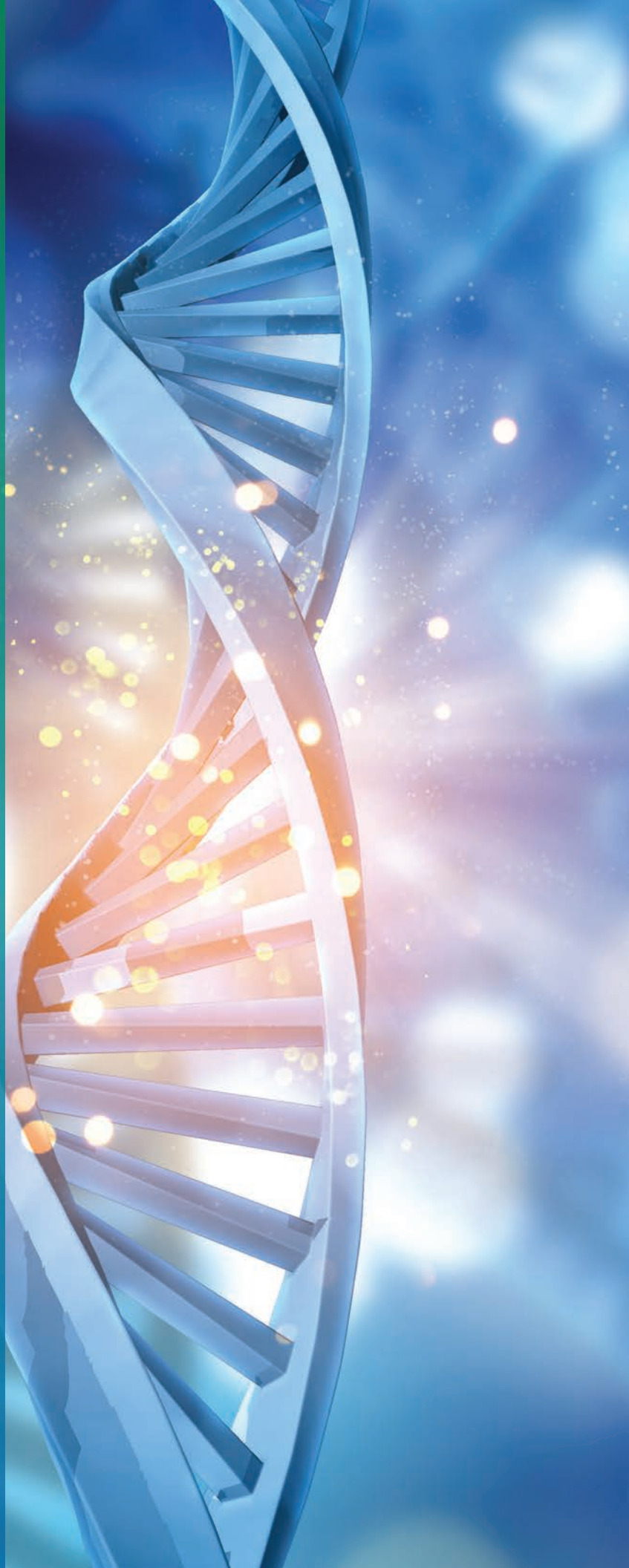
➔ MENTAL HEALTH:

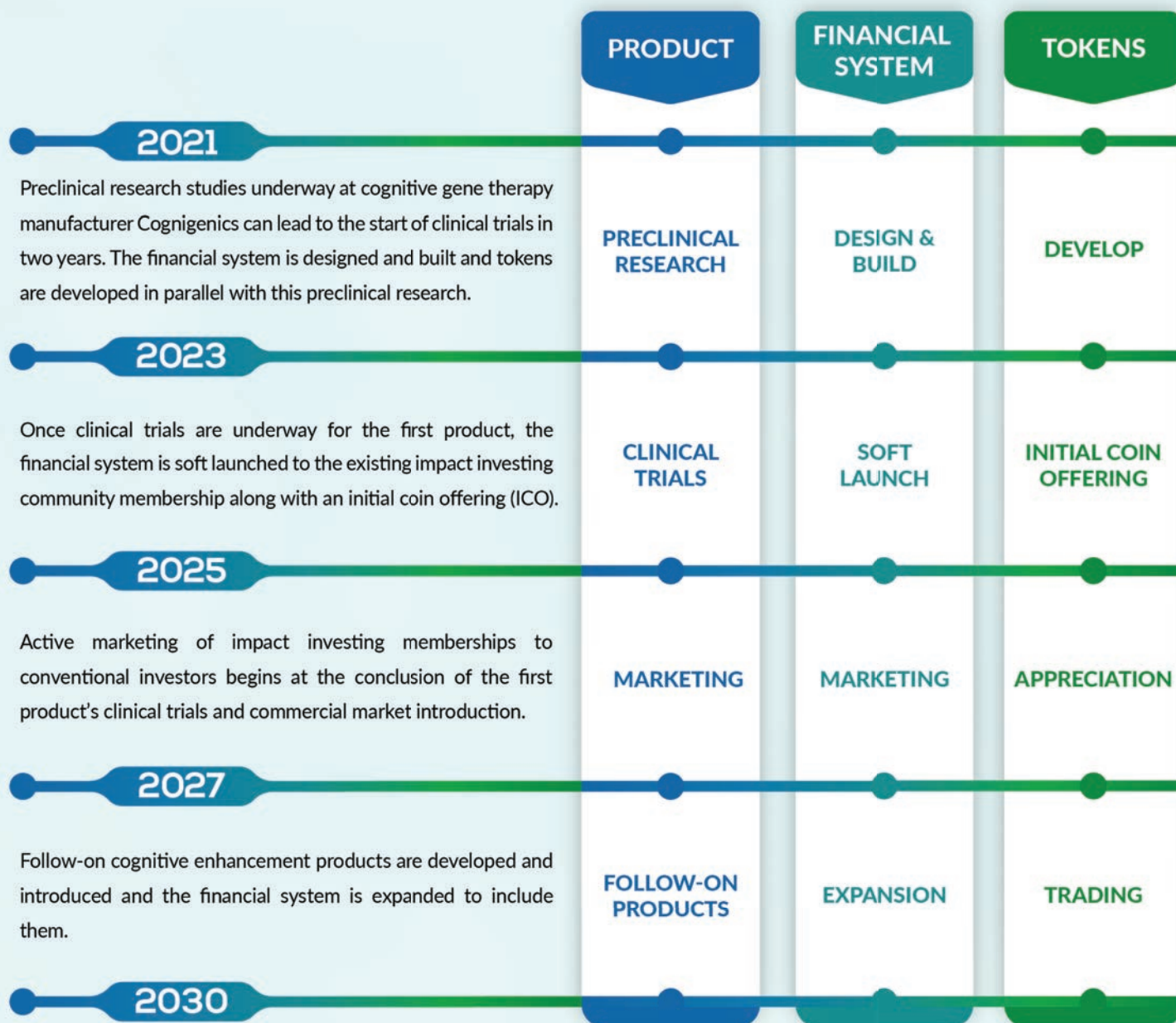
A new series of techniques promises to revolutionize the treatment of mental health issues which affect 80 million Americans, including stress, anxiety, depression, attention deficit disorder (ADD), cognitive impairment, bipolar disorder and other conditions. Due to the size of the market, these mental health applications could potentially generate \$100 billion in the US over a 10 year period. New patent-pending technology precisely targets the neurological causes of mental health issues using a combination of genetic, cognitive and neuroengineering tools.

Mental health treatments which remediate cognitive deficits raise cognitive net worth by reducing cognitive liabilities. For example, Attention Deficit Disorder (ADD) can affect a person's career progression, harmony in relationships, earning potential, and quality of life. To liberate their lifetimes from this debilitating condition, young adults diagnosed with ADD will pay \$250 per month for 10 years (\$30,000). Alternately, the annual cost of care in an Alzheimer's facility is \$60,000. A genetic intervention in the early stage could postpone this outlay for a year or more.

OS

Timeline





➤ VALUE INFLECTION POINT:

Cognigenics expects to begin a Phase I clinical trial in 2023 for its first product – a treatment for General Cognitive Impairment Syndrome. This product is a general purpose cognitive enhancer which, when administered to patients with cognitive deficits, will work to normalize their brain activity and cognition.

The main purpose of a Phase I trial is to test the safety of new drugs on normal, healthy volunteers. Since the Phase I test will administer gene therapies to normal subjects who do not have cognitive deficits, the test subjects are likely to experience cognitive enhancement.

Although Phase I trials are meant test safety, there is nothing preventing an affiliated university from running the Phase I volunteers through a battery of cognitive tests before and after the treatments. If the tests reveal significant gains, then these volunteers will be recognized as the first cognitively-enhanced human beings, which is headline news.

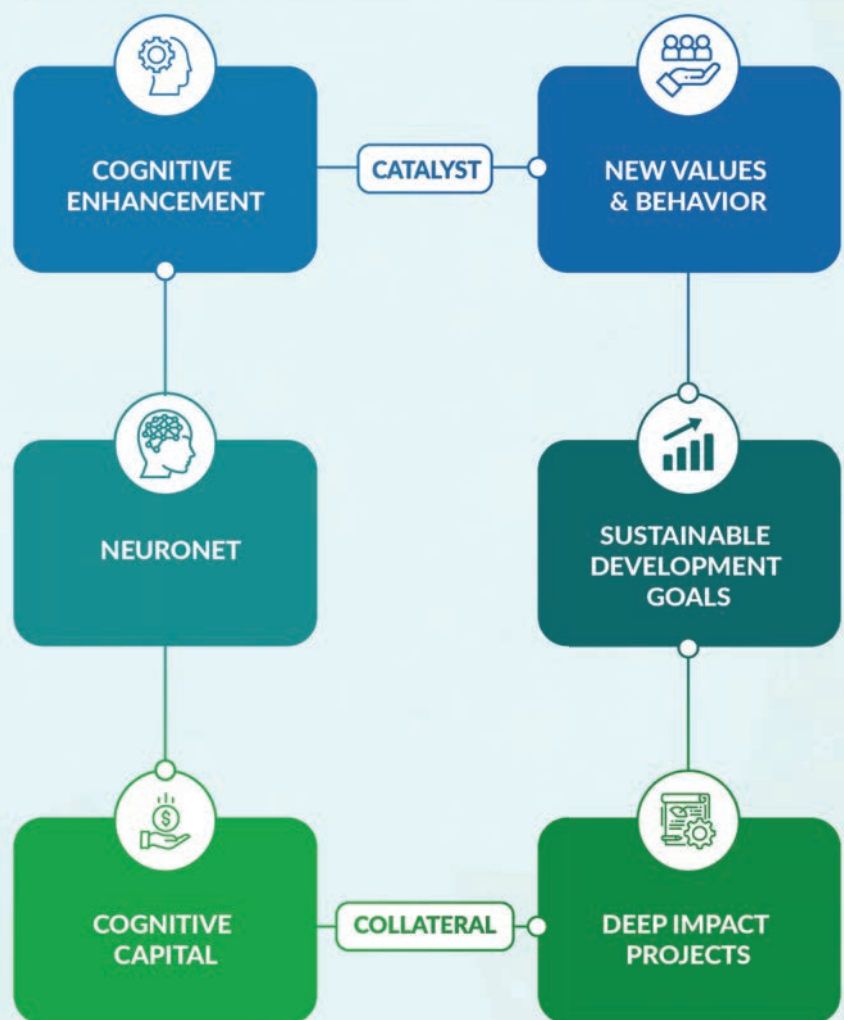
06

Summary and Conclusions



Deep impact investing is a powerful force for creating the enlightened progress humanity needs, but it is not growing fast enough to reach a critical mass of influence. To accelerate global transformation, we need to add game-changing elements to the equation which leverage entirely new kinds of solutions.

As illustrated in the diagram, cognitive enhancement can catalyze conscious values and new behaviors that are more closely aligned with holistic ecology models and sustainable development goals. (See Exhibit I for details.) In addition, cognitive capital can collateralize deep impact initiatives aimed at achieving these goals.



The world today is shifting into a knowledge economy where cognitive capital is the prime currency. In the 21st Century, the ability to marshal this precious resource for creative innovation will determine the economic mobility of individuals and the wealth of nations.

Futurists predict the Genetic Age will deliver greater benefits to humanity than the Industrial Revolution or the Information Age. Once fully realized, genetic engineering could be the most powerful and promising technology yet devised by the human mind.

Social impact investors face a choice. We can sit and watch this transformative technology from the sidelines, or we can seize the opportunity and leverage it to achieve our goals.

Widespread application of cognitive engineering technology can accelerate humanity's conscious evolution by generating a new form of wealth – cognitive capital – which can help people create innovative solutions for our world's most pressing problems.

Societies, groups and nations which embrace this disruptive new technology can harness its vast potential to drive exponential growth in cognitive capital to help us meet the challenges facing the world today. Global distribution of this technology can help humanity achieve a more responsible stewardship of the world we will bequeath to our children.

Cognitive engineering technology is at a nascent stage and hence it carries higher risks than other less ambitious projects. But the time for playing it safe has passed. Decisive action is needed.

The deep impact investing community can own and control the technology, the industry, the derivatives market, and the blockchain. The temptations that accompany control of a technology this powerful will be enormous. The industry's leadership must be firmly grounded in human-centered values to guarantee the technology serves the needs of the many instead of the

few. Providing exclusive access to the new cognitive economy via the impact investing community serves that purpose, acting as a filter to ensure the owners are value-aligned.

Success in today's world requires bold, decisive action based on keen insights into emerging revolutionary trends. The future is now, and the future belongs, as it always has, to visionaries. At Cognigenics, preclinical research programs could have "limitless pills" working in the laboratory within a few years. But we are still at the trailhead of a long journey. Cognitive genetics is a whole new field. The risks will be great, the road will be long, and there will be challenges along the way.

The company's leadership is dedicated to its larger purpose, and we accept the risks of pioneering new fields. We are expanding our partnerships with progressive, conscious leaders who are committed to accelerating the awakening of humanity. Working together, we can leverage these exciting new discoveries to create a brighter future for our world.

“
HISTORY IS OFTEN SHAPED
BY SMALL GROUPS OF
FORWARD-LOOKING
INNOVATORS.

”

YUVAL NOAH HARARI

Affiliations

1. University of California Irvine, School of Medicine
2. Boise State University, Department of Biology

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07

Exhibits





EXHIBIT I

Human 2.0

The next step in human evolution predicted by Dr. Harari could comprise a four layer systems architecture which has an analog in computer design.

At the hardware layer, gene therapies will improve neuron performance to boost conscious awareness and cognitive ability.

At the firmware layer, supporting epigenetic influencers such as education, mindfulness practices and humanistic psychology, will reinforce the expression of genetic modifications.

At the O/S layer, the new humans will enjoy expanded cognitive capacity as well as heightened conscious awareness of their interconnectedness with Nature and the human family.

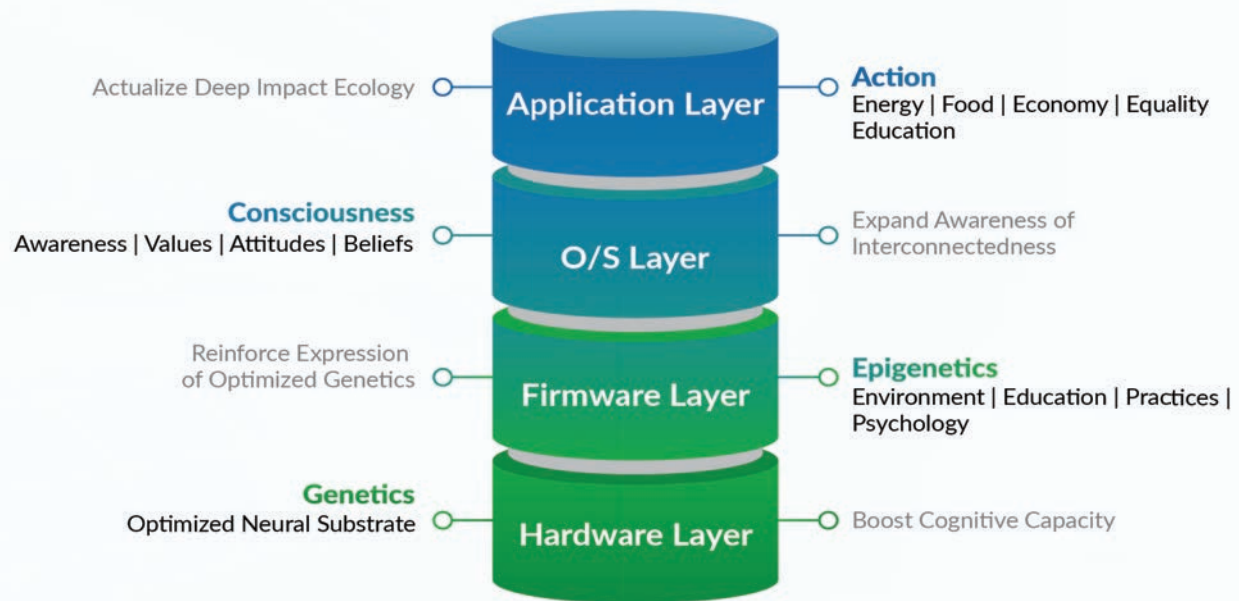
These changes in consciousness can have a cascading effect on the person's values, beliefs and attitudes, ideally leading to new behaviors at the application program layer which support deep impact ecology initiatives.

Human awareness utilization can be compared to computer CPU utilization. It has two forms, free and applied.

Free awareness resembles idle CPU cycles. It is conscious awareness available in the present moment, also known as awareness-of-awareness, presence, mindfulness, meta-awareness and metacognition.

Applied awareness has two forms, conscious and unconscious. Conscious applied awareness comprises analytical thinking and perception. In computer parlance, these processes are analogous to application programs.

Human 2.0 Systems Architecture



TYPE A

Unconscious awareness processes comprise ninety percent of brainwaves and many of them are unnecessary. Compulsive thinking and mind-wandering during meditation are common examples of superfluous unconscious processes, but this is just the tip of the iceberg. There is an enormous amount of unconscious activity going on beneath the surface which we are completely unaware of.

There are two kinds of unconscious applied awareness:

1. MOVE TYPE A PARAGRAPH HERE.

Unconscious processes and memories support conscious thought and perception including language, logic, and object recognition. These vital processes are analogous to a computer's operating system.

TYPE B

Unconscious processes and memories support animal survivalism; scanning for real or imagined threats, and preparing for flight or fight responses. Although largely unnecessary in civilized society, these stress-related responses are nevertheless overactivated by modern life. In computer parlance, Type B processes are like anti-virus programs, and in many people, they are running amok. Meditation calms them down temporarily, but the results are inefficient and time-consuming. However, a genetic "smart pill" can permanently attenuate these processes by alleviating unnecessary unconscious activity in the brain.

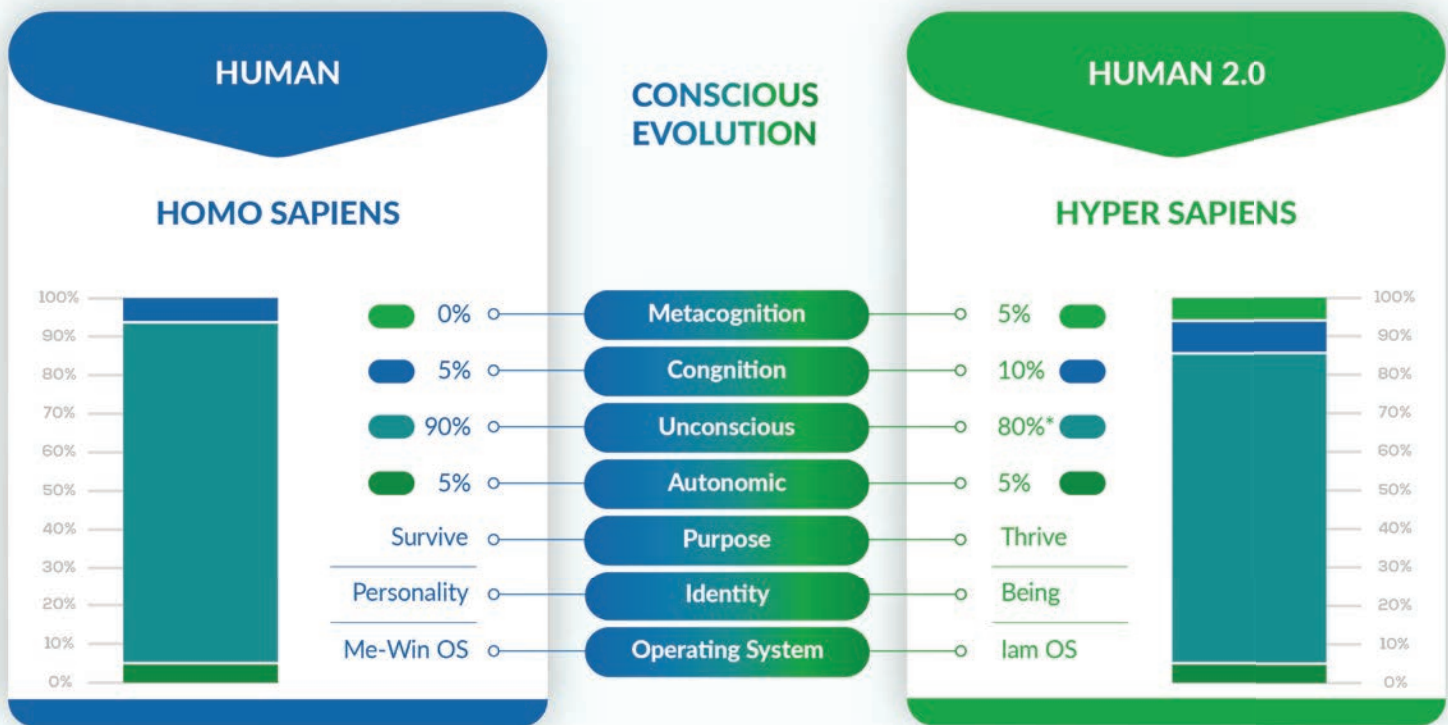


EXHIBIT II

The Second Cognitive Revolution

Excerpts from *Homo Deus: A Brief History of Tomorrow*,
by Yuval Noah Harari

Although Dr. Harari has a secular, reductionist worldview, his book contains excellent insights. Dr. Harari's first two books, *Sapiens* and *Homo Deus*, have sold 25 million copies, and his readers include Barack Obama and Bill Gates.

"The mental renovations of the first Cognitive Revolution ...transformed the Sapiens mind, thereby turning an insignificant African ape into the ruler of the world. The improved Sapiens minds suddenly had access to the vast intersubjective realm, which enabled them to create gods and corporations, to build cities and empires, to invent writing and money, and eventually to split the atom and reach the moon. As far as we know, this earth-shattering revolution resulted from a few small changes in the Sapiens DNA and a slight rewiring of the Sapiens brain. If so, maybe a few additional changes to our genome and another rewiring of our brain will suffice to launch a second cognitive revolution."

"Techno-humanism agrees that Homo sapiens as we know it has run its historical course and will no longer be relevant in the future, but concludes that we should therefore use technology in order to create Homo deus – a much superior human model."

EXHIBIT III

Service Delivery

“At the beginning of the third millennium, medicine is increasingly focused on upgrading the healthy rather than healing the sick. Doctors, engineers and customers no longer want merely to fix mental problems – they are now seeking to upgrade the mind. We are acquiring the technical abilities to begin manufacturing new states of consciousness.”

“The main products of the twenty-first century will be bodies, brains and minds, and the gap between those who know how to engineer bodies and brains and those who do not will be far bigger than the gap between Sapiens and Neanderthals.”

“Relatively small changes in genes, hormones and neurons were enough to transform Homo erectus – who could produce nothing more impressive than flint knives – into Homo sapiens, who produce spaceships and computers. Who knows what might be the outcome of a few more changes to our DNA, hormonal system or brain structure?”



THE WORLD TODAY
IS SHIFTING INTO A
KNOWLEDGE ECONOMY
WHERE COGNITIVE CAPITAL IS
THE PRIME CURRENCY.

Mental health professionals in cognitive clinics will screen applicants to determine suitable candidates for gene therapy. Approved candidates will receive education to prepare them for genetic enhancement and counseling to support them in harvesting the greatest benefit from gene therapy and achieving their goals. Participants who successfully complete their education and counseling programs become eligible for genetic upgrades. The results of each upgrade will be scientifically verified with brainwave measuring equipment and psychological tests to quantify awareness gains and improvements in cognitive functions.

Cognitive upgrades will be transformative for many people. Cognitively-enhanced individuals may experience positive shifts in personality, outlook, values, openness, relationships, professional interests, and other areas. Graduates will attend continuing education programs which help them understand and navigate these changes to realize the greatest benefit for themselves, their families, their communities, and humanity.

EXHIBIT IV

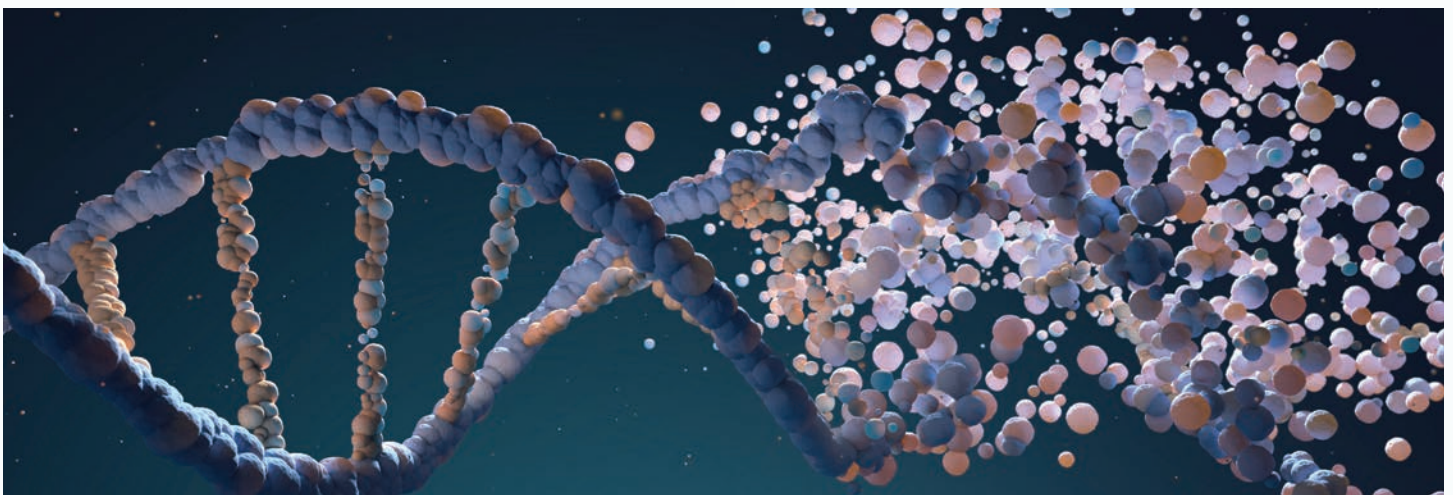
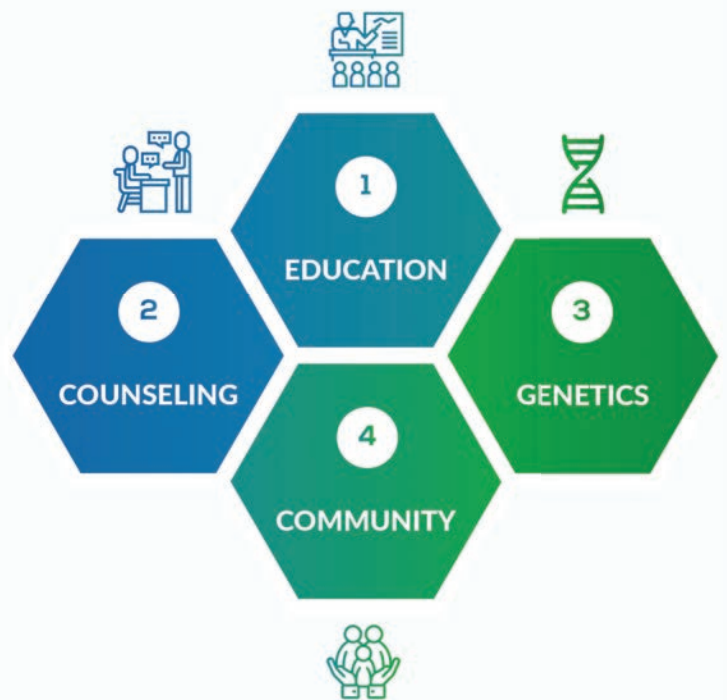
Historical Parallels

History is often shaped by small groups of forward-thinking innovators. Ten thousand years ago, most people were hunter-gatherers, and their capital was spears and arrows. But a group of disruptive thinkers in the Middle East pioneered a new form of capital – seeds and land – and became the first farmers. Although small in number, the future belonged to the farmers, since agriculture allowed cities to arise, fostering the development of writing, money, art and commerce.

As the Agrarian Age gave way to the Industrial Revolution, European aristocrats who stayed tethered to feudal forms of capital – land and titles – lost their power to a rising middle class who saw the future. New titans of commerce who understood the new forms of capital – men, machines and money – rose to prominence on the back of the steam engine and built great fortunes.

Century knowledge economy. The ability to create and distribute this resource carries a wealth generation potential which can be compared in principle to the petroleum industry.

Vast reserves of cognitive capital lie buried beneath layers of superfluous unconscious mentation and brainwave activity. Retrieving this lost awareness and restoring it to the individual is relatively straightforward in theory if one knows where to look and how to do it.



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This report was prepared by Cognitive Genetics Institute, a research center dedicated to expanding the frontiers of human knowledge in the area of consciousness engineering. The Institute is a world leader in pioneering bold initiatives to discover new cognitive sciences and technologies which provide humanity with greater understanding of the behavior of awareness.

This research has identified emerging scientific discoveries and technical breakthroughs which can have an overarching effect on human cognition. The goal of this report is to help forward-thinking leaders understand how to leverage these new technologies to enrich humanity's cognitive capital around the world.

Cognitive Genetics' staff draws upon the Institute's international network of senior advisors in the scientific, business and academic fields. The Institute is a non-profit organization and its research is not commissioned by any business, government, or other institution. For further information, please contact us.

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