## History & the Neomnivore

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HISTORY &

THE NEOMNIVORE

KRISTOPHER GASTERATOS

COLTON BIEHL
How would the most influential people & civilizations throughout history have supported cellular agriculture?
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Due to historical accounts and ancient remnants throughout history, we have attempted to piece together the insights of various historical figures and groups related to cellular agriculture.

The following historical figures & groups were selected based on their influence and impact upon human civilization. While some of the individuals listed were ostensibly vegetarian and others by default, omnivores, the purpose of this piece is to investigate their potential positions towards that of neomnivores (if such an option had been available to them).

These significant groups and people have, of course, changed the course of history through their collective and individual actions, respectively. The prospect of revolutionizing animal agriculture through cellular agriculture, while not explicitly denoted by any of these groups or people, derives the impetus behind our investigation. Specifically, we have drawn connections between the analogous impacts their life results had with the tremendous capacity of cellular agriculture. This served as the fundamental basis for conceptual comparison and the analysis of these minds and their corresponding opinions towards the technology of cellular agriculture.

We hope the collaboration and construction of this piece will create a space for conversations that otherwise may have never occurred. Exposing those interested to avenues of thought previously unseen is our main objective rather than to compose a comprehensive historical document. And so, this piece aims to inspire thought, conversation, and intellectual engagement on cellular agriculture and the historical giants that have come before us.
The areas of concern within animal agriculture have become increasingly worse in the last few decades as the production capacity of animal products has increased rapidly. At the same time, the prospect of making animal products without animals, called Cellular Agriculture, has revealed itself scientifically, and is showing promise towards curbing the associated problems with animal agriculture -- ranging from public health and food scarcity, to animal welfare and ecological degradation.

As this technological solution rises in the form of cellular agriculture, or producing animal products without animals, so too has the public interest in recent years. This modernization of agriculture calls to thought the innovators and trailblazing communities throughout history; for they too were once before the beginning path of their revolution. Over thousands of years, various individuals and groups have indeed shaped the course of history, but just a handful come to mind when considering the most influential. Throughout the span of human history also lies the reality of animal farming, creating a common thread between Plato, Lincoln, and Einstein. The historical accounts from the following individuals give us insight into how they would have regarded cellular agriculture, and the expertise we consulted on each, strengthens these postulations.

However, postulations these indeed are so it ought to be implied that attaining the opinion of individuals like Harriet Tubman or Benjamin Franklin on the subject of cellular agriculture are at best, educated guesses. Many of the fields like Biology were not even conceptualized yet, so while attaining Isaac Newton’s potential thoughts on genetics is challenging, attaining it on derived subsects like biotechnological genetic engineering is an even greater challenge.

Ultimately though, through historical accuracies and expert accounts, this work aims to introduce a great innovation of modern intellects, cellular agriculture and its behavioral manifestation, neomnivorism, to the great individuals and collective minds of history.
CHAPTER 1

ALBERT EINSTEIN
Albert Einstein was the Nobel Prize winning physicist best known for his theory of general relativity that married the concepts of classical Newtonian mechanics with that of electromagnetism. He became a vegetarian in the later years of his life and once wrote to Max Kariel in a letter, “I have always eaten animal flesh with a somewhat guilty conscience.” This was reportedly prior to his own adoption of a vegetarian diet and way of life. It also seemed Einstein was well versed with evolutionary theory and came to the understanding that the life of the human species is not more or less valuable than the life of other organisms that descended from common ancestry.

Later in his intellectual life, after having emigrated from Germany to the United States of America, he wrote many philosophical pieces. Einstein was reported to
have read many of Immanuel Kant’s works by the age of 16 and his philosophical thinking is believed to be behind much of his development of revolutionary scientific theories. And while Kant did not presuppose animals to having moral value intrinsically, many deontologists today like Harvard’s own, Christine Korsgaard, find this to be a flaw in his framework rejecting this former tendency of Kant.

Nevertheless, Albert Einstein did indeed adopt a vegetarian diet and advocated for it stating, “Nothing will benefit health or increase chances of survival on Earth as much as the evolution to a vegetarian diet.” Based upon his philosophical and dietary subscription to vegetarianism, it seems that the German born physicist would have been genuinely interested in and shown support for cellular agriculture in its ability to alleviate animal welfare problems. It also seems Einstein’s pantheistic viewpoint may have led to him being a proponent of cellular agriculture insofar as its capacity to increase the harmony between sentient beings globally.

We have examined what Einstein would have thought of cellular agriculture based on his dietary choices and philosophical conceptions, but what of his scientific training? A thinker capable of developing theories such as the quantum theory of light, the photoelectric effect, the relationship between mass and energy, and the theory of general relativity would assuredly be interested in cellular agriculture -- if only for its scientific innovation.

Just as Einstein stood on the shoulders of the scientific giants before him, the great scientific minds of today are standing upon his shoulders and hoping to make
significant discoveries. The work of Einstein and many other scientists were foundational to the development and formulation of quantum mechanics, and likewise cellular agriculture is a technology that stands upon the shoulders of the historical giants of biological thought.

Overall, based on his own dietary choices and quotes cited from his letter and other pieces of correspondence, it is safe to claim Einstein would have been strongly in favor of the advancement of cellular agriculture.

“Look deep into nature, and then you will understand everything better.”
CHAPTER 2

MAHATMA GANDHI
Mahatma Mohandas Karamchand Gandhi is perhaps the most well-known figure for peace and nonviolence in all of human history. He was heavily influenced by the religious views of his parents -- his father adhered to Hinduism, and his mother, Jainism. Gandhi’s nonviolent civil disobedience led to the independence of India and inspired civil rights movements around the world. He is one of the most notable members related to standing up for one’s views in the face of injustice, leading to his strict adherence to vegetarianism and a nonviolent way of life.

Subsequently, Gandhi is often seen as a champion of the animal rights movement quoted saying, “The greatness of a nation and its moral progress can be judged by the way its animals are treated.”
While the literature and sources pertaining to Gandhi’s views toward the scientific enterprise are limited, one would imagine that he would have whole-heartedly embraced cellular agriculture -- if only on the premise of alleviating the killing of indefinite quantities of animals that otherwise would be slaughtered -- particularly bovine, sacred in Hinduism. Gandhi supported nonviolence in actions, words, and thoughts at all times and toward all living beings so his support for cellular agriculture would have likely been unwavering, though one can only speculate if he would have adopted the dietary ways of the neomnivore himself.

Gandhi believed that one should seek to comprehend and minimize such violence caused by dietary choices. He based these teachings on the “essential unity of all life”. Much of the philosophical and ethical influence of cellular agriculture coincide with his beliefs – namely, that all cellular life exists on a continuum of evolutionary history and relatedness to one another. It seems Gandhi may find it unjust that one species, Homo Sapiens, deserves more or less of an opportunity to experience life without suffering than other sentient species.

He is also quoted to speak on environmental matters noting, “What we are doing to the forests of the world is but a mirror reflection of what we are doing to ourselves and to one another.” The ecological prospects of cellular agriculture to end the decades of deforestation around the world would be a probable cause for his support. Not to mention his sentiment on humanity’s reckless exploitation of our planet’s resources towards animal agriculture, “Earth provides enough to satisfy every
man’s need, but not enough for every man’s greed.”

Gandhi’s dietary choices were more than an opportunity to obtain nutritional and caloric energy in the form of organic matter to fuel his own ability to live. The impact of his dietary choices on the environment and other living organisms was considered equally salient.

The humanitarian aspect of cellular agriculture would have surely appealed to Gandhi as well. He would have likely taken issue with grain from developing countries with starving children being sent to the West to feed livestock. And it seems Gandhi would have been concerned too with the rights of workers in the animal agriculture industry like tannery laborers overseas who work in unhealthy conditions with toxic chemicals. Each of these points leads us to believe that Gandhi would have been a strong proponent for cellular agriculture towards creating animal products harmlessly. It is easy to imagine that Gandhi would have been interested in and supported the cellular agriculture movement insofar as it seeks to alleviate suffering for humans and animals alike, consequentially feeding an ever-growing human population.
“First they ignore you, then they laugh at you, then they fight you, then you win”
CHAPTER 3

MARTIN LUTHER KING JR.

History & Neo
As a prominent leader of the United States civil rights movement, Martin Luther King Jr. labored resolutely towards a dream of equality. His struggle was ultimately awarded with the Nobel Peace Prize in 1964 for his activism towards those facing racial injustice. We think it is reasonable to assume that the issues of ecological racism and animal welfare would have likely spoken to Martin Luther King regarding animal agriculture, and hence towards cellular agriculture as a means to alleviate such qualms. This assumption is supported by the actions Dr. King took during his lifetime to peacefully combat racial injustices and his fundamental support of nonviolence. The leadership role Dr. King took in the Civil Rights movement was deeply inspired by the teachings and actions of Gandhi as he nonviolently protested for the independence of India from British rule. Dr. King would have likely stood up to the injustices of environmental racism caused by animal agriculture systems.
Environmental racism is defined as environmental injustices of socially marginalized, racial-minority communities. Examples of this include exposure to pollutants, including animal waste, and an intrusion on the ability of these communities to access clean natural resources. Due to the disinterest of wealthier communities to house animal farming operations for their uncleanliness and ironically distasteful nature, the majority of livestock farms throughout the world are positioned in lower income communities.

Such actions taken toward less financially well-off individuals could certainly represent an injustice served to them by animal agriculture. With hog waste primarily posing adverse health risks to poor, colored communities, we would imagine this would draw Dr. Martin Luther King’s support for cellular agriculture as a means to reduce the effects of environmental racism. He likely would have opposed the spreading of manure into the air that regularly occurs from industrialized animal farming operations, along with the corresponding discrimination against farm animals. Dr. King ultimately stood up for infractions that he believed to be inherent rights of all humans; his leadership, and influence would have been a powerful voice in support of cellular agriculture.

With the rise of industrialized animal agriculture in the late 20th century, after his death, we speculate that Martin Luther King Jr. would have taken issue with the state of modern animal welfare. This pertains particularly to his position that one ought to “never, never be afraid to do what’s right, especially if the well-being of a person or
animal is at stake." Dr. King’s views would have likely coincided with the current cellular agriculture movement and suggested his support.

Dr. King actively spoke out against injustice and discrimination in any and all forms stating, “injustice anywhere is a threat to justice everywhere.” We believe this powerful voice for social equality and peace would have supported the promotion and adoption of neomnivorism as a means to eliminate suffering and promote equality.

His life, influence, and teachings starkly contrasted what was deemed normal or acceptable in his time. Brave men and women throughout history such as Dr. King were individuals willing to defy social axioms of their time to implement ideas worth multiplying to establish norms of greater justice. Enlightenment and knowledge always lead the way out of ignorance and condemnation; this was true during the civil rights movement and is true for the cellular agriculture movement. Dr. King believed when the imaginary wall between “us” and “them” is toppled down, the world shall be better off – whether this imaginary wall has been constructed between members of one race, species, or man, it seems Dr. King would agree that extension of the moral circle will be the wrecking ball that will inevitably bring it down.

Proponents of cellular agriculture today see the injustices present within the current agriculture paradigm and are willing to fight towards the solution. The actions of individuals such as Dr. King have inspired activists and all interested in equality and peace in this world. Martin Luther King Jr. would have likely supported the movement of cellular agriculture as it seeks to alleviate suffering and attempts to solve the environmental problems humanity presently faces.
“The time is always right to do what is right.”
CHAPTER 4

CHARLES DARWIN
In concert with his published, On the Origin of Species by Means of Natural Selection, in 1859, Charles Darwin became the father of evolutionary biology. The study of the relatedness of all living organisms on Earth ties quite well into the issues of animal agriculture and that of cellular agriculture.

As Charles Darwin indeed played an integral role towards the discovery of core biological principles like evolution by natural selection, the scientific foundation of cellular agriculture owes its conception to Darwin’s work. An acknowledgment of gratitude would be in order when sitting down with Charles Darwin to discuss cellular agriculture, as his work changed the course of biology, and led to insights and advancements in fields that created this technology. His position that, “The love for all
living creatures, is the most notable attribute of man” suggests that perhaps he was keen to the idea of moral extension to non-human animals. Cellular agriculture’s moral imperative of relieving the trillion-quantity slaughter of animals annually aligns quite well with Darwin’s position here.

Furthermore, a critical concept to utilitarian/consequentialist ethics as it relates to non-human animals is “speciesism”, or determining the interests of one sentient species to take precedence over another. Darwin’s work proving the gradient of biological life that is evolution from a single common ancestor is central to rejecting speciesism, where a fundamental premise is humanity’s position as another animal on the cladistical spectrum.

Darwin’s idea of natural selection, culminated through his hours of observation of the natural world, revolutionized our understanding of life on Earth and our own existence. He was willing to stand up to the commonly held beliefs of his time and published his own ideas. Cellular agriculture is an idea that also holds the potential to be as rebellious as Darwin’s since it stands up to societal norms seeking eventual enlightenment.

A mind such as Darwin’s would have likely seen the biotechnological techniques of cellular agriculture and marveled at its complex, yet fundamental scientific basis. We would think Darwin would also be honored to know that his insights and deep thought about our place in nature led to such discoveries and technologies that made cellular agriculture possible today.
Perhaps Darwin would have enjoyed the irony that our species evolved consuming animal products from animals as it was essential to our survival, but now if humanity does not change our dietary tendencies, we may be welcoming our own extinction as a species.

“I AM NOT APT TO FOLLOW BLINDLY THE LEAD OF OTHER MEN.”

Charles Darwin
The former president of South Africa is most notably remembered for his efforts to end apartheid. The ideology of apartheid that his actions strongly opposed were based on racial segregation that privileged whites with greater opportunity. He was an activist that stood up for his beliefs and for freedom in the face of oppression and injustice. Mandela believed that this was the obligation of everyone -- to do what could be done to enhance the freedom of others. He endured an unimaginably long and difficult prison sentence of 27 years during which he contracted tuberculosis, was transferred to multiple prisons, forced to work manual labor, and other atrocities likely beyond the layperson's comprehension. In due course, Nelson Mandela received the Nobel Peace Prize for his actions that defied the racist policies of his time.

Much of his life's work, philosophy, and resiliency was aimed at the degradation of the wall built between races in his home country of South Africa. The
same revolutionary effort and motivation could certainly be employed to bring down the wall that has been erected between our species and other living organisms. Mandela is quoted having said “Real leaders must be willing to sacrifice all for the freedom of their people”. Other animals do not have a voice or the ability to defend themselves from the exploitative net that our species has cast upon them. For that reason, the cellular agriculture movement must step up as leaders for those who are unable to lead themselves. The adoption of this promising biotechnology will greatly enhance the freedom and quality of life for sentient beings ad infinitum, and surely a man as noble and forward thinking as Nelson Mandela would grasp the significance and severity of the problems that cellular agriculture stands to solve.

We believe that Nelson Mandela would have embraced and advocated for cellular agriculture while also encouraging those involved in the activism and spreading of its cause. Among the many pearls of wisdom that Mandela’s life stands to offer us all is his persistence in the face of adversity. It ought to be inspirational to read of someone who spent 27 years of their life behind bars who still had the ability to overcome hardship and change the world. His teachings encourage all to stand up and speak boldly for that which is true and just.

A quote by Nelson Mandela seems pertinent to the discussion of cellular agriculture and animal welfare. He said, “No one is born hating another person because of the color of his skin, or his background, or his religion. People must learn to hate, and if they can learn to hate, they can be taught to love, for love comes more
naturally to the human heart than its opposite”. Those words about human compassion can surely be applied to the human perception or misperception of our animal relatives. One could imagine that no one is born indifferent to the well-being of animals, but that they must learn to be indifferent. Surely if the youth of our society can be taught to consume animals and that animal farming is normal, they can transition to going “neo” and taught that a new tomorrow is possible where animals are no longer seen as conduits to products. Even though his passing is just a few years before the emergence of this concept publicly/commercially, it seems Mandela’s status on encouraging universal freedom may have contributed to his support of cell-ag, “For to be free is not merely to cast off one’s chains, but to live in a way that respects and enhances the freedom of others.”

A man as passionate about change, equality, and freedom as Nelson Mandela would likely be interested in a technology with such utility as cellular agriculture.
“IT ALWAYS SEEMS IMPOSSIBLE
UNTIL IT IS DONE”
Arguably one of the brightest minds belonged to Leonardo Da Vinci -- an artist, scientist, and inventor of 15th Century Italy. Da Vinci was perhaps the most influential figure of the Renaissance; an artist and scientist of such unmatched diversity and entirety that the term “renaissance man” was coined after his extensive skillset; a term used today to label those of varied talents, skills, and interests. His insatiable curiosity and appetite for inquiry led him to the investigation of topics as varying as botany and mathematics. A technological invention as logically sound and potentially beneficial as cellular agriculture would likely have sparked deep interest and thought from Da Vinci too. The brain responsible for the brush strokes that culminated into the Mona Lisa assuredly could realize the immense promise of this modern biotechnological development.
While Da Vinci was an inventor and philosopher ahead of his time and purportedly a vegetarian, his position on cellular agriculture would have been an interesting one to attain. We think Da Vinci’s position on animal suffering and interest towards engineering may have drawn him to cellular agriculture, and his various involvements suggest this as well. Da Vinci’s famous sketches of parachutes, helicopters, and tanks centuries before conceptualization, suggested his affinity for forward-thinking and visionary engineering. Da Vinci’s mind could think far beyond the societal norms and intellectual constraints of his time. Proposing novel mechanisms to create animal products without harming animals is a style of thinking that came naturally to Da Vinci. An inventor of the caliber of Da Vinci would have likely been deeply fascinated by the inventions of cellular agriculture that will help enable humanity to become an interplanetary species.

This, in addition to his interests in anatomy and surrounding fields serving as pre-curors to biology (which as a science did not yet exist), would have drawn him towards the engineering efforts behind cellular agriculture. The efforts behind dairy, leather, and meat made via cellular agriculture are of complex biotechnological utility and we would suppose Leonardo would be immensely intrigued by this philosophical/scientific dichotomy.

His positions on animal suffering would have likely compounded his interest towards the field as well. An old constituent of Leonardo, Andrea Corsali, has been noted to claim, “Certain [people] are so gentle that they do not feed on anything which
has blood, nor will they allow anyone to hurt any living thing, like our Leonardo da Vinci.” Da Vinci has also been quoted on the topic of sheep, cows, and goats that, “Endless multitudes of these will have their little children taken from them, ripped open and flayed, and most barbarously quartered.” These quotes indicate that his moral position would have led him to support the adoption of neomnivorism as ethically sound.

Reports of his public actions and private writings indicate a mind motivated by profound reason and tremendous empathy toward other sentient beings. He was reported to have regularly purchased caged birds from the marketplace only to walk around the corner and release them into the wild. Many of his writings also questioned the common belief at the time that man was superior to other animals. His own words were, “humanity is not ‘king of the animals’ but merely ‘king of the beasts’, that is, a more powerful beast than the rest.” He clearly had a strong aversion for the actions related to our treatment of other animals, caging them, raising them for slaughter, and exploitation in general. These aspects of Da Vinci’s life point to his probable adoption and support of neomnivorism as a dietary and philosophical way of living. Perhaps Da Vinci would have felt the societal adoption of cellular agriculture would be an opportunity to open the metaphorical cages around the globe releasing all animals.

Conclusively, it seems, Da Vinci, having lived during the European Renaissance would have appreciated cellular agriculture as the sort of renaissance or re-birth of “animal agriculture” viewing cellular agriculture as the reinvention of a broken system into a 21st century Agricultural Renaissance.
“As long as men massacre animals, they will kill each other.”

L da Vinci
Chapters

7-12
As yesterday is considered history with respect to this present moment, this next section explores cellular agriculture as it pertains to our most recent history. We find the current time period while writing this piece to be particularly note-worthy, as it is on the cusp of cellular agriculture’s revolutionary commencement. As such, this chapter is dedicated to the current age which will be the history of early 21st century humanity, preceding cellular agriculture’s introduction to society.

Oxford Biologist, Richard Dawkins has claimed, “In 100 or 200 years’ time we may look back at the way we treated animals today as we look back on the way our forefathers treated slaves”. This chapter is unique, though similar as we think it’s worth noting that we are, in essence, presently living in an era comparable to what most of these historical figures and groups were living in -- a time where ignorance towards
cellular agriculture is ubiquitous. Similar to the vision Steve Jobs had for mobile computing technology to revolutionize the world, we too find cell-ag to be on the horizon with a wave of immense global good coming to shore.

This work was written with the intention of raising awareness on this vital issue and bringing it into the consciousness of the public. It shall only be a matter of time until even our constituents during this era become aware of the superb capacity of cellular agriculture. Only then will the neomnvoires of the future understand the history before them; such is the crux of History & Neo -- humanity's soon-to-come evolution towards neomnivorism.

As cellular agriculture becomes a feasible commercial reality in the 2020s, the conventional animal agriculture industry will have reluctance to renounce their past infrastructural systems due to the decades of financial investment into them. But how perfect that the decade of 2020 will serve as the decade of genesis of cellular agriculture -- Humanity will finally correct its vision (to 20-20) on animal commodity acquisitions seeing clearly the path forward towards a post-animal bioeconomy. Additionally, public resistance will unavoidably exist predicated upon cellular agriculture’s perception of “unnaturalness” and its intrinsic basis challenging millennia-long status quo agricultural practices and traditions. While these political and psychological hurdles will decelerate cell-ag from adopting in particular geographic areas and countries, its culminated benefits will prove too strong for humanity to oppose. And so, nothing short of existential risk will truly derail public acceptance
of cellular agriculture, as the norm, which will take place in the 21st century in an intra/interplanetary manner. The 21st century, worldwide adoption of cellular agriculture will be one of the most important, yet overlooked advances of human civilization. While driverless vehicles, interplanetary expeditions, and alternative intersecting technologies may capture greater social interest during its era, the global impact of cellular agriculture will be unmatched in its ability to ensure a brighter future for the people, the animals, and the world.

And it is worth noting that it will take a large shift in advocacy for cellular agriculture before the majority of humanity no longer depends on living animals for agricultural products altogether, but we would suppose this would take course throughout the 21st century.

After all, the reason for this inescapable likelihood is how this evolution to cellular agriculture was inevitable with social movements prioritizing the innocent and victimized, towards environmental sustainability, and the economic capacity – this destined cellular agriculture to be on the cusp of tremendous impact. It was only natural since the traditional ethical bedrock of developed nations encompassed consideration for suffering, and so cellular agriculture served as the panacea resolving the millennia-long exploitation towards the sentient animal kingdom. Overall, this innovative capacity suggests humanity’s 21st century acceptance of cellular agriculture will transform as the modern system of acquiring animal products.
“THE ONES WHO ARE CRAZY ENOUGH TO THINK THAT THEY CAN CHANGE THE WORLD, ARE THE Ones who do.”

Steven Jobs
CHAPTER 8

NATIVE AMERICANS
This chapter will examine the introduction of cellular agriculture to the indigenous populations of the Americas, North and South. The first members of our species to inhabit the land known today as North America and South America are believed to have done so around 10,000 BC. This was made possible via a land bridge in the Bering Strait that connected Asia and America. As humanity originated in East Africa and migrated to all corners of the planet, the only feasible route to the Americas would have been through Asia. As the peoples and ways of life held by the Native Americas were as numerous as the blades of grass that covered the grassland, we will examine commonalities between them. The Native American populations were the members of humanity that migrated the furthest distance from our East African origins, thus were potentially the most inquisitive and adventurous.
Perhaps the most technologically advanced cultures or tribes were in the Andes region of South America while the majority of North American, at least the tribes in modern day United States, were grasslands establishments with inferior technology. What seems to have been constant throughout the ideologies, however, was an appreciation and respect for nature and its resources. While they were hunters and gatherers, their harvesting of nonhuman animal life was not malicious, but rather one of thoughtful necessity. Conservatism and a refrain from over-indulgence seems to permeate through Native American cultures. There are reports of Native American hunters thanking the spirit of the animal before consuming it as an energetic source of food. This, we believe, lends to a support that would be present from the Native Americans, since saving natural resources at a grand scale was aligned with their cultural/philosophical beliefs.

Both farming and hunting indicate a utilization of resources that nature provides in various ways. For this reason, as well as the Native American respect for the resources of nature, it is plausible to imagine that cellular agriculture would have been of interest to the inhabitants of the Ancient Americas. If the technology were explained properly, relaying the fact that it enables users to consume animal products without harming animals, we believe it would have been strongly supported. It would be naïve and irresponsible to write about the potential introduction of a technology to the Native American population without noting their experience with the imposition of novel ways of life. Our discussion of the Ancient Americas
completely changes with the voyage of Christopher Columbus in 1492, which paved the way for the innumerable modifications that followed for the Native American way of life. For this reason, among others, it is likely that the idea of cellular agriculture and the benefits that it holds for the environment would have been supported, but hesitation and fear of such a novel technology could be expected as well.

Native American culture was notably quite conservative with their resources, as many groups throughout history were pre-industrial revolution with resource scarcity more prevalent. Though beyond environmental conservatism, we postulate that Native Americans might have appreciated the philosophical ideology of cellular agriculture which prioritizes a minimalist approach to the production of animal commodities starting with cells and a small amount of resources; in other words, rejecting modern over-consumption of resources rampant in many contemporary societies.

As various Native American tribes believed that all life contained a spirit, it is logical to deduce that if animal suffering could be avoided, this would have been favorable too. This would include clothing inhabitants of the ancient Americas which was commonly dependent on animal hide. Developments in cellular agriculture that enable animal products like leather to be made without animals such as Zoa or Mylo, would also be of interest. As cellular agriculture would enable human and nonhuman animals to inhabit the same land in harmony and alleviate environmental problems, it likely would have been supported by the people of the Ancient Americas.
“Every seed is awakened and so is all animal life. It is through this mysterious power that we too have our being and we therefore yield to our animal neighbors the same right as ourselves, to inhabit this land.”

-Sitting Bull, Hunkpapa Lakota Holy Man
As we continue our journey through time, we make our way to a port in the Indus Valley River Civilization of Ancient Asia. The Silk Road was a network of trade routes, terrestrial and maritime, by which technology, goods, and ideas were exchanged between Asia, Africa, and Europe. Some of the technologies that were exchanged between civilizations were gunpowder, paper-making, the compass, and silk. Current efforts in cellular agriculture are underway to produce silk and other textiles without animals, and may have appealed to Ancient Asians, at least metaphorically and semantically, through the term “Silk Road”.

Nevertheless, many of these technologies greatly accelerated the ability of civilizations around the world to advance and communicate with one another. Today we have the internet and other more efficient means of communicating ideas to other
people but at its time, the Silk Road was the most efficient form of cultural and technological transmission available to the dwellers of Ancient ancient civilizations. Imagine a Silk Road traveler spreading the word of cellular agriculture to the inhabitants of a foreign land.

Archaeological discoveries indicate that ancient Asian civilizations were hubs of technological advancement and innovation. In that sense, discussion and introduction of cellular agriculture to the inhabitants of these civilizations would have likely been welcomed. Many of the philosophies and schools of thought that arose out of ancient Asia and the Indus River Valley Civilization valued animal welfare and some ideological systems promoted nonviolence too. This indicates that many of the inhabitants of these ancient civilizations of Asia perhaps would have been open to and interested in cellular agriculture, specifically the suffering it aims to relieve.

Some of the first signs of cities and urbanization were found in the Indus River Valley Civilization of Ancient Asia. And with the congregation of humans, comes the necessity of providing them with food and resources to survive. One can only imagine the conversations and daily activities that took place on the streets of these first cities such as Mohenjo-Daro. Likewise, many of the conversations and creativity behind the cellular agriculture movement are currently taking place in cities around our planet. We believe that the discussion of ne omnivorism and cellular agriculture to the people of Ancient Asia would be rampant and dynamic in nature.

In the end, the concept of the Silk Road was about creating alternative paths
towards the same aim of globalization and the sharing of goods, ideas, and other aspects of human culture. Cellular agriculture can be seen under a similar lens where the goal is to produce animal products, and the current routes that recklessly exploit animals, public health, and the environment ultimately position cellular agriculture to be a viable path forward. This, the plight of the neomnivore, aligns with the following message from Laozi unraveling itself as the best path forward, but animal agriculture as the old system must be transitioned away from for the security of humanity is at stake.

“When one lets go of who they are, they can become what they are meant to be.”

-LAOZI
CHAPTER 10

ANCIENT GREECE

History & Neo
The group of city-states collectively referred to as Ancient Greece were influential to Western Civilization like no other. There is much that began in Ancient Greece connected to cellular agriculture, like the evolved representative democracy, which bounds governmental decisions of most countries such as regulatory measures. And regulation in the food and clothing industries will certainly intersect with cellular agriculture’s adoption. The birth of philosophy also took place in Ancient Greece, and some of the most significant figures in the field came from this era including Socrates, Plato, Pythagoras, and Hippocrates – all of whom have noted ethical positions on animal agriculture and were likely vegetarians.

Much of the intellectual driving force behind neomnivorism and the field of cellular agriculture is a desire to produce a pragmatic solution to philosophically
derived problems that humanity faces. It is not a claim of our piece that the views of these individuals reflect those of the Greek populace, but this passage on groups will focus on specific influential figures and the general significant achievements of the groups as they pertain to cellular agriculture. The philosophies of these Ancient Greek thinkers are as follows:

**Socrates** *(in questioning eating meat)* - “Would this habit of eating animals not require that we slaughter animals that we knew as individuals, and in whose eyes we could gaze and see ourselves reflected, only a few hours before our meal.”

The compassion and empathy that Socrates held for animals is clear to all those familiar with his teachings and the quote above. As he stated that we could see ourselves reflected in eyes of these animals that we lined up to slaughter simply for food, he points out the emotional desensitization that must take place to commit such acts. His quote also invokes the imagination of readers to relate to animals, realize that they experience emotions as we do, and apply a more mindful awareness of the current destructive situation that animal agriculture systems create.

**Plato** - “The Gods created certain kinds of beings to replenish our bodies; they are the trees and the plants and the seeds.”

Plato, a student of Socrates, was known to have been a vegetarian like his teacher. Both
of these Greek thinkers would have been interested in cellular agriculture and neomnivorism if only on a philosophical basis. This quote clearly alludes to Plato’s renouncing animals as dietary options, and the promotion of vegetarianism. Insofar as vegetarianism and neomnivorism coincide to resolve similar issues, Plato’s empathetic position for cellular agriculture would likely have garnered his support.

**Pythagoras** - “For as long as man continues to be the ruthless destroyer of lower living beings, he will never know health or peace. Indeed, he who sows the seeds of murder and pain cannot reap joy and love.”

Pythagoras’ statements speak to the tremendous quantity of animals suffering caused by adverse conditions simply to supply humanity with animal-based goods. This quote also points out that humans will never fully experience health if relying upon the destruction of lower living beings for food. Pythagoras’ quote above turned out to be quite visionary as it pertains to the public health predicaments created by the animal agriculture industry as well, hence serving as a prospective benefit beholden to neomnivorism.

**Hippocrates** - The soul is the same in all living creatures, although the body of each is different.
Without examining Hippocrates’ quote as a metaphysical claim, it is true that the essence of all living creatures is the same. As we all came from the same source, the origin of cellular life on Earth, all living creatures do indeed have undeniable similarities at the molecular and biochemical level. It is apparent that each of these great thinkers did not take their mental faculties for granted but examined each area of their lives thoroughly. This too is what the cellular agriculture movement aims to do raising public awareness of the injustices taking place.

Furthermore, ancient Greece is often thought of as the birthplace of architecture and as such, we would think the revolutionary architecture of cellular agriculture facilities would be fascinating to those of this time. Certainly those who helped construct such architectural feats as the Parthenon would marvel at the architectural design of modern cellular agriculture facilities. Just as modern-day citizens around our globe marvel at the Parthenon, in 2100, students in history classes on Mars will read about the architectural beauty of the first cellular agriculture facilities on Earth recognizing the monumental accomplishments that those buildings represent. The Ancient Greek founders of architecture and design would surely appreciate all of the work and thought in upcoming years that will go into the development of facilities, bioreactors, and other necessary pieces of the cellular agriculture puzzle.

Lastly, the inhabitants of Ancient Greece relied heavily upon farming and agriculture to meet their dietary needs, but were a viable option such as cellular agriculture presented with its potential to feed the hungry populace, it seems it would
have interested them. The deep thinkers of Ancient Greece with their innovation and implementation of architecture and ethics would have been intrigued by the concept of cellular agriculture, and likely in support of it.

We move on from Ancient Greece noting one of the ancient Greek inventions being the alarm clock. And so, our global metaphorical alarm clock is now ringing; it is set to wake us up to change our agricultural system, and unfortunately hitting snooze this time could mean large-scale damage to human civilization.

“AT HIS BEST, MAN IS THE NOBLEST OF ALL ANIMALS; SEPARATED FROM LAW AND JUSTICE, HE IS THE WORST.”

-ARISTOTLE
Like many of the earliest civilizations of ancient history, the Ancient Egyptian civilization took advantage of the accessible supply of water along the Nile River Valley. Indications of this civilization’s reliance upon agriculture dates to as early as 8000 BC but was a certainty by 3000 BC. Inhabitants of Ancient Egypt took advantage of the flooding of the Nile River which left the land fertile and workable. When flood waters receded, the land that was previously covered in water was viable and prime territory for planting and harvesting crops. For this reason, the economy of Ancient Egypt was believed to revolve around or heavily rely upon the use of agriculture for sustenance.

The ingenuity and resourcefulness of the ancient Egyptians leads one to believe that they would be interested in the technology of cellular agriculture. As cellular agriculture is also an intelligent technique of making use of the resources that are naturally available. Reports indicate that inhabitants of this ancient African civilization
maintained primarily a vegetarian diet.

This could be due to the cost of meat or the inability to refrigerate or preserve meat in a desert biome. For this reason, it is easy to believe that this ancient culture would be open to the discussion and presentation of cellular agriculture. Another reason this seems to be a plausible hypothesis is that Ancient Egyptians seemed to have had a highly competent grasp of the utility of science and technology for the advancement of society. This seems apparent when examining the magnificent pyramids, temples, and other architectural feats of those ancient minds. Such structures were obviously the result of a confident command of engineering, construction, communication, and cooperation among vast numbers of individuals. If the ancient Egyptians could bring the idea of the Great Pyramids to reality, then certainly they could understand the necessity towards implementation of a neomnivore lifestyle.

Vast fields of study such as medicine, astronomy, and mathematics can be traced back to Ancient Egypt as they were employed in their infancy thousands of years ago. In voluminous facets, echoes of Ancient Egyptian culture can be detected in various aspects of modern day life in Western Civilization; particularly the reliance upon agriculture and technology for economic stability and advancement.

Animal Husbandry was also an aspect of this ancient culture, with remnants of cattle pens detected as far back in history as the Neolithic. The Egyptians saw animals as incarnations of the gods and were one of the first civilizations to keep household pets. They were particularly fond of cats, which were associated with the goddess Bastet, but
they also had a reverence for hawks, ibises, dogs, lions and baboons.

Many of these animals held a special place in the Egyptian home, and they were often mummified and buried with their owners after they died. Other creatures were specially trained to work as helper animals. Egyptian police officers, for example, were known to use dogs and even trained monkeys to assist them when out on patrol. This close connection to the animal kingdom would have served the Egyptians well as recipients towards neomnivore philosophy.

Ancient Egypt was a society built upon agriculture, science, and innovation. Perhaps the first colony of our species on Mars will follow the lead set by the ancient Egyptians with a slight variation. The colony that inhabits Mars will build their society upon cellular agriculture, science, and innovation; a colony where all life forms are allotted the chance to live free from harm. Indeed, perhaps one of the most valiant hallmarks of humanity is our ability to collectively work towards unbelievably large goals; our travel to the moon and back, our construction of the Great Pyramids, and next our adoption of cellular agriculture to save ourselves and future generations.
CHAPTER 12
MESOPOTAMIA
As our historical clock reaches the final hour, we arrive in Ancient Mesopotamia, the Cradle of Civilization. The geographical boundaries of Mesopotamia are not strict but generally encompass the territories that are today know as Iraq, Iran, Syria, and Turkey. Archaeology has provided evidence of humanity's first use of agriculture in this region as far back as 10,000 BC. While some uncertainty may exist pertaining to dates, humans certainly domesticated animals and were growing cereals to sustain themselves several thousand years ago during this era. The transition from small bands to large societies began with our domestication of plants and animals, during the Agricultural Revolution. Likely, out of necessity, agriculture and our utilization of other animals and plants for our dietary needs has persisted since that time, but cellular agriculture offers an effective way out.

Archaeological discoveries have indicated the development of several technologies in Mesopotamia other than agriculture. These include the invention of the
wheel for pottery and transportation purposes, the development of the concept of time and dividing time units into 60 parts, as well as astronomy, and the first writing form: cuneiform. The Cradle of Civilization was clearly a hub of creativity and ideas; one that certainly would be open to novel technologies such as cellular agriculture. Introducing one of the most profound technologies of today to the area of our planet where our species once created the wheel is a powerful thought experiment. Dynamically influential, cellular agriculture holds the potential to be as impactful and essential as the wheel in all of its forms to our society today. Most people in the society of Mesopotamia, regardless of sex, worked and almost everyone worked in agriculture as it was fundamentally an agrarian society. Similarly, cellular agriculture promises job opportunities for the future generations as this new agricultural system embeds itself into the framework of modernity.

So like a clock journeying from the 12-hand mark back to its origin, we conclude in Ancient Mesopotamia, which coincides with a beginning as well. The inauguration for innovation of agriculture makes it appropriate that our journey back in time, ends where animal husbandry and domestication began. We have examined the presentation of cellular agriculture to some of the most influential members of humanity in recorded history. In the macroscopic view of life on our planet, recorded human history is but a brief instance. But we have no doubt that the future inhabitants of Earth and the other planets that we colonize as a species will look back to this moment, the birth of cellular agriculture, as a momentous transition. The transition to
cellular agriculture that will alleviate potentially infinite animals from suffering, save the welfare of our environment, solve many public health & environmental issues, and save our species from possible extinction.

After all, the society and members of Mesopotamia are perhaps most notably known as the master minds behind the agricultural revolution, including the domestication of animals and commencement of animal agriculture. It became evident to them that the only way humanity was to progress to the next level of civilization was to innovate the essential task of agriculture. But as it was necessary to commence animal agriculture then, it is necessary to culminate it now – and as our ancestors in the Fertile Crescent accomplished millennia ago, analogously cellular agriculture will bring about the second agricultural revolution to address the most salient, threatening concerns facing human civilization.
“It does not take a mind the caliber of those explored in History & Neo to realize the simplicity and brilliance that cellular agriculture holds. The ability to create the same animal product without causing global issues using the most sophisticated biotechnology techniques of our time is quite simply astounding … and as purported here, we believe those peoples and figures explored in this piece would surely concur.”
“Perhaps unbeknownst to it, humanity will soon awake from its millennia-long daze accustomed to using the other animals as organismal conduits for commodities; ultimately realizing a solution of tremendous capacity is developing right before its eyes – one that aims to address the most pressing issues facing our species, the rest of the animal kingdom, and the planet we reside on.”
Our determinations on those explored in History & Neo were primarily positive (regarding their prospective acceptance of cellular agriculture), however it is quite likely that some of the individuals’ subscription to vegetarianism, and naturalness theories would have superseded their personal indulgence towards going “neo”. In light of this, their support for the option of neomnivorousness to exist is certainly mutually exclusive and a preference we do think most would have.

It seems so evident that the majority of people throughout history did not want their meat/animal products contaminated, fellow man/woman sick from working in adverse working conditions or consuming tainted animal products; they did not want animals to suffer needlessly, or to waste resources that are limited in nature. Though today we stand on the brink of a solution to this; one where unlike “solutions” of the past, going “neo” will not require difficult behavioral change and will make solving these problems at mass scale as simple as the idea to use mere cells to drive its innovation and progress.

Many other influential figures in history have obviously had ties to similar tenants of cellular agriculture; of which we found the list to be extensive. With that said, it should be noted quite generally that vegetarians and environmentalists of the past would perhaps have been likely supporters of cellular agriculture insofar as it resolves similar qualms they believed were intrinsic to farming living animals.
As this was written, we considered the 30,000 animals killed every second for food and were quite blown away by statistics like this and others from animal-ag. Perhaps what’s more important to consider though, are the conditions by which many of these animals live, particularly those terrestrial over the aquatic. As these animals, unlike the latter who primarily experience suffocation, endure confinement, zoonosis and mutilations that we all, representing the species inflicting it, ought to be ashamed of. But rather than focus on those animals being killed every second, the 30,000, we ought to think about those 30,000 who make up economically for those lost in the industry; that is thinking about the more than 30,000 animals born every second for food. It’s these non-human animals that ought to receive more solace, as they are being born into a system of misery and suffering, while those 30,000 being killed, are simply redeeming their ticket out of a living nightmare.

While I cannot speak to this with any form of accuracy, I would assume my ancestors of the past casted away, subconsciously, intrinsic emotions of empathy otherwise held for non-human animals, specifically when seeking their exploitation for personal/familial gains. In other words, my ancestor living during the Neolithic period, I would assume, looked into the eyes of a lamb or hen it was about to kill for food and saw the sentence behind it, but due to biological/psychological barriers like Maslow’s Hierarchy of Needs for example, forced emotions of aggression over this empathy simply to be able to survive. Well I’m now proud to be on the cusp advancing a solution to this where these ancestors would be liberated past this moral tribulation and actualize empathy towards other non-human sentient animals as seems they naturally would.
As Einstein said “looking into nature will allow you deeper understanding”, it seems… looking deep into the biological basis of cells has brought us to the understanding of agricultural manufacturing at a cellular level.

In our discussions with the experts of History & Neo, we found varied perspectives brought unique takes on cell-ag. One particularly interesting definition, to quote the Ancient Asia expert we consulted, Dr. DeBlasi, was that “[Cellular agriculture] is, in essence, aiming to secure animal products without the need to allow the development of what the Buddhists would call the sentient being, from which such products are usually harvested.”

Harriet Tubman and Isaac Newton were two historical figures among others that were going to be included in History & Neo but had to be cut out for structural purposes. The historical figures targeted in this piece were chosen considering their dynamic, documented relation to cellular agriculture making a case for their connection. Insubstantial, relational evidence made such exempted entries unachievable for us to explore and were ultimately scratched from consideration in the final piece.
While our ancestors lived in times where ruthless murder may have been necessary, we do not. They lived in an era where survival was on the line more often than it is now for the average first-world civilian. What’s important to consider here is the psychological tendency towards actions that are conducive for homeostatic flourishing, and also the simple tenant of adaptability. That’s why 15,000 years ago killing a fellow person was “acceptable” if this person was challenging the game you were scoping out to hunt during the ice age, for instance. But fast forward today and our advancement in technology has tangentially fulfilled an advancement in morality (at least towards others in this homicidal capacity). While we did such acts out of necessity, cognitive dissonance seems to have buried ethical tendencies we have had all along; true thoughts like the consideration of the person killed in the previous example was simply trying to provide food for his/her own family. These rational thoughts were subdued by a confirmation bias that caused us (our ancestors) to overlook thoughts like this. Likewise, as we have killed the mammoths and pigs of the past, we must adapt to our new, informed position that leads us to the understanding that our ancestors were forced to kill and continuing their practice out of “tradition” is a slap to the face of innovations they would have happily accepted. Think this might not to be the case, well consider that all civilized nations build legal systems upon this fact of humanity; that we ought to not treat others as we do not want to be treated. We don’t want to be killed so we don’t kill, we don’t want our property stolen, so we don’t steal from others. They killed out of necessity and reason, but now we do so out of negligence and recklessness. But our path out of these historical handcuffs lies ahead; the road to redemption is before us and the natural world has provided a streamlined process to better create animal products we have used for millennia. It’s time we redeem our legacy as “human(e)-ity” and right this wrong. And how perfectly that this will transpire during the next decade of the 2020s. 2020s -- the decade cellular agriculture is fully introduced, and how perfectly, as humanity will have its vision adjusted to clearly see the path forward for its agricultural acquisitions.
Experts Consulted

Dr. John Van Wyhe
Darwin Specialist

Dr. Rosie Bosworth
Cellular Agriculture Specialist

Paul Shapiro
Clean Meat Specialist

Dr. Dave Beck
Native American Specialist

Anthony DeBlasi
Ancient Asia Specialist

Irving Finkel
Mesopotamia Specialist

Dr. Barbara Ganson
Historian
THANK YOU FOR READING