Resurrecting Industrial Hemp to Revive our Sustainability Problem

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On my honor as a University Student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments

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Introduction

US recycling rates have been decreasing drastically over the years (Paben, 2019), such that over 65% of the municipal solid wastes has gone unrecycled. The cost of recycling is increasing up to a point where US cities are refusing to recycle at all. On top of this, the primary destination for the US's recyclable waste, China, is no longer taking in plastic waste from foreign countries and private waste management institutions' recycling rates are declining (Joyce, 2019). Executive director of Recycle Across America (a nonprofit organization that pushes for more standardized labels on recycling bins to help people better sort material), Mitch Hedlund, states that the process of recycling has been dysfunctional for a long time and people didn't really knew where our recycling waste went (Corkery, 2019). It is clear that we need discuss possible paths to solutions: whether it is advocating for less plastic usage, introducing an alternative product that could replace plastics or invest in recycling research to bring the costs down.

One proposed intervention in the sustainability equation around waste and resource use is industrial hemp. It can't solve all our problems, but it could be developed in ways that might be useful. This paper considers who supports and how they support local interventions in this emerging sustainability debate around hemp. However, it is surrounded by controversy and misconceptions. This paper is attempting go back and forth between the hype and the hope, the controversies and the actual on the ground empirical details of the enactment of hemp in a couple of different cases. Throughout this research, I will be utilizing 2 frameworks that David J. Hess conceptualizes: the first is analyzing and predicting localist movements to explore the world of development strategies around industrial hemp, the second is utilizing technology- and product-oriented movements (TPMs) to look at specific instances where products like CBD as a product type relates to the conversations that relate to hemp and health (Hess, 2005).

Literature Review

Technology and Product-Oriented Movements (TPMs)

Technology- and product-oriented movements (TPMs) are mobilizations of civil society organizations that generally include alliances with private-sector firms, for which the target of social change is support for an alternative technology and/or product, as well as the policies with which they are associated (Hess, 2005). The research of David J. Hess reminds us that consumers have the power to cause change. This research combines the values of David Hess with the idea of reshaping our current recycling system. In Hess's "Technology- and Product-Oriented Movements: Approximating Social Movement Studies and Science and Technology Studies" article, he proposes a hypothesis called "private-sector symbiosis". This hypothesis postulates that the emphasis on technology and product innovation leads to the articulation of social movement goals with those of inventors, entrepreneurs, and industrial reformers (Hess, 2005).

Misconceptions on Industrial Hemp

Although it is gaining attraction and awareness in media outlets, implementing a viable way of including this material in our industrial chain was met with backlash and a series of difficult laws to get around. In 1937, where "the passage of "Marihuana Tax Act" occurred, and, despite the U.S. government's "Hemp for Victory" campaign during World War II, misplaced fears that industrial hemp is the same as marijuana combined with targeted harassment by law enforcement discouraged farmers from growing hemp." (Yonavjak, 2013). Before 1937, the US was a big cultivator compared to the globe. However, despite these complicated laws, most companies still use hemp. One such example is given in "Sustainable hemp seed, fiber and oil are still used in raw materials by major companies, including Ford Motors, Patagonia, and The Body Shop, to make a

wide variety of products. However, most hemp product manufacturers are forced to import hemp seed, oil and fiber from growers in Canada, Europe, and China because American farmers are prohibited by law from growing this low-input sustainable crop." (Yonavjak, 2013).

In 2018, this intensified for some when a provision of the 2018 Farm Bill lifted a federal ban on hemp production that had previously classified hemp as a controlled substance on a par with heroin (Williams, 2019). These misconceptions that surround hemp and industrial hemp has had great impact on farmers and cultivators as well as retailers of hemp products such as CBD oils and side products. One family farmer in Salem, NY has been growing hemp for 7 generations has had trouble of theft of crops and mistreatment for police authorities (Nir, 2019). The root of the problem stems from not knowing the difference between marijuana and hemp: The two cannabis plants look and smell alike, but hemp has a far lower concentration of THC, the psychoactive component, than marijuana. Hemp is a proven crop that is suggested to have many applications while marijuana is considered a drug in most states, while some states in the US are legalizing or decriminalizing it. Hemp applications ranging from industries like textiles, construction, health care, animal bedding and agriculture to biofuel, chemical absorbents. Ms. Wazwaz is a store owner in Duncanville, Dallas that sells CBD products that authorities raided her store as well as their employees aggressively. She defended herself by stating that she is not a mob boss but police officers around the nation have announced large-scale marijuana busts, only to find out later that the "drug" haul was actually hemp. Even drug-sniffing dogs, said Erica Stark, the executive director of the National Hemp Association, react to hemp just as they do to marijuana (Williams, 2019).

Viable Product Pathways & Local Pushes in Virginia

Despite of the controversy and jarring news, significant steps are being taken in Virginia. In 2015, the Virginia Legislature enacted Chapter 41.1 of Title 3.2 of the Code of Virginia authorizing

the Virginia Department of Agriculture and Consumer Services (VDACS) to establish and oversee an industrial hemp research program to be directly managed by public institutions of higher education. This allowed UVA conduct agronomic studies as well as studies aimed at establishing new molecular breeding and genetic engineering strategies to specifically enhance the biological properties of the hemp plant. UVA's goal is to develop a Virginia hemp cultivar (Harwell, *Virginia Department of Agriculture and Consumer Services*). This is significant because allowing researchers not just in UVA to legally grow and research on industrial hemp supports the triple-helix, university-industry-government, model of potential innovation and economic development (Etzkowitz, n.d.). With these types of research, the innovations can be deployed in rural areas of Virginia that has been either under-utilized or undeveloped. A great example of this is the 22nd Century Group Inc. 22nd Century is a plant biotechnology company focused on genetic engineering and plant breeding which allows the increase or decrease of the level of nicotine in tobacco plants and the level of cannabinoids in cannabis plants. The Company's primary mission in tobacco is to reduce the harm caused by smoking. "We are very excited about using 22nd Century's industrial hemp plants for land reclamation in Southwest Virginia, where years of poor land management practices and industrial mining have devastated soil quality and fertility," explained Dr. Michael Timko, the principal scientific investigator at UVA. "This is also a tremendous opportunity to partner with UVA-Wise where Dr. Ryan Huish and his colleagues have been studying the problems of mining land reclamation. Industrial hemp farming provides a new approach to not only rejuvenating the land but also the local economy in key portions of the Commonwealth of Virginia" (Clarence, 2017).

Considering the current agricultural sector in Virginia, cotton farmers are currently having a tough time in sustaining. Cotton has been one of the most successful crops to grow in Virginia, until about the 1960s. Although the high price of cotton at that time, the number one threat of cotton was the dreaded boll weevil, an insect that devastates the entire cotton crop [14]. The state had

success in eradication programs by the 1990s, however, it was too late for the industry. Today the price of cotton has plunged almost 60% per pound due to high competition from the nation as well as foreign competitors. The devastation of this infestation caused such setbacks that local farmers located in South Virginia, such as Hampton roads and Isle of Wight County, they feel that they've lost this industry that was once so profitable. Aside from profitability of cotton, another concern is the sustainability of cotton. World Wild Life organization suggests bringing cotton production in line with even minimally acceptable environmental standards is a challenging task. A staggering fact is that it almost requires 20000 liters of water to produce 1 kilogram of cotton; which is equivalent to a single t-shirt (World Wildlife Fund, *Cotton Industries*). Although they are working with a coalition of global partners to promote the sustainable production and use of cotton, there is little evidence of success.

Another industry consider is CBD products. CBD products are used wildly used in medical treatments for anxiety, seizures, pain relief and etc. Although these products are recommended as medical products, they can be found in common retail stores such as Urban Outfitters, in Washington DC. The products that they sell with CBD oils are in products ranging from chap sticks to face masks. The are advertised as common cosmetics products without much information. From a medical professional's perspective: in Virginia, doctors can recommend CBD products. However, patients didn't have access to these recommendations until the Virginia Board of Pharmacy has approved five companies to open the dispensaries with undetermined dates (Burstein, 2019).

Analysis & Recommendations

The decline in cotton prices in Virginia can accommodate for the demand in industrial hemp that the nation has been craving. According to David Hess's theory, the cultivators in Virginia would need to create a strong network with manufacturers as well as the product designers and sellers to create a successful movement to popularize hemp. But we always need to be concerned about the way in which those initial movements form and if their values are meet. Grand View Research has estimated the global industrial hemp market size to be 4.71 billion USD and is driven by various industries demand for hemp oil and fibers in the automotive, construction, food and beverage, personal care, and textile industries (Grand View Research, 2020). They also estimate that the market capital in the US is around 900 million dollars and is forecasted to increase 10 times over the next 10 years. It seems that one way or the other, hemp might make it way into the popular market.

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