

**‘Cotton Bagging and Bale Rope’:**

**The Technology of Hemp Culture in Kentucky, 1792-1860**

“CASH given for HEMP” read an 1809 advertisement in Lexington’s *Kentucky Gazette*. The short notice went on to announce the firm of Fisher and Sutton’s “wish to hire 16 Negro Boys, from 12 to 16 years old, for a term of years.”<sup>1</sup> This simple ad hinted at key aspects of the emergent hemp culture of the Bluegrass. Grown as a cash crop, hemp often found a ready market in regional urban centers where enslaved Kentuckians processed the fiber to transform the raw material into a finished product, such as rope or bagging. At many steps in the long chain of events by which a hemp seed became a strand in a rope, the heavy labor required by the crop came mediated through the application of mechanical devices that eased the transition from natural to cultural product.

A contemporary dictionary available in Lexington around the turn of the nineteenth century defined “engine” as “any mechanical complication, in which various movements and parts concur to one effect,” which perfectly captures the roles of individual mechanical implements in hemp culture. Yet the entry went on to list alternate definitions including “any means to bring to pass” and “an agent for another.”<sup>2</sup> Taken as a whole, the hemp machinery of the Bluegrass, or what I’ve chosen to call the “technology of hemp culture,” met these meanings as well. Exploring both levels of meaning reveals the important ways in which hemp engines powered the creation of a flourishing slave-based agroecosystem. On the level of both the individual farm and the entire landscape, the technology of hemp culture acted as engines of change, helping to establish connections between the countryside and local urban centers, between agriculture and industry. These connections distinguished the unique agroecosystem of the Bluegrass during the antebellum period.

Hemp arrived in Central Kentucky with the first white settlers in the 1770s and pioneers extolled the fertile landscape's potential to produce the crop, calling it "the best Country for...hemp...in the United States."<sup>3</sup> As more settlers arrived and the countryside took on an increasingly settled appearance with fields and woodland pastures gradually replacing the native flora, Kentucky's hemp settled into a seasonal cycle. Farmers plowed fields intended for hemp during the late winter and early spring before "the seeds [were] sown broadcast" during the month of May at a rate of approximately one and a half bushels per acre, though more might be used on particularly fertile plots.<sup>4</sup> A hearty species, hemp needed only minimal maintenance during the growing season as "the plants [were] sufficiently high to shade the ground" and prevented weeds from taking root after just "a few weeks."<sup>5</sup> The subsequent months saw a veritable explosion of dense growth that regularly reached ten feet in height by the time of harvest in August.<sup>6</sup>

Once the crop ripened, laborers, almost exclusively enslaved Kentuckians, returned to the fields to take over from biology. Depending on the farmer's preference, the stands of hemp could be harvested via two different methods; the first,

by pulling them up by the roots, an easy operation with an able bodied man; and the other by cutting them about two inches (the nearer the better) above the surface of the ground...When pulled it is done with the hand, which is better for the protection of an old leather glove. The laborer catches twenty or thirty plants together, with both hands, and, by a sudden jerk, draws them up, without much difficulty. The operation of cutting is performed with a knife, often made out of an old scythe, resembling a sickle, though not quite so long, but broader. This knife is applied much in the same way as the sickle, except that the laborer stoops more.<sup>7</sup>

It bears mentioning that these descriptions of the hemp harvest as an "easy operation" came from Henry Clay, himself a slaveholding hemp producer. Clay might have had some passing experience with cutting a few stalks, but none with cutting plants while "stooped" to reach as near the ground as possible for hot summer hours stretching for days on end. The black men

whose hands wielded the modified scythes, cutting thousands of individual hemp plants across the ten acres they were each expected to harvest every season, likely would have described things differently.

Samuel Chew, a Lexington contributor to the *Farmers' Register* wrote more revealingly a few years later when he noted that the tasks associated with the hemp crop were “very dirty, and so laborious that scarcely any white man will work at it; of course it is entirely done by slave labor.”<sup>8</sup> After cutting or pulling the plants and spreading them “to cure” for “two or three days,” slaves tied the hemp “in small hand bundles,” knocked “the leaves...off with a rough paddle or hooked stick” and stacked the bundles in larger “shocks.”<sup>9</sup> The shocks protected the hemp from the elements in some measure, but also allowed some degree of decay to begin. Managing decay was key to the next step in the process: rotting or “retting” the hemp. Rotting was necessary to begin to break down the resin binding the valuable fibers to the “worthless” woody portions of the stalk.<sup>10</sup>

As with harvest, two methods existed for the process and each had its proponents. Most Kentucky hemp farmers employed the “dew-rotting” approach in which the stalks of the plants were spread across the same field they had grown in for approximately eight weeks from October to December. Detractors of this method argued, with some merit, that hemp “so prepared is not so good for many purposes, and especially for the rigging of ships, as when the plants have been rotted by immersion in water, or, as it is generally termed, water-rotted” and that it would only be after the majority of farmers adopted that “improved” approach that the regional hemp industry would reach its full potential.<sup>11</sup> Water-rotting might occur “in stagnated or standing water, such as ponds, pools, or broad deep ditches” or “in running water as in a brook or river,” but over the course of the nineteenth century agricultural improvers increasingly called

for the construction of “artificial ponds” in order to take greater control over the process.<sup>12</sup>

Bluegrass farmers’ continued resistance to this “improved” method of processing their crop represents a decision based on their appraisal of the opportunity cost of switching from the less-labor intensive dew-rotting approach. Their collective decision *not* to invest in the infrastructure needed for water-rotting ultimately contributed to the sustainability of the agricultural system because the dew-rotting technique left the vast majority of organic material in the same location, leaching minerals back into the soil while rotting in the field, whereas water-rotting removed a much greater portion of the mineral wealth borrowed from the soil.<sup>13</sup> Overall, the decisions of Bluegrass farmers about which approach to take influenced the composition of their slice of the agricultural system, and their general preference for the less sophisticated technique held the beneficial consequence of maintaining a greater degree of soil fertility over a longer time than would have been possible had water-rotting come to predominate. Whichever method of rotting a farmer preferred, the hemp was judged ready for the brake when a small handful “breaks easy.”<sup>14</sup>

The association between slave labor and the hemp crop, along with a tendency to view slavery as antithetical to industry, can obscure the significance of locally produced implements such as the hemp brakes erected in fields across the state every winter. In the hands of enslaved laborers, these simple mechanisms picked up where the work of dew and frost left off and served to separate the fiber, which constituted only one-sixth the mass of the stalk, from the woody bulk of the plant. Clay wrote that the “brake in general use...has been always employed here” and was “so well known as to render a particular description of it, perhaps, unnecessary.” It remained ubiquitous until the crop’s ultimate decline in the twentieth century. The typical brake was “a rough contrivance, set upon four legs about two and a half feet high... [it] consist[ed] of two jaws with slits in each, the lower jaw fixed and immovable, and the upper one moveable, so that

it may be lifted...The lower jaw ha[d] three slats or teeth made of tough white oak, and the upper two, arranged horizontally...in such a manner that the slats of the upper jaw play between those of the lower.” “The laborer,” virtually always a male slave, stood “by the side of the brake, and grasping in his left hand as many of the stalks as he can conveniently hold, with his right hand he seizes the handle in the head of the upper jaw, which he lifts, and throwing the handful of stalks between the jaws, repeatedly strikes them by lifting and throwing down the upper jaw.”<sup>15</sup> This action separated the fiber from the stalk, which broke into pieces and fell to the ground where decomposition returned most of the organic material back to the soil. The breaker then used a stake or wooden paddle to remove any lingering bits of woody material, set the newly “cleaned” fiber aside and repeated the process with a fresh bundle of hemp. The amount of hemp broken by each laborer depended upon the expectations of the farmer and the skill of the individual; something like seventy-five or eighty pounds of cleaned hemp seems to have been a typical requirement, with some slaveholders offering minimal per pound bonuses for exceeding the daily quota.<sup>16</sup> In some exceptional circumstances, skilled individuals broke and cleaned up to 250 pounds in a single day, taking full advantage of the rare chance to receive any financial compensation for their labor.<sup>17</sup>

Entrepreneurial Kentuckians attempted to devise a mechanical implement to improve upon the basic handbrake design described by Clay, with limited success. George Mansell, for example, announced in the *Kentucky Gazette* in 1802 that he “had invented a machine for breaking, milling or cleaning hemp or flax...Guaranteed to break and clean 1,000 pounds of hemp per day.”<sup>18</sup> He elaborated that his machine “worked by hand, horse, water or steam,” noted that he was pursuing “a patent for the same” and warned “all persons from making use of said invention” under penalty of law.<sup>19</sup> Yet, this seemingly wondrous invention, if one took the word

of its inventor, had no lasting impact on the regional hemp industry and quickly disappeared from the scene. Three decades later, Clay could hardly be blamed for striking a skeptical tone about the latest “machine...for breaking and dressing hemp and flax” due to “the number of failures which I have witnessed...in the attempts to supersede manual labor by the substitution of that of machines.”<sup>20</sup> The latest contender to supplant the hand brake that drew Clay’s commentary, the Barnum Hemp and Flax Breaker, aimed “to break and dress hemp...in one operation” via “the rotary motion of fluted rollers...seven under and eight upper rollers three feet long and five inches in diameter...graduated from coarse to fine” which broke the hemp before it fed into the “two dressing rollers, consisting of knives placed horizontally and parallel with the breakers, which dress off the shives as fast as the hemp is delivered.” The inventor claimed the machinery would “break two thousand pounds of stalk per day” using the power of three horses.<sup>21</sup> He further touted its compact dimensions claiming it could “be easily transported in a wagon,” which made “it very convenient for farmers to remove the machine from one farm to another without the trouble of transporting the hemp.” Barnum offered copies of the machine for \$300, with a purchaser option to add on a “right for a sufficient territory to support a machine,” or a guarantee that none of the neighbors would be able to buy a copy, for an additional fifty.<sup>22</sup> Yet, Barnum’s machine had as little lasting impact as Mansell’s before it.

Sands Olcott of Newport devised a complete mechanical system for breaking, cleaning and preparing hemp for market that epitomized the efforts to decrease the human labor needed. That he submitted illustrations of his machines along with his descriptions of their operation makes his case particularly revealing. The first image represents Olcott’s breaking machine, composed of rollers completing 150 revolutions per minute and capable of “work[ing] off about 2 tons of hemp per day.” The second shows the mechanisms by which laborers wound the

broken hemp into loose “roves” that could be processed by milling machine in the third. Olcott wrote that a “man and a boy” could create roves from 1,000 to 1,200 pounds of clean hemp per day. The third is “a side view of the milling machine with the hemp roving in it, passing through the machine in form of an endless band,” an operation that “continued until the hemp composing the rove, is completely soft and silky; the fibres split to the desired fineness, and all the remaining wood disengaged.”<sup>23</sup> Olcott described the cumulative effect of the various machines on the fiber as creating “No. 1, long clean” hemp, “the finest specimen” on the Kentucky market.<sup>24</sup> Yet, despite the ingenuity displayed by men like Olcott, Mansell, and Barnum, by 1842, Clay noted glumly that “All attempts to substitute horse, water or steam power to the hand brake, and there have been many, have hitherto failed.”<sup>25</sup>

But this focus on “failure” obscured the continued success and value of the traditional implements and the men who fabricated and used them. Far from relics of a by-gone agricultural era only present due to Bluegrass farmers’ stubborn refusal to adopt “improved” techniques, the traditional hemp brakes functioned as engines powering part of Kentucky’s most profitable and modern industry, facilitating connections between the region and the dynamic currents of the Atlantic World as the bagging and rope securing Southern cotton on national and international markets. Hand brakes’ significance as engines of physical change can be obscured by their relatively simple design, a contrast thrown into ever-greater relief by the rapid advance of mechanization and industrialization in other aspects of the antebellum economy. That the same enslaved men who used the brakes often constructed them, from local materials, according to the traditional designs that they had learned through experience, further compounded the dismissive view of the simple machines taken by contemporary observers, whose comments shape the interpretations of subsequent scholarship. Yet, re-framing the traditional implements of hemp

culture in an agroecological context reveals the key roles played by relatively modest machines. Without the preparatory processing that occurred on handbrakes in fields across the Bluegrass, the complex finishing work of the more recognizably industrial portions of the system would not have been possible.

Thoroughly processed, with most of the physical materials that constituted the plant at the time of harvest remaining behind on the farm, the broken and cleaned fiber often traveled next to one of the hemp “manufactories” located in Lexington or dotting the outskirts of other regional towns. John Hamilton placed the first notice in the *Gazette* announcing his “rope walk...about two miles from Lexington where he carries on [sic] the rope making business” in 1790 and a half century later, the state held 111 ropewalks alone, a figure that did not include the bagging, duck cloth, and linen factories omitted from the census returns.<sup>26</sup> The manufactories functioned as engines transforming the hemp fiber into finished goods, and the market they created incentivized local farmers to grow the crop. In this way, the existence of industrial operations in the new urban centers of the Bluegrass acted as an engine of agroecological change across the landscape, helping to establish the patterns that characterized the region at least until emancipation shook the system. In this step too, entrepreneurial Kentuckians sought to leverage their mechanical ingenuity to reduce the labor necessary to transform the clean hemp into finished hempen goods. Men like Nathaniel Foster of Fleming County designed and patented devices to create items of value in the specific cultural context out of the raw material; Foster, for example, invented a hemp spinning machine that resembled an oversized “women’s spinning wheel” in 1809 and aimed to produce hempen fabric on a greater scale than was possible using the traditional techniques.<sup>27</sup> Other Kentucky tinkerers also turned their attention to perceived inefficiencies in hemp processing and devised mechanical solutions, which led to Kentuckians

taking out no fewer than twenty-three federal utility patents on hemp machinery between 1837 and 1860.<sup>28</sup>

Cordage, bale rope, and rough bagging manufacturers consumed “the most part” of Kentucky hemp during this period and warrant extended attention.<sup>29</sup> Rope fabrication occurred in long buildings or temporary set-ups aptly named “ropewalks,” that relied entirely on hand labor for the first decades of statehood, though new machinery began to make in-roads among some manufacturers by the 1830s.<sup>30</sup> Even the traditional “process of rope making by hand” required sophisticated tools and the dexterous labor of multiple people working in unison. A contemporary described the scene: one member of the team, the

spinner carries a bundle of dressed hemp round his waist...Having drawn out a proper number of fibres with his hand, he twists them with his fingers, and fixing this twisted part to the hook of a whirl, which is driven by a wheel put in motion by an assistant, he walks backwards down the rope-walk, the twisted part always serving to draw out more fibres from the bundle...As soon as he has reached the termination of the walk, a second spinner takes the yarn off the whirl, and gives it to another person to put upon a reel, while he himself attaches his own hemp to the whirl hook, and proceeds down the walk. When the person at the reel begins to turn, the first spinner, who had completed his yarn, holds it firmly at the end, and advances slowly up the walk, while the reel is turning, keeping it equally tight all the way, till he reaches the reel, where he waits till the second spinner takes his yarn off the whirl hook, and joins it to the end of that of the first spinner, in order that it may follow it on the reel.<sup>31</sup>

The urban Bluegrass ropewalks individually housed the simple “mechanical complications” of the “hook of a whirl,” “a wheel” and “a reel,” which, when powered by the labor of enslaved Kentuckians, converted bundles of fiber into rope, but taken as a whole, along with the other hemp industries, they also acted as engines in the broader sense of serving as the “means used to bring to pass” the entrenchment of hemp culture in the region. In this sense, proto-industrial engines drove the development of one of the distinguishing characteristics of the rural Bluegrass agricultural system. Of course, a similar point might be made in the opposite direction; namely, that the suitability of the landscape for hemp production and the decision of rural residents to

cultivate it created the surpluses that tempted the industrial entrepreneurs to launch their operations in the first place. This illustrates the two-way connections between the industrial and agricultural spaces of the evolving agroecosystem. The various hemp machines of the Bluegrass ultimately served as engines affecting landscape change across the region.

Slavery represented another linkage connecting the industrial with the agricultural. Early hemp manufacturers like Elijah Craig relied on the labor of enslaved Kentuckians before the turn on the nineteenth century, establishing a pattern that survived until the Civil War destroyed the institution.<sup>32</sup> Rather than purchase their chattel outright, the manufacturers often rented “surplus” slaves from the surrounding countryside, as we saw in the notice taken out by Fisher and Sutton at the outset of this paper. The system of slave hiring allowed entrepreneurs the benefits of forced labor without the high initial investment. At different stages in their lives, or conceivably even in a single year, black Kentuckians might find themselves engaged in any step of the hemp culture from plowing to prepare the land for seed, to breaking the stalks in the field or twisting the fiber into cordage. At each stage in the process, hemp laborers operated machinery, whether simple or complex. The symbiotic relationship between industrial and agricultural slavery in the Bluegrass, and even the tension between the two highlighted by tasks like braking hemp by hand using a simple machine of local manufacture to prepare the plant for further processing into a finished item intended for national markets, complicates popular understandings of the institution. Hemp culture fostered both the industrial and agricultural development of the region in such a way as to fertilize a distinct brand of slave-based agroecosystem that befitted a border state in tapping into currents shaping the economies of both the industrious states north of the Ohio and the cotton-producing region opened up by the Louisiana Purchase. The mechanical implements of hemp culture in the Bluegrass helped establish many of the characteristics that distinguished

the regional agricultural system by facilitating a diverse range of connections: between the countryside and local urban centers, between agricultural and industrial spaces in the landscape, and between Central Kentucky and the broader Atlantic World.

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<sup>1</sup> *Kentucky Gazette*, April 11, 1809.

<sup>2</sup> Thomas Sheridan, *A Complete Dictionary of the English Language...Third Edition, in Two Volumes* (London: Charles Dilly, 1790).

<sup>3</sup> On the first crop planted in 1775 see Willard Rouse Jillson, *Kentucky Hemp: A History of the Industry in a Commonwealth of the Upper South, 1775-1942* (Versailles: n/a, 1942), 3; quote from Edward Harris to Thomas Christie, April 11, 1797, *Filson Club History Quarterly*, II (1928), 165.

<sup>4</sup> Henry Clay, "Hemp," *Western Agriculturalist and Practical Farmers Guide* (Cincinnati, 1830), 228-229.

<sup>5</sup> *Ibid.*

<sup>6</sup> James F. Hopkins, *A History of the Hemp Industry in Kentucky* (Lexington: University Press of Kentucky, 1951), 47.

<sup>7</sup> Clay, 229-230.

<sup>8</sup> "Profit of a Hemp Crop Compared with Silk Culture" *Farmers' Register, A Monthly Publication Devoted to the Improvement of the Practice, and Support of the Interests of Agriculture* Vol. III (Petersburg, VA: Edmund Ruffin, 1836), 612.

<sup>9</sup> Clay, 230-231.

<sup>10</sup> Jillson 4-5.

<sup>11</sup> Clay 231.

<sup>12</sup> Edward Antil, "Observations on the Raising and Dressing of Hemp," *Transactions of the American Philosophical Society* Vol. I (Philadelphia: R. Aitken & Son, 1789), 269; John Wilson, "On Retting Hemp," *The New Genesee Farmer and Gardener's Journal* (Rochester, N.Y.: M.B. Bateham, 1842) 107.

<sup>13</sup> Hopkins 22.

<sup>14</sup> Antil 269.

<sup>15</sup> Clay 233.

<sup>16</sup> Clay suggested eighty pounds per day, 234; Chew suggested seventy-five, 612. Interestingly, John Wilson of Springfield Massachusetts wrote that fifty pounds was considered an average day's work breaking and cleaning hemp, suggesting that slaveholders expected greater per-day productivity from their chattel than northern employers could extract from their laborers. *The New Genesee Farmer*, 1842, 58.

<sup>17</sup> Henry Clay letter, *The New Genesee Farmer*, 1842, 59.

<sup>18</sup> *Kentucky Gazette*, July 30, 1802.

<sup>19</sup> *Kentucky Gazette*, August 6, 1802.

<sup>20</sup> Clay, 235.

<sup>21</sup> "Hemp and Flax Breaker," *Western Agriculturalist*, (Cincinnati, 1830), 345.

<sup>22</sup> *Ibid.*

<sup>23</sup> Sands Olcott, "Hemp," *Western Farmer & Gardener* (Cincinnati, 1841), 165.

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<sup>24</sup> Sands Olcott, "On the Preparation of Hemp," *Western Farmer and Gardener* (Cincinnati, 1841), 131-133.

<sup>25</sup> Clay, *The New Genesee Farmer*, 59.

<sup>26</sup> "John Hamilton, Rope Maker," *Kentucky Gazette*, July 19, 1790; Hopkins, 132. Hopkins noted further that twenty-one of the ropewalks were located in Fayette County, the most in the state, and nine fell within the city limits of Lexington.

<sup>27</sup> "Patent right issued to Nathaniel Foster," June 28, 1809, in *First American West: The Ohio River Valley, 1750-1820*, the Library of Congress Online.

<sup>28</sup> "Utility Patents 1-65000," 1836-1867, Patent and Trademark Resource Center Association online, <http://ptrca.org/history>. Interestingly, by the late 1850s, some Kentuckians had begun to show an interest in replacing the hempen materials that bound southern cotton into bales with metallic implements for holding the southern fiber together as three separate patents were issued for a variation of a "Bale Tie Cotton Iron" between 1857 and 1860.

<sup>29</sup> Hopkins, 104.

<sup>30</sup> These buildings often stretched entire city blocks, reaching lengths from approximately 600 feet to over one thousand. Hopkins, 132, 134.

<sup>31</sup> Andrew Ure, *A Dictionary of Arts, Manufactures, and Mines: Containing a Clear Exposition of their Principles and Practice* (London: A. Spottiswoode, 1840), 1069-1070.

<sup>32</sup> Hopkins, 115.