The Social, Political, and Cultural Aspects of Hemp and Human Society

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Introduction: “Social, political, and cultural aspects of hemp in human society”

After thirty years of study and work within the cannabis industry in various activist roles and manufacturing and consulting projects, I realized that so much of my knowledge was based on hearsay, anecdotal stories, unverified or unsourced accounts, and urban legend that has been propagated throughout the industry that I willingly embraced as unsubstantiated fact. When I first began outlining this paper in my head, I believed that I had a very clear story to tell about the social, political, and cultural aspects of hemp and human society, but as I have gone further down the rabbit hole into peer-reviewed research and historical evidence, I have found that of all of the sectors of cannabis culture, my sector of industrial hemp, appears to be significantly influenced from decades of unsubstantiated claims and unverified historical accounts being the basis for modern industrial planning and projections.

Cannabis prohibition placed industrial hemp in a time capsule based on industrial work and manufacturing that was all but frozen post-WWII. Additionally, it is clear from the limited historical sources that though hemp was produced and used as an industrial, agricultural resource, much of its notoriety was based on theoretical possibilities during the early turn of the 1900s. The reality is that hemp production never had a firm agricultural foothold in the United States as compared to crops such as corn, wheat, or soy. It is worth noting that Great Britain tried to push hemp agriculture heavily in Colonial America early in their establishment and right up to the Declaration of Independence and Revolutionary War (Barrow, 1963, Woodward, 1929, Nettels, 1931). Further, the supply chain and manufacturing infrastructure for industrial hemp in the United States has never been sustainably established for long enough to benefit from economies of scale and realize many of the hopeful projections assigned to the crop. Everything from global politics to the evolution of agricultural and manufacturing processes of crops that produce similar product lines as hemp has impacted its relationship with humanity.

This paper provides an abridged historical account of the interaction between humanity and cannabis sativa, indica, and hemp to establish historical precedence (cannabis sativa, indica, and hemp are defined further in the “What is Cannabis?”). Further examination of modern "cannabis culture" will include personal experiences and perspectives, as well as a variety of references including peer, reviewed works to provide an ethnographic snapshot of the current state of social, political, and cultural aspects of hemp and human society.

Early-life Reflections on Cannabis (Joseph B. Carringer)

As a 1980s Air Force brat growing up under the influence of Nancy Reagan's "just say no!" campaign, I have lived on both sides of the cannabis cultural divide. Drugs were "bad," and marijuana was the "gateway drug" to a life of criminality and depravity, or at least that's what they were teaching us in the mainstream middle class of the United States in the 1980s-1990s (Alliance, 2022).

I graduated high school at the bottom of my class, despite my avoiding using illicit drugs and cannabis. College was not in my cards until a friend whose work-study job was working for the dean of admissions of Hawaii Loa College convinced the dean to give me a chance and convinced me to apply to school. This was the same friend who introduced me to the man who would be responsible for the first cannabis cigarette I ever smoked.

I would love to tell you that time has robbed me of his real name, but in truth, the only name I ever knew him by was Doc. Doc was a 35-year-old freshman in his second semester when I met him in the Spring of 1992. His reputation had preceded him; I knew he was a "drug dealer," and I did not like him, even though it seemed like everyone else either liked him or had no issue with him.

It was sometime in late February that I happened into a dorm room with a handful of people, my friend who got me into school, one of them, along with two members of the swim team and a couple guys I knew who surfed, and Doc. They invited me in and took up positions in a circle.

Doc pulled out a joint and lit it up. At this point, seeing people smoke cannabis did not bother me much, but I was still very hardened in my position that I was "not a drug user." I don't remember who Doc passed it to first, but I do remember he eventually got it back and tried to hand it to me, which I refused and said, "No, thank you, I don't do drugs."

To this statement, Doc looked at me as I was smoking a tobacco cigarette and drinking a beer and said, "You smoke?" to which I answered smugly, holding out my cigarettes with "Obviously!" Then he asked, "And you drink?" sounding almost confused. I waved my can of beer at him and said, "Like a fish!" with the smart-assed pride of a college freshman in the early 1990s.

Doc paused, still with a look of disbelief on his face, then stared straight at me and said, "You're too ignorant to smoke my weed!" What he did next changed my life. Doc challenged me to do what I had come to college to do and learn by going "up to our college's library and researching the differences between tobacco, alcohol, and cannabis." He finished his statement with, "and when you're done and have finally educated yourself, then you can come back and smoke my weed."

There are moments in a person's life that can be responsible for defining the course of how that life will be lived. This was a moment that did that for me. I took Doc up on his challenge, and for the rest of the semester, I used medical cannabis as the topic of my papers and presentations. Having been a student of debate, I knew that the best way to learn about a subject was to argue from the position that you do not agree with, so every paper and presentation I did was written in support of a pro-medical cannabis position and decriminalization.

The oral presentation for the first position paper I wrote at Hawaii Loa College in Spring 1992 began with the statement, "I smoke weed, and the fact that I have freely admitted that out loud will disqualify me from ever running for or being elected president of the United States." As I write this sentence 30 years later, it is not lost on me that if I had presidential aspirations, cannabis use would be the least likely culprit on my list of sociopolitical disqualifiers for my presidential bid by mainstream voters of the United States.

The lesson I learned at Hawaii Loa College from Doc's challenge was so much more than "medical and recreational cannabis should be legal." What it really taught me was that

government regulations and prohibitions are not one size fits all. I discovered firsthand that I understood a subject with the clarity of facts better than the officials who were lying about it.

These revelations also called into question a whole series of established rules, regulations, and moral codes that had been forced on me by my upbringing and the culture I was raised within, placing me firmly within the cannabis "counterculture" movement. Most importantly, this entire experience, from Doc's challenge to my first academic projects on cannabis, led me down a path toward cannabis activism and the industrial hemp business sectors culminating in a significant portion of my life's work.

What is Cannabis?

When a person hears the word cannabis, it is similar to the word "crow" insofar as all ravens are crows, but not all crows are ravens. Cannabis sativa and industrial hemp are the same plants though industrial hemp is a non-psychoactive varietal of cannabis sativa. Additionally, cannabis indica, which can be grown as a pure indica plant or as a sativa indica hybrid, is a purely psychoactive form of cannabis and is not used for industrial hemp agricultural.

All forms of the cannabis plant bare the distinctive five-to-seven-pointed leaf and a characteristic aroma. Additionally, all varieties of cannabis contain some amount of CBD and THC, though not all varietals include psychoactive quantities of THC. Though all the plants share a similar woody central stalk, cultivation methods and varietals will determine if the plants' characteristics will be tall and thin or shorter and bushy.

This paper defines cannabis into three primary categories: psychoactive cannabis flower, non-psychoactive cannabis flower, and industrial hemp (non-psychoactive).

Psychoactive cannabis flower refers to cannabis sativa and indica plants that have been cultivated for elevated levels of tetrahydrocannabinol (THC), the compound that enables psychotropic reactions when ingested in various forms.

Non-psychoactive cannabis flower refers to cannabis sativa plants cultivated for the flower in plants that produce less than .3% THC. These plants are harvested for the cannabinoid Cannabidiol (CBD).

Industrial hemp refers to cannabis sativa plants that produce .3% THC or less for food, fuel, fiber, and biomass applications. The agricultural process for these plants is visually different from the flower-based harvesting processes insofar as industrial hemp, from a distance, can be mistaken for densely growing bamboo ranging in height from 6'-12', usually grown in hundreds to thousands of acres.

These three categories of cannabis growth share the cannabis plant as a common thread, though there are many subtle and not-so-subtle differences between these categories from product goals, environmental impacts, legality, and the types of individuals who pursue working with them.

An overview of cannabis flower and hemp culture

Cannabis culture is founded on a relationship between the humanity of cross-cultural origins. Cannabis has been cultivated by numerous cultures for medicinal, recreational, spiritual, and industrial uses spanning thousands of years from prehistory to modernity. Historical evidence shows that humanity used and benefitted from its relationship with the cannabis plant, most notably in its longstanding textile applications, and it is one of the earliest plants cultivated for its bast fiber[*]. Industrial hemp cultivation for use for its bast fibers for use in textiles has been dated back to 2,500 B.C.E. in China. The first Chinese records of "hemp" cultivation are 6,000 years old, older than the first known salt mines recorded by the Chinese (Kurlansky, 2002, Jiang et al., 2016).

Humankind's relationship with cannabis and hemp is itself not surprising due to the limited sources for agriculturally produced bast fiber in the ancient world. Ancient archeological records at dig sites in Turkey have identified textiles carbon dated to 9,000 B.P. made with the bast fibers from trees (Newsroom, 2014). Agricultural crops such as flax and hemp along with wild harvests such as nettle have evidence in later archeological record and appear to altogether replace the neolithic use of trees as a source of bast fiber. Despite its widespread historical cultivation, the twentieth century near-global prohibition of cannabis and industrial hemp cultivation defies logic or simple explanation.

Cannabis prohibition was a catalyst for modern U.S.-based cannabis culture to evolve in response to domestic prohibitions and international contrabands. Even though the term “cannabis culture” is used frequently to broadly describe supporters of medicinal, spiritual, recreational, and industrial uses of cannabis, “cannabis culture” is not monolithic. Within the cannabis and industrial hemp communities, it takes little effort to uncover what may be argued as ideological belief systems that span from the right to use cannabis medicinally, recreationally, spiritually, and industrially (hemp) as expressions of personal freedom, choice, political activism, and environmentalism. Further, support for psychotropic cannabis and industrial hemp spans the international community.

The decades from 1990 through 2020 have seen a dramatic shift in domestic U.S. cannabis regulations as well as an increase in Cannabis research (Jaeger, 2022). While researching this paper there was a noticeable absence of academic journals article and papers in the 1970s post-Nixon era. U.S. drug policy that placed cannabis on the Controlled Substances Act Schedule One list had a direct impact on the ability of scientists to study cannabis (Jaeger, 2022). National Institute on Drug Abuse (NIDA) has also directly impacted the ability to study cannabis, as pointed out by cannabis researcher Donald Abrams who states that “the reason we don’t have more data is because it’s quite difficult to study. The only legal source of cannabis is NIDA, which has a Congressional mandate to only study its harms” (Downs, 2016). However, research specific to the medical benefits cannabis has been on the rise over the past two decades with $1.5 billion of research recorded from 2000-2018 (Jaeger, 2022). Additionally, multiple U.S. colleges

[*] “bast fiber, soft woody fiber obtained from stems of dicotyledonous plants (flowering plants with net-veined leaves) and used for textiles and cordage. Such fibbers, usually characterized by fineness and flexibility, are also known as “soft” fibers, distinguishing them from the coarser, less flexible fibers of the leaf fiber, or “hard” fiber, group. Commercially useful bast fibers include flax, hemp, jute, kenaf, ramie, roselle, sunn, and urena.” (Britannica, 2021).

and universities now offering accredited cannabis programs including respected universities such as such as Cornell and Syracuse.

The use of psychoactive cannabis for medicinal, spiritual, and recreational purposes as well as industrial hemp manufacturing pursuits has persevered through prohibition and prosecution that began in the early 1900s and continues throughout the United States and globally. There has been a growing multinational and cross-cultural increase in cannabis activism with individuals from various socioeconomic, racial, and cultural backgrounds coming together to lobby for the right to use the plant in all forms. The activist-driven industry embraced a view early on that cannabis and industrial hemp has the power to "save the planet," creating an environment where distortions and exaggerations based on theories and hypotheses became shared and promoted as fact. This paper explores a snapshot of the historical precedence for human cannabis use from the earliest known records to the modern establishment of the flower-based cannabis products and industrial hemp sectors.

In popular mainstream culture, there is widespread recognition of Rastafarianism as synonymous with cannabis use, popularized by Jamaica's top musical and cultural export, Bob Marley (BBC, 2009a). The spiritual and ideological connection to the plant is rooted in the simple understanding that Jah (God) provides all things natural, and cannabis flower and hemp products are Jah's will (BBC, 2009b). Similarly, with the mainstreaming of cannabis use, there is a growing interest in cannabis-based spirituality (Stone, 2019). In cannabis-based spirituality the plant has become a sacrament and is considered more than just a medicinal or recreational psychotropic, viewed as “a gateway to the divine” (Stone, 2019).

Cannabis culture has been characterized as "counterculture," for decades was popularized as such by *High Times Magazine*, the former definitive source of all thing’s cannabis in the U.S. and abroad. Within mainstream U.S. culture there was an expectation of a “type” of individual who smoked cannabis or promoted industrial hemp decriminalization, popularly characterized as the “spacey stoner” from characters such as Cheech and Chong to Bill and Ted. These stereotypes arguably trace back to beginnings in anti-cannabis rhetoric such as Reefer Madness that worked to define cannabis users as morally depraved, different, and outside of cultural norms. However, if one stops to considers the sheer number of individuals who admit to having smoked cannabis including influential billionaires such as Steve Jobs and Bill Gates, the idea that cannabis use being “counterculture” seems erroneous or mis guided at best (Grimm, 2017).

Modern cannabis culture is derived from an ongoing relationship with a plant that spans thousands of years of human interaction. Human beings participating in cannabis culture have created relationships and beliefs in the cannabis (hemp) plant that span recreational, medicinal, and spiritual interactions for manufacturing, industrial, and agricultural purposes. These beliefs also have required the most recent generation of cannabis culture participants to do so at their own peril during global and domestic prohibition.

From a commercial viability standpoint, hemp needs to become culturally acceptable on a mainstream level in order to achieve economies of scale that will enable it to become a sustainable industrial, agricultural commodity. States such as Massachusetts, Maine, and New York have decriminalized recreational cannabis flower use and reset political and public opinion

on cannabis use and industry. Though widespread recognition and approval of flower-based cannabis products is a positive development for cannabis in general, perception of the shift towards the psychoactive and nutraceutical product sector, which offer no food, fuel, or environmental benefit, has had a mixed effect on industrial hemp agriculture. Recent confusion at the farming level from uninformed misunderstandings over the differences between industrial hemp and cannabis flower agriculture regarding yields, varietals, legal permitting, and potential earnings per acre have created a volatile and sometimes hostile environment for industrial hemp agriculture's development of stable manufacturing and supply chain infrastructure in emerging markets.

Hemp and Cannabis from the Ancient World to Modernity

Hemp's history in the ancient world can only be as clearly understood as the artifacts and ancient texts permit. Due to the limitations of historical and archeological records surrounding cannabis sativa and hemp cultivation in the ancient world, there is some room for interpretation of the limited data available when determining the earliest dates of human cultivation and when specific processing practices were implemented, and to what scale. However, with the current archeological findings and written historical accounts, it is clear that cannabis sativa and industrial hemp cultivation have been a well-used agricultural resource, beginning in Asia, that then spread through the ancient world (Li, 1974b, Pomeroy et al., 2020).

When searching the internet regarding cannabis and industrial hemp use in the ancient world, it quickly becomes evident that some of the presented information may be founded on individual theories or recycled exaggerations based on the lack of reference materials and cited sources. The record of cannabis sativa and industrial hemp use established in this paper's timeline is not attempting to discredit any specific claims or theories. Instead, the presented timeline's sole purpose is to establish a verifiable base of historical evidence for cannabis sativa and industrial hemp's presence within multiple cultures broadly placed along humanity's shared timeline from the ancient world to modernity.

Ancient China, Japan, and Asia

Cannabis sativa appears to have been first cultivated by humans in Northern China, though there is limited agreement about exact dates and locations. Carbon-dated evidence that includes pottery shards with hemp rope imprints date back to 10,000 B.P. from Taiwan and imprints Pan Po Village, Weishui Valley S. Shensi Prov., China has artifacts of pottery that bare hemp cloth imprints on pottery from 4115-3535 B.C.E. (Merlin, 2003). It is widely accepted that hemp was being used as a textile, medicinal, and food source by 4,000 B.C.E., though unverified claims of Asian and Mesopotamian cultivation of 10,000 - 8,000 B.C.E. are common throughout the internet, even from respected industry producers such as Manitoba Harvest (Harvest, 2022, Perez, 2022).

Chinese cannabis and industrial hemp cultivation have been identified in the Lung-shan Neolithic culture (Li, 1974a). Additionally, hemp is included in an extensive written record that identifies its uses in rope and fishing nets (Li, 1974a). Ceremonially, Confucians would wear hemp textiles during their mourning period after the death of a parent (Li, 1974a). The character

for "hemp" itself has a series of specificities that relate to plant sex, fruit, and flowers, and the base character for "ma" (hemp) is used in multiple bisyllabic words (Li, 1974b).

Regardless of the exact dates of cannabis sativa and industrial hemp cultivation throughout Asia's history, it is fair to state that cannabis was used extensively for textile purposes as well as a potential food source, with additional records of the recognition and use for its medicinal value (Li, 1974a, Li, 1974b). Additionally, though China has regulations regarding psychoactive cannabis, it has maintained the cultivation of cannabis sativa for industrial hemp agricultural purposes in an unbroken chain throughout the empire's thousands of years of history. China was one of the primary sources of hemp textiles during the 1990s to early 2000s during the initial push to reestablish a domestic U.S. demand for wholesale and retail hemp textiles. While many historic hemp-producing nations and territories fell victim to pressure from the U.S. states to include industrial hemp in established prohibitions implemented during the War on Drugs, China held firm in its traditions as an industrial hemp producer and for decades has been a leader in global hemp production.

Another Asian nation that has a longstanding historical record of cannabis sativa and industrial hemp agriculture is Japan (Mitchell, 2014). The earliest evidence of hemp agriculture in Japan appears in the Jomon period (10,000 - 300 B.C.E.) in the form of seeds and woven fibers (Mitchell, 2014).Hemp was used to produce clothing, bowstrings, and fishing line proving to be durable and resistant to mold and decomposition (Mitchell, 2014). Some suggest that hemp was brought to Japan's Kyushu Island via China by way of Korea closer to the end of the Jomon period (Olson, 2022). Evidence of hemp agriculture includes a neolithic cave painting featuring images of tall hemp stalks with the characteristic leaves with images of individuals and horses that appear to have a style of dress that was foreign to the region, believed to be representations of the Korean traders that brought hemp to their land (Olson, 2022).

Cannabis was considered a sacred plant by Shinto priests, a medicinal plant, and most importantly, an agricultural resource that produced a bast fiber that could be used for various textile applications (Olson, 2022). Cannabis clearly had a strong presence in Japanese culture, religion, and the industry growing from its introduction in the Jomon period through the conclusion of WWII (Olson, 2022, Mitchell, 2014). The U.S. victory over Japan in WWII and subsequent post-war occupation led to the implementation of Japan's cannabis prohibitions, partially due to cannabis' strategic value by the Japanese military, who had been responsible for the administration of the agricultural resource throughout the war (Mitchell, 2014).

Japan's industrial hemp industry has been steadily declining, with fewer than 60 licensed cannabis farms in the country. But, despite the strict contrabands, hemp remains firmly tied to Japanese culture and Shinto beliefs, ceremonies, and traditions (Mitchell, 2014, Olson, 2022). Additionally, the evidence of Japan's once-thriving hemp industry persists today with annual crops of feral hemp that grow despite ongoing eradication attempts (Mitchell, 2014). Despite the decline and eradication attempts, Japan's lone cannabis museum is doing its best to preserve historical records and its agricultural and processing techniques (Mitchell, 2014). Additionally, Japan's feral hemp is so heartily established that seed stocks of these once domesticated strains are still readily accessible for cultivation once domestic policy permits (Mitchell, 2014).

Evidence of cannabis migration from northeastern regions of China and Asia appears in the form of carbon-dated archeological evidence. Cannabis plants from the first millennium B.C.E. have been identified in multiple tomb excavations in Russian Siberia and northwest China (Jiang et al., 2016). In the Jiayi cemetery, Turpan, N.W. China cannabis fruits and stems have been excavated and radiocarbon dated between 2510+30 to 2650+25 B.P. (2,800 – 2,400 years old) (Jiang et al., 2016). These artifacts suggest that cannabis was an important cultural plant used in ceremonies, including ritual burial. Additionally, the location of these gravesite discoveries provides a timeline reference for the cannabis plant's migration westward. This movement probably followed trade routes, towards Europe and the Macedonian region, and would be responsible for bringing cannabis sativa medicinal and industrial hemp textile goods to the Ancient Greek and Roman Empires (Fleming and Clarke, 1998).

Ancient Greece and Rome

There is strong evidence for cannabis sativa and industrial hemp's growing presence in ceremonial, medical, textile, and cordage applications in the historical records of Ancient Greece and Rome. The Black Sea region was a critical trading partner with Ancient Greece, which was known for providing "hides, cattle, fish, hemp, wax, chestnuts, iron, timber, and slaves," as chronicled by a respected textbook on the subject matter (Pomeroy et al., 2020).

Herodotus, the father of history, in 440 B.C.E., notably wrote, "The Scythians, as I said, take some of this hemp-seed, and … throw it upon the red-hot stones," and when the hemp seeds began to smoke, "the Scyths, delighted, shout[ed] for joy" (Solly, 2019). Additionally, a 1st c. C.E. Roman naturalist, Pliny the Elder, wrote about harvesting techniques for cannabis flower and fiber (Sumler, 2018). A Roman doctor, Dioscorides from the 1st c. C.E. also mentions cannabis flower and fiber in his works, while Artemidorus in 3rd c, C.E. separately identifies hemp fiber and hemp flower businesses for dream interpretations (Sumler, 2018).

When reading texts such as Sumler's *Cannabis in the Ancient Greek and Roman World* or Bennett's *Cannabis in Ancient Greece*, it is essential to consider that these works have been produced with a limited number of ancient written records and archeological artifacts. Though the historical record confirms cannabis and hemp cultivation, the full scope and significance cannabis has had as a resource or culturally significant psychotropic is not fully known and leaves room for considerable speculation. That speculation includes how widely industrial hemp products such as textiles, rope, and sailcloth were used throughout Ancient Rome and Greece, as well as how widely and often cannabis was used for medicinal and spiritual applications.

A challenge to determining the level to which industrial hemp was used as a bast fiber resource is due to the fact that in the ancient world, there were multiple sources of bast fiber used for a variety of spinning, weaving, and textile purposes. It is commonly accepted that hemp and flax are two primary sources of bast fiber used in various textile weaving applications throughout Italy and the Mediterranean region (Coletti et al., 2021). Regional evidence has shown that both plants had an agricultural foothold in the area, and the processes for utilizing flax and hemp for textile purposes were established and well known throughout those regions of the ancient world (Coletti et al., 2021, Mercuri et al., 2002).

Herodotus wrote of the Thracians in 4.74: "Hemp grows in Scythia: it is very like flax; only that it is a much coarser and taller plant: some grows wild about the country, some is produced by cultivation: the Thracians make garments of it which closely resemble linen; so much so, indeed, that if a person has never seen hemp he is sure to think they are linen, and if he has, unless he is very experienced in such matters, he will not know of which material they are" (Brunner, 1973).

However, even with the writings of Herodotus, it is difficult to determine the full scope of use of hemp fiber for textile applications throughout the ancient world due to difficulties in discerning fiber contents of ancient fabrics (Coletti et al., 2021). Recently, Coletti et al. (2021) chronicled the difficulties in determining the difference between aged hemp and flax fibers. Their research compared artificially aged hemp and flax fibers to ancient fibers taken from the Pompei and Vesuvian regions and then used microscopy techniques to determine if the old samples were hemp or flax (Coletti et al., 2021). Their research shed some light on the aging and degradation processes of the bast fibers, which was inconclusive as to whether the ancient fiber samples were hemp or flax (Coletti et al., 2021).

When considering the sheer size and population of the Roman Empire, it is clear that there was a need for a bast fiber to fulfill the textile and cordage demands of the empire. Yet, with limited archeological evidence and limited historical writings on the subject, it is difficult to determine a specific level of reliance and demand that the ancient world had on hemp, specifically as a resource for bast fiber. Mercuri et al. (2002) took an interesting approach to determine the probability of cannabis sativa cultivation which could be inferred for industrial hemp bast fiber production, by looking at the ancient pollen records of Central Italy. Mercuri et al. concluded that even though they found evidence of feral concentrations of both hops and hemp pollens, it was necessary to note that the higher concentrations of hemp pollens were due to human agricultural activity.

Using the keywords “cannabis, ancient, Greece, Rome” to search databases of academic institutions will turn up an assortment of journal articles that can be used to support the claim that cannabis sativa and industrial hemp were most likely present in various regions of the ancient world. Still, its significance as an agricultural resource for bast fiber or medicinal or spiritual herb in Ancient Greece and Rome is not fully known. To date, there also appears to be a disproportionate amount of research focused on the use of cannabis in the ancient world as a medicinal and spiritual herb versus its role as a bast fiber resource that would have played an essential role in the building of the ancient world from cordage to lift materials or sail cloth to transport them. Though one might infer that hemp and cannabis would have been used and traded throughout the ancient world, its use in Ancient Egypt is considered a myth with little to no evidentiary support (Harer, 2015, Jones, 2012).

It becomes harder to ignore cannabis sativa and industrial hemp's role as an agricultural resource used cross-culturally in more recent records. The limited historical record of cannabis cultivation in the Ancient World can only cast doubt on the size and scope of cultivation, but with the evidence that is there, one can infer that cannabis cultivation played a role on some level in the ancient world.

Viking Hemp in the Middle Ages

The archeological record for the migration of cannabis (hemp) across Europe can be described as a piece of stained glass that has been shattered. Some pieces are recognizable and can fit into place, but there might not be enough connecting pieces to fully explain how it connects to another piece of the image, or in this case, the timeline.

The Scandinavian archaeological record of cannabis agriculture demonstrates that cannabis sativa was cultivated in Viking culture for industrial hemp textile applications between 375-900 C.E. (Andresen and Karg, 2011). Additionally, research into Viking Age Scandinavia (800-1066 C.E.) has produced conclusive evidence of the use of cannabis sativa (hemp) in the production of wall hangings, including the Överhogdal wall hanging (Lukešová et al., 2017). The use of hemp fiber in the Överhogdal wall hangings is significant insofar as it is an example of hemp fiber's use in finer textile applications that require a higher level of refinement over use in cordage. Further, the discovery of cannabis pollen in Middle Ages retting pits and the confirmation of fine Viking tapestries being made from cannabis fiber demonstrates that hemp was a material that could be used in applications typically believed only to use flax (Skoglund et al., 2013). Prior to these discoveries, the common belief was that hemp was "used solely for the production of coarse textiles such as ropes and sailcloth" (Skoglund et al., 2013). Though it would be reasonable to hypothesize the use of hemp cloth for sails in Viking ships, archaeological evidence points to a specific type of wool treated with oils and resins (Eamer, 2016).

Research into why Middle Ages Scandinavian culture would choose hemp over flax for textile applications points towards the heartiness of the cannabis plant to produce textile-grade fibers in soil and climate conditions in which flax struggles (Skoglund et al., 2013). The decision to grow hemp over flax is believed to have been based on the local growing conditions (Skoglund et al., 2013). Note, however, that even though both flax and hemp produced linen in the Scandinavian culture, flax became the most common textile material, eventually making the word linen synonymous with flax textiles, even though by the eighteenth-century hemp and flax were being blended to make linen (Skoglund et al., 2013). Further evidence also points to flax being the preferred textile fiber for individuals of status by the Merovingian period (Skoglund et al., 2013).

Colonial Expansion

During the era of colonial expansion there is abundant evidence of cultivation and use of industrial hemp. Unlike their Viking predecessor, sea fairing vessels of this period were well known for their use of hemp for a variety of uses including sailcloth, cordage and oakum (hemp fiber and tar) for sealing cracks and holes (Crosby, 1961, Merriam-Webster, (n.d.)). Additionally, recorded motivations for promoting industrial hemp agriculture are presented in multiple sources as having reasons with geopolitical motivations (Crosby, 1961, Díaz-Ordóñez, 2019). Though this section focuses primarily on the British colonies in North America, it is worth noting that European production of hemp textiles and cordage has become commonplace in the international political economy of the colonial expansion era and even the Spanish Empire was dependent on Russian hemp, and like England considered the Spanish held American territories as a potential; asset in relieving their Russian dependency (Crosby, 1961, Díaz-Ordóñez, 2019). Through the historical accounts of the British colonies, it is also possible to

understand the importance industrial hemp played as a resource related to naval and national security concerns.

Once firmly established North American colonial states became a source of raw materials to be exported back to England to feed Britain's growing demand for producing manufactured goods as Europe approached the start of the industrial revolution (Nettels, 1931). The New England states, New York, and Pennsylvania were the least productive in producing raw materials to be exported back to England, and the middle colonies were prized for their economic contributions (Nettels, 1931). However, New England and the northern colonies proved of vital importance during Queen Anne's War for their naval ports and were supplied by goods imported from England to discourage the establishment of a domestic colonial manufacturing base (Nettels, 1931).

The production issue for naval stores was used throughout the 1700s to encourage England to support the colonies with instruction in agricultural and manufacturing practices specific to industrial hemp (Nettels, 1931). During this period, much of the required materials needed to project a robust naval force were imported into England from Sweden, Germany, Holland, Denmark, Norway, the East Country, and quite notably, Russia (Nettels, 1931). As early as 1705, products such as hemp, resin turpentine, ship timber, and pitch tar were identified as strategic naval stores and had bounties placed on them (Nettels, 1931). However, as late as 1717, the British Naval Board was reporting that the colonies had produced "no hemp," which was identified as a "most needed product" (Nettels, 1931).

Further suppression of colonial manufacturing manifested itself in the rejection of a proposal for New York to begin producing sail cloth with the statement by the Board of Trade that "(it) would be more advantageous to England that all hemp and flax of the growth of the plantations should be imported hither, in order to the manufacturing of it here (England)" (Nettels, 1931). This brief statement from the Board of Trade in 1715 provides a clear account of industrial hemp's presence and importance as a resource and allowing the inference that hemp was used as a material in making sailcloth. The disproportion of dependence on imported goods from England in the colonies was identified as a potential growing issue insofar as there was an increasing risk that colonists were not making enough money to pay for imported goods (Nettels, 1931). In short, the colonial export economy was not earning enough on their material exports to cover the costs of the dependence on imported British goods.

By 1722 Archibald Cummings presented a proposal including providing land grants, training, and bounties to soldiers to produce hemp on 40 acres of land (each) to be exported back to England (Barrow, 1963). Then in 1723, it was identified that the colonies "(were) very little if at all acquainted with the proper methods of sowing or curing hemp..." and requests for individuals skilled in these practices be sent to the colonies to offer instruction in these practices (Woodward, 1929). Strategic needs for maintaining naval stores were identified, and the British government began providing export bounties (subsidies) of 4 pounds per ton for hemp (Woodward, 1929). It is believed that the pressure to institute this policy came in 1765 in a request made to the British Lords of Trade by Benjamin Franklin (Woodward, 1929).

Soon after the colonies were established, Virginia was identified as having land suitable for hemp production (Hilldrup, 1959). In 1748 George Washington wrote in his journal, "The land is exceedingly rich and fertile, all ye way produces abundance of grain, hemp, and tobacco" (Herndon, 1963). England had developed a significant dependence on Russian hemp and in 1768 had spent £740,000 on Russian hemp imports (Hilldrup, 1959). It had been projected that the colonies could produce enough hemp for domestic manufacturing needs related to the growing colonial shipbuilding industry and eventually relieve the overall British Navy's reliance on Russian hemp, which had the additional unpopular cost of influence from Russian Monarchs (Hilldrup, 1959).

Through 1770 there is ample documentation of Franklin's ongoing pursuits for education in hemp agricultural practices as well his desire to establish manufacturing infrastructure in the colonies (Green, 2015). Additionally, in the years prior to the Declaration of Independence and the Revolutionary War, "at least six ropewalks" were in operation, with multiple facilities eventually coming online during the war (Herndon, 1963).

Even with the historical and archeological records of industrial hemp production in the colonies, hemp as an agricultural commodity was never able to compete with tobacco (Herndon, 1963). It is estimated that during 1712-1728, the colonies exported only 15 tons of hemp to England, and it was not until the twenty years from 1765-1785 that hemp experienced a production "boom" in Virginia (Herndon, 1963). However, hemp also played a role in colonial America in the cottage industries of homespun textiles used for servant wear and slave clothing (Herndon, 1963).

Though cottage-level homespun hemp textile production was present in the colonies, it would be fair to infer that imported wool and cotton fabrics would have been respectably sought-after textiles of the colonial era. There was clearly a demand and use for industrial hemp, but there is not enough historical evidence to determine the full scope and significance of the role the commodity played. Additionally, it is clear that hemp agriculture lost market share in Virginia though evidence for maritime demand continued for items such as rope and sail cloth through the 1900s. The decline of Virginia's industrial hemp agriculture did not mean the end of industrial hemp agriculture in the colonies and what would soon to become known as the United States. Virginia's neighbor Kentucky would play a significant role in the coming century of the 1800s.

Russian Hemp

The North American colonies never fulfilled the expectations of providing industrial hemp to England to any significant level that would have relieved their dependence on Russian hemp. Additionally, the colonies themselves and the young post-Revolutionary War United States also had a dependency on Russian hemp that could not be fulfilled by domestic hemp production.

The young United States was forced to establish a trading relationship with Russia in order to satisfy the demands of maritime hemp consumption for its merchant and military fleets (Crosby, 1961). That relationship was responsible for the very survival and success of the U.S. Navy as well as its merchant fleet of ships (Crosby, 1961). If wind power was the fuel that drove the colonial expansion, then Russia was the primary energy supplier of that era. The hemp cordage required to rig any sea vessel was essential, and warships and merchant ships alike required tons

of it (Crosby, 1961). Additionally, the U.S. had no domestic sources of production for linen or iron, both vital components to the manufacture and operation of marine vessels (Crosby, 1961). Sailcloth was made from linen, and Russia supplied the world with flax, hemp, diaper, and linen for sailcloth (Crosby, 1961).

Industrial hemp requires significant processing to prepare it for use in marine quality cordage. From the care taken in the initial cutting of the hemp to the water retting*, drying, storage, and final fiber separation, the Russians had perfected a process that could take as long as two years from seed to finished fiber (Crosby, 1961). Russians produced the product unrivaled globally, and U.S. Naval officials refused to use domestic Kentucky-produced hemp fiber for their cordage (Crosby, 1961). Kentucky hemp was considered far inferior to Russian hemp and became dangerous to use after just 18 months of exposure to the marine elements (Crosby, 1961). The field retting process practiced in Kentucky left the hemp brittle, and Kentucky farmers did not understand the care required to produce marine or textile grade hemp fiber, nor did it appear that they wanted to engage in that level of time-consuming work (Crosby, 1961). Kentucky hemp cordage eventually became the bailing twine used for making cotton bails once that agricultural crop became the staple of the U.S.-made textiles of the industrial revolution (Crosby, 1961).

Ropewalks of the 1800s to the "Billion Dollar Crop" of the 1900s

Global and U.S. demand for industrial hemp continued from the late 1700s well into the 1800s. Boston's ropewalks were built to supply merchant ships and warships with much-needed hemp cordage. Historical accounts record that Boston had fourteen operational ropewalks by 1794 and that the industry was one of New England's first, having been established in 1612 (Desy and Scott, 2016, Globe, 1899).

Early records of colonial bounties confirm that hemp was in short supply, as were the proper water retting processing protocols (Globe, 1899). Regulations were implemented that directed the use of hemp no shorter than four feet and required only water retting as the approved way to process hemp fiber for cordage purposes (Globe, 1899). It is evident that there was the knowledge that field retting was an inferior process from the onset of colonial expansion, later to be reconfirmed in testing by the U.S. Navy.

New England proudly recorded having produced 2.5 tons of hemp over domestic needs prior to the Revolutionary War, which was shipped back to England (Globe, 1899). However, demand for cordage and lack of domestic hemp agriculture required that the U.S. begin importing hemp fiber and yarn for rope making from countries including Italy and Russia (Globe, 1899). Additionally, a war between Russia and Crimea in the 1850s would impact Russian hemp supply chains and exports with Manila hemp, a cousin of the fruit-producing banana plant also known as abaca, ready to step to satisfy U.S. domestic and global fiber demands for cordage and textiles (Hayase, 2018). Manila hemp's prominence as an industrial commodity continued to grow and

* "In water retting, the most widely practiced method, bundles of stalks are submerged in water. The water, penetrating to the central stalk portion, swells the inner cells, bursting the outermost layer, thus increasing absorption of both moisture and decay-producing bacteria" (Britannica, 2007).

surpass cannabis hemp well into the 1900s, and by 1940, the U.S. was the single largest importer of the commodity (Hayase, 2018).

Two articles published in Scientific American in 1902 and 1903 shed some light on the state of the domestic U.S. and global cannabis hemp industries at the turn of the century. In 1902 it was reported that 18,000,000 pounds of hemp were being used annually in the U.S., though only 8,500,000 pounds were being produced domestically (Fawcett, 1902). To put that into context, that is 4,250 domestic tons of production and based on a modern whole stalk conservative 3.5 ton per acre yield, approximately 1,200 acres of domestic hemp farmland production (8,500 acre's using Dewey's estimate of .5 tons of fiber per acre). The article primarily showcases Kentucky's industrial hemp agricultural practices noting that though hemp is water retted in European countries such as France and Italy, field retting is the cheaper alternative used in the U.S. (Fawcett, 1902). The 1903 article further confirms that water retting was not a consideration in the U.S. due to its increased processing costs even though it produced a superior fiber and once again showcased European nations who practiced hemp agriculture as well as a water retting process (Fawcett, 1902).

Lyster H. Dewey, Assistant Botanist, American Bureau of Plant Industry, was featured in the 1903 Scientific American article and is most notably known in the modern U.S. hemp industry for authoring the United States Department of Agriculture Bulletin No. 404 in 1916. Dewey's bulletin featured an evaluation of hemp hurds for paper making, estimated per-acre yields, and agricultural and production practices and processes (Dewey and Merrill, 1916). Using hemp hurds to manufacture paper had been a well-known and common practice in manufacturing Danish paper, and many notable works have been printed on hemp, including the 17th Century King James Bible (Cellania, 2013). Dewey's report in 1916 identified hemp as a sustainable source of paper manufacturing and estimated that 20 years of annual harvesting of a 10,000-acre parcel of hemp could produce enough hurd for paper production as a 40,500-acre poplar forest harvested once every twenty years (Dewey and Merrill, 1916). Dewey concluded that paper demand would place unnecessary strains on the nation's forests which could be mitigated by harvesting hemp hurds in place of forest for wood pulp and recommended encouraging paper companies to embrace this business model (Dewey and Merrill, 1916). Bulletin 404 is still a regularly cited source (today) for hemp activists, industrial hemp supporters, and environmentalists promoting cannabis hemp as a sustainable alternative to harvesting forests for paper and wood products.

In the modern hemp industry, there is only one other article that is arguably as important to industry activism as Bulletin 404, and that is the February 1938 Popular Mechanics article titled *New Billion Dollar Crop*. The timing of this article came after the 1937 U.S. ban on cannabis cultivation and the same year as the implementation of Canadian prohibition (Lynch, 2020). The report itself states nothing radical, nor does it provide any groundbreaking information regarding industrial cannabis production. However, as a written artifact, it will be uncovered and used as a signpost by industrial hemp and cannabis activists from the 1990s through the present day as confirmation that industrial hemp prohibition is unjust and economically costly.

The Modern Era Cannabis Prohibition

Psychoactive cannabis consumption for recreational, spiritual, and medicinal purposes has been recorded for thousands of years (Sumler, 2018). In those thousands of years of known use of psychoactive cannabis and cultivation of industrial hemp, the last century of strict cannabis regulations and prohibitions circling the globe is an anomaly in the historical timeline. There has been a significant amount of speculation about the reasons for cannabis flower and industrial hemp prohibition. Despite the countless conspiracies that persist, there is evidence to suggest that cannabis prohibition began as slow evolution of regulations and drug policy in the mid-1800s through the early 1900s, targeted primarily at Indian Hemp (cannabis indica), set in motion by politicians with ties to the temperance movement[*] (Ayonrinde, 2020, Mills, 2005).

Cannabis indica has a higher natural level of THC (tetrahydrocannabinol) then does cannabis sativa. THC is the cannabinoid responsible for the plant's psychotropic properties and has been used recreational, spiritually, and medicinally in Central Asia for thousands of years, with known records in India dating to "the first millennium BCE" (Richert and Mills, 2021). British interest in cannabis had been historically focused on fiber production. However, by 1853 Bengal had become the supply chain blueprint utilized by England for regulating, sanctioning, and taxing cannabis indica (ganja) throughout colonial India (Richert and Mills, 2021).

The British colonial government considered psychoactive cannabis prohibition as early as 1793, though it was never imposed due to the conclusion there were no significant "violent or dangerous effects of intoxication except when taken to excess" (Ayonrinde, 2020). Between 1840 and 1860, there was even a push in the French medical community to better understand how to use hashish (Indian Hemp) in a medicinal capacity (Richert and Mills, 2021). However, fears over the spread of Indian Hemp "psychosis" and "insanity" started to emerge towards the end of the 1800s in British Caribbean colonies, including Guiana, Trinidad, Mauritius, and Jamaica (Ayonrinde, 2020, Richert and Mills, 2021). It is believed that Indian Hemp was brought to the Caribbean by Indian indentured laborers who were brought to the islands to work on sugar plantations (Richert and Mills, 2021).

Concern over madness, insanity, and psychosis from Indian Hemp use spawned the creation of the Indian Hemp Drug Commission (IHDC) by the British government which was tasked with assessing the health risks of Indian Hemp for the Empire (Ayonrinde, 2020). By this time, House of Commons M.P.s, with ties to the temperance movement, had already begun speaking out against cannabis, with statements like Mark Stewart's proclaiming that "(ganja) which is grown, sold, and excised under much the same conditions as opium', is far more harmful than opium" (Mills, 2005). However, when the IHDC released its report focusing on asylum patients suffering from Indian Hemp insanity between 1892-1893, it found that the symptoms of "insanity" ranged from incoherence, violence, and suicidal tendencies to laughter, absurdity, and childishness (Ayonrinde, 2020). The IHDC's report produced conflicting results that cast doubt on insanity or psychosis directly being attributed to Indian Hemp use, taking into consideration flaws in police detainment procedures and the diagnostic methodology of the South Asian psychiatric system (Mills, 2009).

[*] "Temperance movement, movement dedicated to promoting moderation and, more often, complete abstinence in the use of intoxicating liquor… The movement spread rapidly under the influence of the churches; by 1833 there were 6,000 local societies in several U.S. states" (Britannica, 2021).

It is unclear in the historical references if Indian Hemp "insanity" or "ganja madness," as it was known in the Caribbean, was exclusively a product of cannabis use or a combination of preexisting mental health issues, poor diagnosis, and/or the effects of more powerful and addictive narcotics such as opium or cocaine (Ayonrinde, 2020, Mills, 2009). The conflation of cannabis with more dangerous narcotics could be heard in the warnings given to Indian agricultural laborers bound for the Caribbean, stating that "possession of opium or ganja would be severely punished" and in the repeated claims of temperance movement supporters on both sides of the Atlantic (Richert and Mills, 2021, Hashim, 2017). By the 1924-1925 League of Nations Second Opium Conference, when Indian Hemp was brought up for a surprise review, psychoactive cannabis was identified as a possible global health crisis, and during the conference, it was reported to be "as grave as opium" and "more dangerous than opium" (Kendell, 2003). Still, League of Nations delegates expressed a desire to create a definition of Indian Hemp that would not put industrial hemp agriculture at any risk, recognizing that it still played a vital role in global trade, with India alone producing 100,000 tons of hemp fiber annually for the British Empire (Kendell, 2003).

By 1932 the temperance movement in the U.S. had the support of influential individuals, including John Rockefeller Jr., who was the point of contact for the Women's Christian Temperance Union (WCTU), Harry J. Anslinger, who was the first Secretary of the Federal Bureau of Narcotics, and his brother-in-law of Andrew Mellon, who was the Treasure Secretary and owner of the bank funding the Dupont Corporation (Hashim, 2017). Additionally, William Randolph Hearst, whose wood pulp farms were heavily invested in by the Dupont Corporation, used his newspapers in a highly coordinated anti-cannabis media campaign (Hashim, 2017).

This power group's targeting of cannabis was exceptionally effective and used media, power, and influence to shape public perception of cannabis and its users (Hashim, 2017). Anslinger's negative feelings toward cannabis are well documented and include the statement that:

"Marijuana is the most violence causing drug in the history of mankind... Most marijuana smokers are Negroes, Hispanics, Filipinos, and entertainers. Their Satanic music, jazz and swing, result from marijuana usage" (Hashim, 2017).

Anslinger tied his belief that marijuana was a violence-inducing drug to its use by blacks and Hispanics (Pagano, 2021). Cannabis was known to be used by Mexican migrant workers, and the slang term marijuana has its origins in that community, and it was Anslinger that pushed the use of the word marijuana over cannabis to tie it to the minority and person of color communities (Pagano, 2021). Anslinger also “created a narrative around the idea that cannabis made black people forget their place in society. He pushed the idea that jazz was evil music created by people under the influence of marijuana” (Pagano, 2021).

Anslinger's statements and views were brought to the silver screen in 1936 in a film titled *Reefer Madness*, featuring scenes of crazed jazz piano players and individuals intoxicated beyond control (Hashim, 2017). By 1937, with its affiliated power brokers' efforts, the WCTU finally succeeded in getting all 48 states to ratify the Uniform Narcotics Act and the Marijuana Tax Act, which regulated and conflated both psychoactive cannabis and industrial hemp (Hashim, 2017).

One of the most widely cited sources of the mid-1900s pro-industrial hemp writing by modern-day industrial hemp activists has been a short piece written in the February 1938 issue of Popular Mechanics titled *New Billion Dollar Crop*, which focused on all of the potential goods from textiles to paper that could be produced from industrial hemp (Windsor, 1938). The Popular Mechanics piece was released one year after the 1937 Marijuana Tax Act officially created industrial hemp agricultural prohibitions that legislated psychoactive cannabis and industrial hemp as a single plant (Hashim, 2017). Arguably the *New Billion Dollar Crop* could be viewed as an industrial hemp public relations piece promoting the potentiality of industrial hemp in a too little to late effort to combat the 1937 Marijuana Tax Act. Additionally, even without the impacts of regulatory prohibitions, it is clear that industrial hemp agriculture and manufacturing had been suffering from a steady decline, and there appeared to be little to no public interest or support for hemp as a commodity one way or another (Hashim, 2017). Further, Manilla Hemp (abaca) produced in the Philippines had been growing in popularity for cordage and textile applications since the 1850s, and by the early 1900s, the U.S. had become heavily reliant on Manilla hemp produced in the Philippines (Hayase, 2018). Consequently, U.S. domestic production of industrial hemp fiber had never achieved a level of quality comparable to Russian and Eastern European produced products leaving Kentucky hemp farmers again in no position to compete with a superior product, this time coming from Asia (Hashim, 2017).

WWII would offer one more opportunity for industrial hemp to become a viable agricultural and manufacturing commodity in the U.S. (Hashim, 2017). Growing demands were placed on cotton, wool, and leather due to the build-up in preparation for war and were compounded by the Japanese invasion of the Philippines, cutting the U.S. off from its supply of Manilla hemp in 1942 (Hashim, 2017). The culmination of these variables forced the U.S. Department of Defense to take another look at industrial hemp's viability to relieve demands on the war machine's manufacturing supply chain (Hashim, 2017). The Department of Defense released *Hemp For Victory* later in 1942 to encourage industrial hemp agriculture and, more importantly, push U.S.-based hemp farmers to modernize their agricultural and processing practices with machinery (Hashim, 2017). The Department of Defense provided industrial hemp with a temporary three-year reprieve prohibition until the end of WWII in 1945. In the end, industrial hemp's contributions to the war effort were arguably inconsequential, and the industry collapsed once again shortly after the war's conclusion (Hashim, 2017).

Cannabis continued to be stigmatized as a deviant drug used primarily by immigrants and people of color and "was removed from the U.S. Pharmacopeia[*] in 1942" (Downs, 2016). Historian Martin Lee states about this era that "segregated American newspapers were saying 'this stuff makes white women and black men have sex'" (Downs, 2016). Additionally, there was little to no political motivation to protect the stereotypical cannabis user i.e., blacks, Latinos, people of color, blues and jazz musicians (Downs, 2016). The legacy of racial profiling and targeted discriminatory prohibition would continue for decades and be exploited again during the Nixon administration on a broader scale to give the administration the power to target cultural groups that were considered political enemies of the Nixon administration (Alliance, 2022)

[*] "The United States Pharmacopeia (USP) is a pharmacopeia (compendium of drug information) for the United States published annually by the United States Pharmacopeial Convention (usually also called the USP), a nonprofit organization that owns the trademark and also owns the copyright on the pharmacopeia itself" (Wikipedia, 2022b)

After decades of loosely enforced regulations against psychoactive cannabis, the Nixon administration launched its War on Drugs and placed psychoactive cannabis in the Schedule One narcotic category (Alliance, 2022). John Ehrlichman, a Nixon aide, admitted in an interview that putting cannabis on Schedule One was done to give the administration power to go after anti-war hippies and blacks, not because it was dangerous or a public health risk (Alliance, 2022). The following year a government commission in 1972 recommend the full decriminalization of cannabis, which was then followed by eleven states between 1973 to 1977 passing legislation that decriminalized marijuana possession (Alliance, 2022). Additionally, in 1977 the "Senate Judiciary Committee voted to decriminalize possession of up to an ounce of (cannabis)" (Alliance, 2022).

The War on Drugs and cannabis prohibition have arguably given significant power to conservative administrations targeting minority and counter-culture communities that historically have been psychoactive cannabis users (Alliance, 2022). Nixon's legacy persisted through the 1980s, given new life by the Nancy Reagan "Just Say No" campaign with cannabis always front and center with other Schedule One drugs such as heroin, cocaine, and crack, taking on a new title as the "Gateway Drug" (Alliance, 2022).

The end of the 1980s and 1990s would see a growing movement of cannabis reform and industrial hemp activism tied to environmental concerns. Of all the activists and authors credited for cannabis prohibition reform, Jack Herer and his book *The Emperor Wears No Clothes* have arguably defined the modern psychoactive cannabis and industrial hemp era of the 1990s-2020s.

The Jack Herer Era of Cannabis Culture

In the 1990s and early 2000s, the talking points behind psychoactive cannabis activism and industrial hemp lobbying were driven largely by the commonly accepted cannabis industry bible, *The Emperor Wears No Clothes: Hemp and the Marijuana Conspiracy*, by Jack Herer. The book's first edition was released in 1985; the 11th was released in 2000 (Herer, 2000). Early editions came with a bold $30K challenge to disprove the claim that:

> *"If all fossil fuels and their derivatives, as well as trees for paper and construction, were banned in order to save the planet, reverse the Greenhouse Effect and stop deforestation; Then there is only one known annually renewable natural resource that is capable of providing the overall majority of the world's paper and textiles; meet all of the world's transportation, industrial and home energy needs, while simultaneously reducing pollution, rebuilding the soil, and cleaning the atmosphere all at the same time... And that substance is — the same one that did it all before — Cannabis, Hemp... Marijuana!" (Herer, Back cover, 1995).*

Jack's bold assertions and claims of the potential benefits and historical uses of psychoactive cannabis and industrial hemp created a rallying point for an assorted collection of activists. By the release of the 11th edition in 2000 and finally printing on November 1, 2010, the challenge reward had increased from $30K to $100K (Herer, 2000).

In 1997 I started my second preprint apparel* business, Cafe 4:20, a pro-cannabis apparel line with edgy slogans combined with a 1990s streetwear styling. Through a series of serendipitous events, by 1998, I found myself employed with Ecolution Inc. and in the middle of the Jack Herer-driven psychoactive cannabis and industrial hemp movement. Steven DeAngelo, the company's founder, and president had a longtime working relationship with Jack. Ecolution Inc. was one of the industry's prominent brands, along with companies such as Headcase, Ohio Hempery, Two Start Dog, Of the Earth, and Hempies.

The hemp industry of the 1990s revolved around talking points easily accessible in Herer's book, and on some level, no matter which company a person worked for, everyone was subjected to indoctrination and programming around accepted industry talking points. By 1998 Jack was a living legend, and *The Emperor Wears No Clothes: Hemp and the Marijuana Conspiracy* was the hemp industry's irrefutable repository of evidence that "hemp can still save the world" as well as a primary source of the alleged industrial and political conspiracies that were to blame for the cannabis contraband (Herer, Front cover, 1995, Herer, 2000).

The goal of this paper is not to undermine or sully Jack Herer's legacy and having had the opportunity to work with individuals close to him as well as speak with him directly, I am confident that Jack's intentions were always meant to support the goal of achieving psychoactive cannabis and hemp decriminalization. However, some of Jack's controversial claims surrounding "hemp's ability to save the planet" were rightfully challenged by prominent European-based hemp industry scientists and even in the face of scientific evidence Herer never modified or backdown from inaccurate claims (Sargent, 2021). The post-Jack Herer era of the cannabis and hemp industry is still dealing with the legacy of widely accepted misrepresentations and exaggerations of the benefits and uses of industrial hemp.

For the individuals who were part of the 1990s and early 2000s hemp industry, it is possible to trace many of the current inaccurate or exaggerated statements regarding industrial hemp's environmental and sustainable benefits back to Jack's claims. At the time, these claims were accepted as fact and heavily promoted by his inner circles of disciples, industry leaders, and activists of the day like my former boss Steven DeAngelo (Ecolution Inc.) and Don Wirtshafter of the Ohio Hempery. During a visit to Ecolution Inc.'s Fairfax, VA office in 1998, Wirtshafter expressed to me directly something to the effect that "it was propaganda and lies that criminalized cannabis, so we need to fight fire with fire if we have to." I never understood the full scope of this statement until I began researching this paper and began to uncover the historical truths that clarify or refute many of the exaggerated claims that are now commonly accepted as facts throughout the cannabis industry.

The Emperor Wears No Clothes: Hemp and the Marijuana Conspiracy took historical data from the Library of Congress archives and presented it with claims that cannabis and industrial hemp prohibition occurred due to targeted political and corporate conspiracies (Herer, 2000). At first glance, it is understandable how the historical data based on the players involved could be

* Preprint apparel is typically an assortment of standard apparel industry garments available to screen printers and private label businesses that can be customized with any assortment of silk screening or embroidery. Hanes and Anvil are examples of manufactures who produce blank preprint tee-shirts for silk screening and private label purposes.

misunderstood as an evil plot of the powerful against psychoactive cannabis and industrial hemp. However, exploration of the historical record outside of Herer's presentation of the data looks less like a single conspiracy and more like a collection of convergent variables that came together from the decline of tall ships, the shift in global fiber demand to Manilla hemp, the lack of industrialization in hemp agriculture and manufacturing, as well as the international and domestic influences of the temperance movement by those in power (Hashim, 2017).

Jack Herer and *The Emperor Wears No Clothes: Hemp and the Marijuana Conspiracy* shaped and defined the movement to end cannabis prohibition for nearly three decades. His work and influence continue to live on in the echoes of exaggerated claims supporting the narrative that "hemp can save the planet" printed across widely circulated memes floating around social media feeds. However, there are growing credible pushbacks from current industry leaders on the credibility of many of Jack's claims of hemp's ability to "save the planet" (Zoellner, 2017).

Jack, who died on April 15, 2010, has a famous Cannabis Cup[*]-winning strain of psychoactive cannabis named after him (Wietstock, 2020).

First Person Snapshot: 1990s-2000s Hemp Industry

The 1990s first wave of hemp businesses was primarily activist driven. Though products were made from hemp, in many cases, they were not necessarily made from hemp in a way that the mainstream population would appreciate or buy. Design and merchandising errors were pervasive throughout the 1990s and early 2000s hemp industry. In most cases, the individuals making critical decisions in merchandising, design, and marketing had no formal background in those areas. This debilitating fact was usually compounded by companies' cultural identity being oriented to the anti-establishment activist, Grateful Dead, Hippie, and High Times Magazine counter-culture stereotypes, which in many cases created significant conflicts when trying to run a for-profit company. I came face to face with variations of these elements while working for Ecolution Inc. and Hemp Works Inc., two well-known and respected companies from the 1990s hemp industry.

I had been involved professionally in fashion and mainstream apparel since my early teens. Cafe 4:20 was my second private label apparel business, and the brand was a pro-cannabis logo-driven apparel line with edgy slogans loosely based on the Coed Naked Sports[**] preprint design and business model. Cafe 4:20 was achieving regional success, and we were looking for a new product category to add to the collection when one of my team members suggested I take a look at Ecolution Inc. and consider making a private label line of hemp jeans. At the time, Ecolution Inc. was promoting itself as an apparel brand and custom apparel jobber. Before I even saw the fabric quality, I was sold on the idea of making hemp-based burlap baggy jeans, even if it was

[*] "The High Times Cannabis Cup is a cannabis festival held each November in Amsterdam. The event allows judges from around the world to sample and vote for their favorite marijuana varieties" (Wikipedia, 2022a).

[**] "Coed was founded in 1990 after two college students from the University of New Hampshire purchased the trademark for Coed Naked. Throughout the 90's Coed Naked arguably became the most popular t-shirt in North America. Today, Coed works with some of the world's great brands, retailers, and businesses, providing these partners with quality decorated apparel that represents the high standards required by these world class companies" (Coed Sportwear, 2022).

just as a gimmick. I was pleasantly surprised when I saw the quality of Romanian hemp denim for the first time, and it would be the material I would use to make my black wedding pants and vest 9 years later.

Barb Filippone (EnviroTextiles, LLC) has been as essential to hemp fabric development as Jack Herer was to cannabis activism. Barb grew up in an NJ garment family, and she was responsible for overseeing Ecolution Inc.'s Romanian manufacturing operations. She and I spoke on the phone in early 1997 regarding my interest in producing a fashion-forward streetwear collection of hemp jeans. Barb's immediate response to me and my understanding of fashion was that Ecolution Inc. needed someone like me working with them because no one in the company besides her had a clue about fashion, and no one was listening to her. Once I saw the collection, I understood her perspective and shared her concerns.

Ecolution Inc. had produced a line of clothing based on the fashion tastes and stylings of its founder Steven DeAngelo, who I would argue still to this day is a very influential person in the cannabis industry but still has little to no sense of mainstream style or fashion sense. The 1990s were when mainstream fashion was dominated by influences streetwear from border sports, hip hop, and R&B culture. Men's bottoms were baggy, and the standard designs of the day were relaxed fit, baggy relaxed, relaxed carpenter, and relaxed cargo. Conversely, Ecolution Inc.'s flagship 100% hemp jean in 1997 was a tight-fitting peg-legged jean. Further fashion gaffs were made by DeAngelo when he insisted on producing a classic two-piece skirt and top design originally intended to be produced in indigo, brown, and black in pink and green neon solid and pink and green neon checker. These fashion mistakes occurred as so many did in the 1990s hemp industry due to the disconnect between the cultural orientation of hemp activists and mainstream popular culture. Though ironically, it is fair to say that the overwhelming goal of these companies was to "mainstream" hemp-based products.

When I took the job with Ecolution Inc. in 1998, I was hired to work with Barb on remerchandising and designing Ecolution Inc.'s men's and women's apparel lines. We designed and produced what was the first and still is, to the best of my knowledge, the only 100% Eastern European wide-leg hemp jean ever made. Though the retail cost of the jean was between $85-$95, which was more expensive than the original skinny Ecolution Inc. jean due to the amount of fabric used, what was immediately apparent was that people wanted to buy these jeans. The company began taking orders based on the design samples used in the catalog photo shoot, and as a result, the line sold out with a combination of wholesale and retail orders. However, my efforts and the sales of the new collection were not enough to overcome the financial losses caused by the failure of the original collection, and Ecolution Inc. filed for bankruptcy in October of 1998.

My work at Ecolution Inc. caught the eye of Hemp Works Inc, and by the Spring of 1999, I was working for Hemp Works Inc. and designing a men's and women's streetwear collection targeted toward mall chain distribution at retail stores like Pacific Sunwear and Hot Topic. Hemp Works Inc. was unique to the 1990s hemp industry insofar as the company was backed by significant financial resources but, like so many hemp companies of the day, was also suffering from a lack of coherent direction and was hemorrhaging money as a result.

Along with the apparel project, Hemp Works Inc. was also producing a line of hemp cosmetics and body care products specifically for Sephora to compete with the Body Shop's hemp body care line. Hemp Works Inc. was poised to produce a product line with mainstream recognition and distribution, but in the end, the cosmetic and body care project cannibalized the apparel project just as Pacific Sunwear was prepared to make an order after viewing the collection.

These experiences offer insight into why industrial hemp products have struggled to gain mainstream success during the 1990s industrial hemp wave. The historic common thread between hemp businesses that failed in the 1990s and early 2000s usually lies in varying combinations of poor business decisions pertaining to design and marketing compounded by unending supply chain issues.

In early 2000 I began offering consulting services to companies interested in industrial hemp. The demand for these services in the 2000s and most of the 2010s was sporadic at best and due to ongoing supply chain issues, unless a company had access to significant financial resources to support all phases of business development, including design, manufacturing, and marketing, my advice was usually to stay out of the hemp industry.

The Current State of Industrial: Canna Markets Group* Perspective

As the psychoactive cannabis and hemp products industries continue to transition into the post-decriminalization period, tectonic shifts in cultural norms surrounding cannabis and hemp continue to occur. Some of these shifts were unmistakable during a trip I took to NY, NY, over the 2022 Memorial Day weekend. While walking through the city, the sheer number of dispensaries and retail cannabis outlets was overwhelming, and it is not hyperbole to say that there was an ever-present odor of cannabis wafting through the city's air. Legal cannabis retailers and cannabis consumption were on full display even in Times Square. However, while psychoactive cannabis and hemp-derived CBD products are poised on the edge of mainstreaming in popular culture, most non-flower-based industrial hemp product sectors are still struggling with the sheer scope of developing a reliable farm to finished good supply chain infrastructure.

In the 1990s-2010s, U.S.-based hemp products businesses existed in a world where companies often had to focus on education and lobbying along with business and product development. Further complications for these businesses came from the inability to source a domestic supply of hemp materials forcing these early activist-driven companies to import products from international sources like China, Hungry, and Romania. Though the U.S. hemp industry has been desperate to achieve the promises of the "New Billion Dollar Crop" portrayed in 1938 by *Popular Mechanics Magazine*, that level of economic success would require vertical integration from farm to finished goods across multiple manufacturing sectors. With the decriminalization of industrial hemp agriculture in the U.S., efforts to establish vertically integrated supply chains are slowly being put in place with manufactures and processors like Fort Benton, MT-based IND Hemp LLC, and Williamsburg VA-based FyberX coming online.

* Canna Markets Group (CMG) is a hemp industry information repository, think tank, and consultancy that provides data, analytics, strategic planning, business planning, and project management services to a wide variety of customers throughout various industrial hemp supply chain sectors based on a diverse industrial hemp and environmental sciences knowledge base. Joseph B. Carringer is the CEO and a co-founder of CMG.

Companies such as IND Hemp LLC and FyberX are harbingers of the era of corporatization the U.S.-based industrial hemp business models are moving into. As the industry is redefining itself, there has been a growing shift in the newly established corporate culture that is working to distance itself from the unsubstantiated claims and inaccurate historical talking points of the Jack Herer cannabis activism era. Some of these changes in messaging were clearly demonstrated in comments made during an interview with Ben Young, CEO and Founder of FyberX, a premier U.S.-based natural and hemp fiber processer and manufacturer (Kerr and Young, 2022).

Young left his career as an investment banker for Goldman Sacs to pursue entrepreneurial endeavors in the hemp industry (Kerr and Young, 2022). In his interview, Young discusses current challenges in the supply chain infrastructure of the hemp industry and the need to modernize processes and integrate operational practices from existing non-hemp corporate manufacturing business models (Kerr and Young, 2022). Further discussions in the interview were made regarding the fact that hemp should not be described as a wonder plant capable of solving all the world's environmental resource problems (Kerr and Young, 2022). Instead, the discussion acknowledges that hemp should be recognized as just one piece of the puzzle in establishing sustainable agriculture, manufacturing, and circular economic practices (Kerr and Young, 2022). When pressed on the environmentally sustainable potential of hemp versus cotton, his responsible answer could be paraphrased to say that hemp shows the potential to be more sustainable than cotton, but until verified peer-reviewed data can confirm the actual impacts of hemp agriculture, it would be irresponsible to make any definitive claims at this time (Kerr and Young, 2022). Sentiments such as Young's regarding industrial hemp's potential as an environmentally sustainable agricultural resource are echoed by a growing number of professionals migrating from other industries into the industrial hemp sector.

When Canada decriminalized industrial cannabis agriculture in 1999, companies like Manitoba Harvest invested heavily in hemp seed-based agriculture and the associated products, including oil. As a result, Canada's hemp seed supply chains are currently some of the most reliable in the world. Companies like IND Hemp LLC are leading the way in U.S hemp seed and fiber production. However, an ongoing challenge faced by industrial hemp supply chains is establishing enough consumer demand to support economies of scale to stabilize agricultural production and standardize manufacturing processes. In short, without consumer demand, the potential to produce a surplus of material exists, and due to the rising cost of goods sold for all agricultural sectors, hemp's current low per acre return makes it a high-risk crop necessitating careful planning and insurances on end-user buyers' post-harvest.

The post-decriminalization era of industrial hemp will require hemp to operate within established agricultural and manufacturing business models, competing against other agricultural commodities in the free market. With millions and potentially billions of dollars at stake, the industry will require a new workforce of well-educated and trained business professionals to ensure its best possibility for success.

Conclusion

My academic research into cannabis began as the result of a challenge to uncover the truth about the plant just over thirty years ago. That initial research overturned my longstanding opinions heavily rooted in negative propaganda and unflattering representations of cannabis users in popular culture of the day. Even in 1992, with only access to the limited library resources of Hawaii Loa College, I quickly concluded that psychoactive cannabis is relatively benign with significant potential for various medical applications. In 1996, I was introduced to industrial hemp agriculture's potentially environmentally sustainable benefits, which deepened my interest in cannabis and cannabis-related issues.

During my early years of cannabis and industrial hemp activism in the 1990s-2000s, I quickly discovered that discussing cannabis use or pro-cannabis support in the mixed company at a minimum came with the risk of judgment and debate. Even conversations surrounding industrial hemp often required clarification on the differences between psychoactive cannabis and nonpsychoactive industrial hemp. Further, for most of my life, illegally possessing cannabis flowers on your person, in your vehicle, or at home has had the potential for criminal liability and risk of incarceration throughout the United States. However, it is possible to argue that decades of persistent activism and educational campaigns supporting cannabis flower and industrial hemp has successfully established a generalized base of positive opinions and understanding for the plant in mainstream popular culture. In just the past decade alone, there have been dramatic shifts in cultural perceptions and legal standings for cannabis and industrial hemp.

Significant changes in domestic U.S. policy towards cannabis prohibition began at the state level in 1996 with the passing of legislation in California that regulated and decriminalized medical cannabis(Wikipedia, 2022b). Years later, Colorado would be the first state to legalize recreational cannabis distribution in 2012 (Wikipedia, 2022b). In the mid-2010s, mainstream media culture began a noticeable shift toward positive representations of cannabis usage. Early evidence of this shift can be seen in the CNN documentary work of Dr. Sanjay Gupta in support of medical cannabis beginning in August 2013 with the documentary *Weed: A Special Report by Sanjay Gupta*, which grew into a six-part series focusing on a wide variety of medical uses and benefits of cannabis (Gupta, 2013). Dr. Gupta premiered his CNN documentary series with an article published on CNN's website titled *Why I Changed My Mind About Weed*, where he opens with an apology for his past anti-cannabis opinions, which he acknowledges as wrong (Gupta, 2013). He then goes on to provide scientific and medical data to explain his change in opinion and states that "Not because of sound science, but because of its absence, marijuana was classified as a schedule 1 substance" (Gupta, 2013).

In 2016 Vice T.V. debuted its network with a diverse collection of documentary series, including three pro-cannabis lifestyle programs (Wikipedia, 2022d). *Weediquette*, *Bong Appétit*, and *Fuck, That's Delicious* offered network programming that featured cannabis users and cannabis businesses in a positive context (Vice, 2016a, Vice, 2016b, Vice, 2016c). These Vice T.V. series were harbingers of a further dramatic shift in beliefs and political opinions that were once dominated by overwhelming negative representations of cannabis rooted in centuries-old anti-cannabis propaganda campaigns.

In 2020 the cable network channel Discovery premiered *Growing Belushi*, a reality television series similar in format to other Discovery Inc. reality programs such as *Gold Rush*[*] and *Deadliest Catch*[**], offering further evidence of the positive media mainstreaming of cannabis (Discovery, 2020). However, this series focuses on Jim Belushi's Oregon-based psychoactive cannabis business. *Growing Belushi* offers its viewers insight into the operational and business challenges of running a nationally recognized cannabis flower product brand and has even featured guest appearances of Dan Aykroyd and Guy Fieri (Discovery, 2020). Anecdotally, this series normalizes the psychoactive cannabis business model as well as recreational and medicinal cannabis use, creating a foundation for positive cultural acceptance with the support of the Discovery Inc. brand identity (Discovery, 2020). Discovery Inc. and *Growing Belushi* have literally made psychoactive cannabis production and the conversations surrounding psychoactive cannabis use family entertainment.

Even with the growing mainstream cultural acceptance of psychoactive cannabis, it continues to be classified as a Schedule One drug under U.S. Federal Drug Enforcement Agency (DEA) scheduling and is not decriminalized for use or possession at the federal level. However, there is a growing majority of support for ending psychoactive cannabis prohibition across the United States. Evidence for this support can be seen in the majority number of states that have legalized both recreational and medical cannabis (18 states) or have just legalized medical cannabis (20 states) (Garber-Paul and Bort, 2022, Hansen et al., 2022). The increasing cultural acceptance of psychoactive cannabis and hemp-derived nonpsychoactive cannabis flower products (CBD) have helped to propel the flower-based cannabis sector to become the current economic engine of the cannabis industry. Anecdotally, the mainstreaming of nonpsychoactive hemp-derived CBD products has destigmatized cannabis to a broad section of the population. Cannabis, by way of cannabis flower products, has entered mainstream popular culture despite any persistent negative media or laws against it.

The psychoactive and nonpsychoactive cannabis flower sector has quickly established economic and cultural significance across the U.S. and has arguably so on the back of a preexisting customer base that has persisted throughout psychoactive cannabis prohibition. However, the U.S.-based hemp industry's growth has been developing at a much slower rate in comparison to the flower-based products sector. The U.S.-based hemp industry is in its relative infancy, working to establish reliable agricultural practices and supply chain infrastructure. Currently, there is an industry-wide demand for significant capital investments, farmland, and mainstream consumer product development. Further, industrial hemp agricultural producers, processors, and manufacturers will need to eventually establish the economies of scale required to achieve consistency and profitability over time.

The U.S.-based hemp industry has also been experiencing a corporatization process since the decriminalization of industrial hemp agriculture. Evidence of this process includes efforts by industry leaders to clarify messaging and claims surrounding the sustainable benefits of hemp industrial hemp agriculture and manufacturing. Corporate leaders have been shifting away from

[*] *Gold Rush*: Follow(s) the lives of ambitious miners as they head north in pursuit of gold (Discovery, 2010).
[**] *Deadliest Catch*: Showcases "the deadliest job on earth: crab fishing off the Alaskan coast on the icy Bering Sea" (Discovery, 2005).

the unverified claims of the hemp activist culture of the 1990s and 2000s. Within industry-leading circles, industrial hemp is no longer described as a super plant that can save the planet. Instead, it is acknowledged as a piece of the sustainability and circular economy puzzle and considered an agricultural resource that can potentially work to establish carbon reduction or neutrality across industrial sectors. However, even with this shift in messaging, environmental sustainability remains at the forefront of discussions with the leading U.S. and international corporations in the industrial hemp supply chain, with efforts now being made to verify claims and present supported facts.

As industrial hemp agriculture and manufacturing establish reliable supply chains, it will be necessary for the hemp industry to produce product lines that receive mainstream notoriety and cultural acceptance. The industry will be able to look to historically viable product production such as textiles and cordage while developing new market interests to identify market potential. Further, as the industrial hemp supply chains mature and stabilize, cross-industry partnerships can be explored to expand sectors like hemp grain through partnerships with existing industrial food producers. Industrial hemp will need to further define itself as a separate industry from flower-based cannabis products within the mainstream culture, which can be achieved through the inclusion of industrial hemp-specific major and minor programs and institutions of higher learning.

Aspects of this paper have been heavily oriented toward the U.S.-based hemp industry and cannabis-related prohibitions and regulations. This is due to the U.S.'s influence globally regarding cannabis prohibitions which can be attributed on some level to the ongoing War on Drugs. However, even with the U.S.'s global impact on psychoactive cannabis prohibitions, nations like China never stopped producing industrial hemp, while countries like Canada have been rebuilding their industrial hemp agricultural infrastructure since 1998. Those countries and the longstanding European industrial hemp producers and exporters are valuable educational resources for developing industrial hemp markets (OEC, 2022, WITS, 2020).

The historical record demonstrates that humanity has had a relationship with cannabis of social, political, and cultural importance that spans thousands of years, and the cannabis prohibitions of the past century are clearly an outlier that appears to be coming to an end. Though there is evidence that cannabis has been used for medicinal, spiritual, and recreational purposes since antiquity, the historical record demonstrates that cannabis has been cultivated more commonly for industrial hemp purposes (textiles and cordage) throughout human history.

With the ongoing decriminalization of cannabis and the re-establishment of industrial hemp agriculture, human society is poised to start the next chapter of its millennia-old relationship with the plant.

Works Cited

ALLIANCE, D. P. 2022. *A History of the Drug War* [Online]. Drug Policy Alliance. Available: https://drugpolicy.org/issues/brief-history-drug-war [Accessed July 05, 2022].

ANDRESEN, S. T. & KARG, S. 2011. Retting pits for textile fibre plants at Danish prehistoric sites dated between 800 B.C. and A.D. 1050. *Vegetation history and archaeobotany,* 20**,** 517-526.

AYONRINDE, O. A. 2020. Cannabis and psychosis: revisiting a nineteenth century study of 'Indian Hemp and Insanity' in Colonial British India. *Psychological medicine,* 50**,** 1164-1172.

BARROW, T. C. 1963. Archibald Cummings' Plan for a Colonial Revenue, 1722. *The New England quarterly,* 36**,** 383-393.

BBC. 2009a. Bob Marley. Available: https://www.bbc.co.uk/religion/religions/rastafari/people/bobmarley.shtml [Accessed July 05, 2022].

BBC. 2009b. Rastafari: Worship and Customs. Available: https://www.bbc.co.uk/religion/religions/rastafari/customs/customs_1.shtml [Accessed July 05, 2022].

BRITANNICA 2007. Water Retting. *In:* ENCYCLOPAEDIA, T. E. O. (ed.). Encyclopedia Britannica: Encyclopedia Britannica, inc.

BRITANNICA 2021a. Bast Fibre. *In:* ENCYCLOPAEDIA, T. E. O. (ed.) *Encyclopedia Britannica.* Encyclopedia Britannica: Encyclopedia Britannica.

BRITANNICA 2021b. Temperance Movement. *In:* ENCYCLOPAEDIA, T. E. O. (ed.). Encyclopedia Britannica: Encyclopedia Britannica, inc.

BRUNNER, T. F. 1973. MARIJUANA IN ANCIENT GREECE AND ROME? THE LITERARY EVIDENCE. *Bulletin of the History of Medicine,* 47**,** 344-355.

CELLANIA, M. 2013. Was the Declaration of Independence Written on Hemp? *Neatorama* [Online]. Available from: https://www.neatorama.com/2013/07/04/Was-the-Declaration-of-Independence-Written-on-Hemp/ [Accessed July 04, 2013.

COLETTI, F., ROMANI, M., CERES, G., ZAMMIT, U. & GUIDI, M. C. 2021. Evaluation of microscopy techniques and ATR-FTIR spectroscopy on textile fibers from the Vesuvian area: A pilot study on degradation processes that prevent the characterization of bast fibers. *Journal of archaeological science, reports,* 36**,** 102794.

CROSBY, A. W. 1961. *America, Russia, Hemp, and Napoleon: a study of trade between the United States and Russia, 1783-1814*.

DESY, M. M. & SCOTT, P. 2016. Ropemakers for the Navy: Part I. Available: https://ussconstitutionmuseum.org/2016/10/06/ropemakers-navy-part/.

DEWEY, L. H. & MERRILL, J. L. 1916. Hemp Hurds as Paper-Making Material - Department bulletin / United States Department of Agriculture: no.404 (1916). District of Columbia: U.S. Govt. Print. Off, 1923-1929.

DÍAZ-ORDÓÑEZ, M. 2019. EL ABASTECIMIENTO MILITAR DE CÁÑAMO PARA EL IMPERIO ESPAÑOL (1665-1808): GLOBALIZACIÓN, ESTADO Y EMPRESARIOS EN EL LARGO SIGLO XVIII 1. *Espacio, tiempo y forma. revista de la Facultad de Geografía e Historia / Serie 4, Historia moderna***,** 45-71.

Deadliest Catch, 2005. Directed by DISCOVERY.

Gold Rush, 2010. Directed by DISCOVERY.

Growing Belushi, 2020. Directed by DISCOVERY.

DOWNS, D. 2016. The Science behind the DEA's Long War on Marijuana. *Scientific American.* April 19, 2016 ed. Scientific American: Springer Nature America, Inc.

EAMER, C. 2016. No Wool, No Vikings: The fleece that launched 1,000 ships. *Hakai Magazine* [Online]. Available: https://hakaimagazine.com/features/no-wool-no-vikings/ [Accessed June 28, 2022].

FAWCETT, W. 1902. The American Hemp Industry. *Scientific American.* Scientific American: Munn & Co. / Scientific American Inc.

FLEMING, M. & CLARKE, R. 1998. Physical evidence for the antiquity of Cannabis sativa L. *J. Int. Hemp Association,* 5.

GARBER-PAUL, E. & BORT, R. 2022. The United States of Weed
Curious about the status of cannabis? Here's where legalization stands, state by state. *Rolling Stone* [Online]. Available: https://www.rollingstone.com/feature/cannabis-legalization-states-map-831885/ [Accessed August 02, 2022].

GLOBE, B. D. 1899. ONE OF BOSTON'S FIRST TRADES: A Ropewalk Was Established in Boston as Early as 1642 and Bounties Were Offered to Farmers Who Raised Hemp--Common Once the Center of the Rope Industry. *Boston Daily Globe (1872-1922)*, p.Newspaper Article.

GREEN, G. 2015. Translating Hemp into a Transatlantic 'Band of Reciprocal Interest': The Society for the Encouragement of Arts, Manufactures and Commerce as a 1760s' Actor Network. *Journal for eighteenth-century studies,* 38**,** 483-495.

GRIMM, B. 2017. 50 Most Successful Marijuana Enthusiasts You Should Know. *Rolling Stone.* Rolling Stone Penske Media Corporation.

GUPTA, D. S. 2013. Why I changed my mind on weed. Available: https://www.cnn.com/2013/08/08/health/gupta-changed-mind-marijuana [Accessed August 04, 2022].

HANSEN, C., ALAS, H. & DAVIS, E. J. 2022. Where Is Marijuana Legal? A Guide to Marijuana Legalization. *U.S. News & World Report* [Online]. Available: https://www.usnews.com/news/best-states/articles/where-is-marijuana-legal-a-guide-to-marijuana-legalization [Accessed August 02, 2022].

HARER, W. B. 2015. The Marijuana Myth in Ancient Egypt. *Journal of the American Research Center in Egypt,* 51**,** 356-358.

HARVEST, M. 2022. *Hemp History* [Online]. Manitoba Harvest: Manitoba Harvest. Available: https://manitobaharvest.com/pages/hemp-history [Accessed June 10, 2022 2022].

HASHIM, N. O. 2017. *Hemp and the global economy : the rise of labor, innovation, and trade,* Lanham, Lexington Books.

HAYASE, S. 2018. Manila Hemp in World, Regional, National, and Local History. *Journal of Asia-Pacific Studies (Waseda Univeristy)*.

HERER, J. 2000. *Hemp & the marijuana conspiracy : the emperor wears no clothes,* Van Nuys, CA (5632 Van Nuys Blvd., Van Nuys 91401), Hemp Pub.

HERNDON, M. G. 1963. Hemp in Colonial Virginia. *Agricultural history,* 37**,** 86-93.

HILLDRUP, R. L. 1959. A Campaign to Promote the Prosperity of Colonial Virginia. *The Virginia Magazine of History and Biography,* 67**,** 410-428.

JAEGER, K. 2022. Cannabis Research Has Rocketed in Recent Years, Despite Prohibition. *Filter* [Online]. Available: https://filtermag.org/marijuana-research-prohibition/.

JIANG, H., WANG, L., MERLIN, M. D., CLARKE, R. C., PAN, Y., ZHANG, Y., XIAO, G. & DING, X. 2016. Ancient Cannabis Burial Shroud in a Central Eurasian Cemetery. *Economic botany,* 70**,** 213-221.

JONES, J. 2012. Textiles, Pharaonic Egypt. *The Encyclopedia of Ancient History.* Wiley Online Library: John Wiley & Sons, Inc.

KENDELL, R. 2003. Cannabis condemned: the proscription of Indian hemp. *Addiction (Abingdon, England),* 98**,** 143-151.

KERR, M. & YOUNG, B. 2022. Moving Hemp Forward with Mandi Kerr and Ben Young. *Moving Hemp Forward With Henp.* LinkedIn: Global Hemp Association.

KURLANSKY, M. 2002. *Salt : a world history,* London, Jonathan Cape.

LI, H.-L. 1974a. An Archaeological and Historical Account of Cannabis in China. *Economic Botany,* 28**,** 437-448.

LI, H.-L. 1974b. The Origin and Use of Cannabis in Eastern Asia Linguistic-Cultural Implications. *Economic Botany,* 28**,** 293-301.

LUKEŠOVÁ, H., PALAU, A. S. & HOLST, B. 2017. Identifying plant fibre textiles from Norwegian Merovingian Period and Viking Age graves: The Late Iron Age Collection of the University Museum of Bergen. *Journal of Archaeological Science: Reports,* 13**,** 281-285.

LYNCH, P. M. A. 2020. Why Was Hemp Banned After World War II? *Way of the Leaf* [Online]. Available: https://wayofleaf.com/hemp/why-was-hemp-banned-after-world-war-ii [Accessed June 03, 2022].

MERCURI, A. M., ACCORSI, C. A. & MAZZANTI, M. B. 2002. The long history of Cannabis and its cultivation by the Romans in central Italy, shown by pollen records from Lago Albano and Lago di Nemi. *Vegetation History and Archaeobotany,* 11**,** 263-276.

MERLIN, M. D. 2003. Archaeological Evidence for the Tradition of Psychoactive Plant Use in the Old World. *Economic Botany,* 57**,** 295-323.

MERRIAM-WEBSTER (n.d.). Oakum. *Merriam-Webster.com.*

MILLS, J. H. 2005. Cannabis in the Commons: Colonial Networks, Missionary Politics and the origins of the Indian Hemp Drugs Commission 1893-4. *Journal of colonialism & colonial history,* 6**,** 0-0.

MILLS, J. H. 2009. Cannabis and the cultures of colonialism: Government, medicine, ritual and pleasures in the history of an Asian drug (c. 1800 - c. 1895). *Zeitenblicke,* 9.

MITCHELL, J. 2014. The Secret History Of Cannabis In Japan. *The Asia Pacific Journal* [Online], 12. Available: https://apjjf.org/2014/12/49/Jon-Mitchell/4231.html [Accessed June 19, 2022].

NETTELS, C. 1931. The Menace of Colonial Manufacturing 1690-1720. *The New England quarterly,* 4**,** 230-269.

NEWSROOM, A. 2014. Piece of Fabric Found at Çatalhöyük: This is a first in the world and one of the best preserved examples. *Archaeology Wiki* [Online]. Available: https://www.archaeology.wiki/blog/2014/02/04/piece-of-fabric-found-at-catalhoyuk/.

OEC. 2022. *Hemp Fibers: TRUE HEMP (CANNABIS SATIVA L.), RAW OR PROCESSED BUT NOT SPUN; TOW AND WASTE OF TRUE HEMP (INCLUDING YARN WASTE AND GARNETTED STOCK) 5302 (HARMONIZED SYSTEM 1992 FOR 4-DIGIT)* [Online]. Observatory of Economic Complexity (OEC): Observatory of Economic Complexity (OEC). Available: https://oec.world/en/profile/hs/hemp-fibers?redirect=true [Accessed August 03, 2022].

OLSON, D. 2022. Hemp Culture in Japan. *International Hemp Association* [Online]. Available: http://www.internationalhempassociation.org/jiha/jiha4114.html [Accessed June 22, 2022].

PAGANO, A. 2021. How racism contributed to marijuana prohibition in the US. *Business Insider* [Online]. Available: https://www.businessinsider.com/racist-origins-marijuana-prohibition-legalization-2018-2 [Accessed August 01, 2022].

PEREZ, A. 2022. *The Ancient History of Hemp* [Online]. Parkdale Brass: Parkdale Brass. Available: https://parkdalebrass.com/blogs/news/the-ancient-history-of-hemp [Accessed June 10, 2022 2022].

POMEROY, S. B., BURSTEIN, S. M., DONLAN, W., ROBERTS, J. T. & TANDY, D. W. 2020. *A brief history of Ancient Greece : politics, society, and culture,* New York, Oxford University Press.

RICHERT, L. & MILLS, J. 2021. *Cannabis: global histories,* Cambridge, Massachusetts, The MIT Press.

SARGENT, M. 2021. Jack Herer: A Look at the Hemperor's History and Legacy. *The RQS BLOG* [Online]. Available: https://www.royalqueenseeds.com/blog-jack-herer-a-look-at-the-hemperor-s-history-and-legacy-n1345 [Accessed July 12, 2022].

SKOGLUND, G., NOCKERT, M. & HOLST, B. 2013. Viking and Early Middle Ages Northern Scandinavian Textiles Proven to be made with Hemp. *Scientific Reports,* 3**,** 2686.

SOLLY, M. 2019. The First Evidence of Smoking Pot Was Found in a 2,500-Year-Old Pot. *Smithsonian Magazine* [Online]. Available: https://www.smithsonianmag.com/smart-news/2500-year-old-chinese-cemetery-offers-earliest-physical-evidence-cannabis-smoking-180972410/ [Accessed June 23, 2022].

STONE, E. 2019. The rise of cannabis spirituality: How the plant can heighten your experience. *Leafly* [Online]. Available: https://www.leafly.com/news/lifestyle/rise-of-cannabis-spirituality [Accessed July 05, 2022].

SUMLER, A. 2018. Cannabis in the Ancient Greek and Roman World *Cannabis in the Ancient Greek and Roman World* Brewminate: The Rowman & Littlefield Publishing Group, Inc.

Bong Appétit, 2016a. Directed by VICE. Vice Media Group.

Fuck, That's Delicious, 2016b. Directed by VICE. Vice Media Group.

Weediquette, 2016c. Directed by VICE. Vice Media Group.

WIETSTOCK, C. 2020. Profile: Jack Herer, 'The Hemperor'. *Ganjapreneur* [Online]. Available: https://www.ganjapreneur.com/profile-jack-herer-the-hemperor/ [Accessed July 12, 2022].

WIKIPEDIA 2022a. Cannabis Cup.

WIKIPEDIA 2022b. Timeline of cannabis laws in the United States.

WIKIPEDIA 2022c. United States Pharmacopeia.

WIKIPEDIA 2022d. Vice (TV channel).

WINDSOR, H. H. 1938. Billion Dollar Crop. *Popular Mechanics Magazine.* Popular Mechanics Magazine: H.H. Windsor, Jr.

WITS. 2020. *Yarn; of hemp (cannabis sativa L.) exports by country in 2019* [Online]. World Intergrated Trade Solution (WITS): World Intergrated Trade Solution (WITS). Available: https://wits.worldbank.org/trade/comtrade/en/country/All/year/2019/tradeflow/Exports/partner/WLD/product/530820 [Accessed August 03, 2022].

WOODWARD, C. R. 1929. Agricultural Legislation in Colonial New Jersey. *Agricultural history,* 3**,** 15-28.

ZOELLNER. 2017. Searching for Jack Herer, the 'Emperor' of American Cannabis. *Leafly* [Online]. Available: https://www.leafly.com/news/politics/searching-jack-herer-emperor-american-cannabis [Accessed July 12, 2022].