

**Enlightened Institutions: Science, Plantations, and Slavery
in the English Atlantic, 1626-1700**

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For Mom and Dad

Abstract

My project examines confluences between the scientific, progressive, and reforming ideas associated with the early English Enlightenment, and the concurrent proliferation of Caribbean slave plantations. More specifically, it argues that Britain's West Indian sugar estates were major sites of early Enlightenment thought and practice, and were imagined as such by both Caribbean planters and English reformers during this period. From the mid-seventeenth century until the American Revolution, two of the most significant developments within the English Atlantic were the proliferation of Enlightenment ideas on reason, order, and progress, and the simultaneous expansion of slave-based work regimes. Yet despite this concurrence historians have almost always treated these topics separately, juxtaposing them as opposing forces within early modern thought. This approach has stymied historians when seeking to explain how a terror-based, exploitative labor system could prosper during the period of Enlightenment. Such a problem has forced historians either to ignore slavery's role within Enlightenment narratives, or to characterize slavery as the Enlightenment's shadow-double with expressions like "The Peculiar Institution" or "The American Paradox."

I address this problem through a study of early English sugar plantations, showing how these estates were appraised by England's intellectual community in the seventeenth century. In doing so, I demonstrate how both slavery and the Enlightenment shared common roots within the expansionist discourse of English natural science during this period. Within this discourse, the dual categories of knowing and dominating were understood as positive synergic outcomes of an ethos which stressed both a systematic exploration of knowledge, and an enforced rational application of that knowledge towards various worldly problems. In particular, this ethos advocated using new discoveries and innovations to streamline artisanal industries and to more thoroughly organize English labor routines, all for the sake of national plenty and profit. Because of this focus, natural scientists of this period perceived little moral, scientific, or economic distinction between the coercive practices of the West Indies and other developmental or experimental projects within British dominions. Instead, Caribbean plantations were simply understood as another example of this period's strivings towards moral, natural, and economic improvement—hallmarks of early Enlightenment thought.

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Introduction

The Colletons were one of Barbados' leading planter families in the late seventeenth century. The family's Caribbean history originates with John Colleton, who initially arrived in Barbados in the 1650s as part of a larger exodus of ousted English royalists seeking political refuge. This immigrant group, classified by the famous slave historian Richard Dunn as "able and aggressive men," quickly ascended the island's local power hierarchy and took a leading role in converting Barbados into a sugar monoculture based upon African slave labor.¹ John Colleton was no exception in this regard. Within a decade he had become the island's major-general and a leading plantocrat, primarily through a series of shifting political alliances and other factional machinations.² Upon the Restoration of Charles II in 1660 John returned to England, and bequeathed his Barbadian governmental powers to his son Peter. Pejoratively called "a chip of the old block" by a political adversary, Peter continued his father's traditions by maintaining both the family's profitable sugar estate and its strong influence in local government.³ After John's departure this father-son duo also invested heavily in the new Royal African Company, a large quasi-public entity which held a monopoly patent for the English slave trade. John was an initial chartered member of the Company, while Peter became its corporate agent in Barbados. Together the Colletons used their connections on both sides of the Atlantic to steer a steady traffic of slaves to their island plantation. In 1680 their estate contained 425 acres and 180 slaves, making them one of the island's largest

¹ Richard Dunn, *Sugar and Slaves: The Rise of the Planter Class in the English West Indies, 1624-1713* (Chapel Hill: University of North Carolina Press, 1972), 78. Dunn's seminal work on the English Caribbean is still the primary reference work for studies on the West Indian planter class.

² See for example Noël Sainsbury, ed. *Calendar of State Papers, Colonial Series (CSP)*, Vol. I (London: Longman and Green, 1860), 377, 456, 476, 479.

³ *Ibid.*, II, 1804. Peter was also acting governor of the island for a time. See *Ibid.*, II, 1065, 1068.

landowners.⁴ Indeed, Peter was not exaggerating in a 1673 letter, where he wrote that “planting is my trade, and I think I may, without vanity, say that I understand it as well as most men.”⁵

That letter was written to John Locke, a person whom Peter called “an honoured friend.” While a friendship between a wealthy provincial slaveholder and England’s premier political philosopher may appear dissonant to the modern reader, this was only one of many transatlantic connections between this Barbadian family and the early English Enlightenment of the seventeenth century.⁶ Throughout this period the Colletons engaged in a host of activities beyond the boundaries of their distant plantation, through which they extended their political, economic, intellectual, and cultural reach. When the elder John Colleton returned to England in 1660 he became a member of the Council of Trade and Plantations, a novel mercantile advisory committee created by the new king to reform the Navigation Acts and to further develop the nation’s economic and foreign policy. The following year, John presented the king with a proposal for a Barbadian bank, one of the earliest such proposals in England. This institution, if granted a royal charter, was to stabilize Barbados’ economy by collecting planter assets into a single credit pool and maximizing interest rates at 6%.⁷ While the bank was never chartered, John was later knighted for his service to the king, and Sir John became one of eight court notables to be granted proprietary rights for the new colony of Carolina. He

⁴ Dunn, *Sugar and Slaves*, 90, 115.

⁵Henry Richard Fox Bourne, *The Life of John Locke* (New York: Harper & Brothers, 1876), Vol. I, 292. See also *CSP* III, 1103.

⁶ On the English Enlightenment, and its contribution to modernity, see Roy Porter, *The Creation of the Modern World: The Untold Story of the English Enlightenment* (New York: Norton, 2000). On the importance of the later seventeenth-century to the English Enlightenment’s origins, see *Ibid*, Ch 1, 3. As shall be shown, many of the English attitudes on progress, commerce, work ethics, and metaphysics which Porter associates with the eighteenth-century English Enlightenment were operating by the end of the English Civil War, if not earlier.

⁷ *CSP* II, 194.

became the treasurer and a chief organizer of this colonial project until his death in 1668, whereupon his son, now Sir Peter, migrated to London and took up his father's posts. Peter further integrated himself into London's cultural elite by becoming a member of London's new Royal Society, the nation's premiere body for the discussion of natural science. According to the Society's minutes, Colleton partnered with this scientific body by sending several barometers to his Caribbean estate, "in order to examine whether they would be of any use for the foretelling the seasons and mutations of the weather as they were found to doe here—Especially concerning hurricanes." That same day he was inducted into the Society by a unanimous vote.⁸

It was through Sir Peter's work on the Carolina colony that he befriended Locke, who was also one of the colony's eight chartered proprietors. By the 1670s the two were working closely together on several aspects of their new venture, as Colleton had become chancellor of the Carolina Company, and Locke the secretary. Their correspondence demonstrates an affinity for a variety of ideas on how to proceed with the new settlement, thoughts which were rooted in novel seventeenth-century theories on both natural science and mercantile profit. At times, they issued instructions for their Company's ship captains to travel abroad to other settlements and to take detailed notes of the "husbandry and manufactures" of these places. Inside Carolina, they ordered their agents to "make experiment" with a variety of imported flora and fauna, in hopes of finding new crops for the expanding colonial market. In the above-mentioned letter to Locke, Colleton mentions a specimen of "Carolina China root" which a colonial correspondent had recently sent him. Sir Peter intended to give it to his apothecary cousin, to appraise its

⁸ December 7, 1677. CELL/RS/HF_115, 119. Hook Folio Online. Centre for Editing Lives and Letters (CELL), Arts Research Centre, Queen Mary, University of London. Accessed through <http://webapps.qmul.ac.uk/cell/Hooke/Hooke.html>.

viability for large-scale production. Colleton also expressed hope that he would soon be able to send a jar of South Carolina tar to Locke, along with “other rarities” of the new settlement, for Locke’s scientific edification.⁹ Finally the two worked alongside Lord Ashley Cooper—a prominent Restoration politician, early champion of the Whig party and English constitutional rights, and shareholder in both Barbadian plantations and slave ships—to create Carolina’s first government, the *Fundamental Constitutions*, a document which granted white Carolina freemen “absolute power and authority over his negro slaves.”¹⁰

I begin this work with a story of the provincial Colletons and their not-so-provincial connections into England’s larger scientific, economic, and intellectual communities, not because their story is exceptional, but because it is not. In the following pages this work will follow many similar stories from the seventeenth century, tracing numerous but frequently forgotten confluences between the scientific and progressive ideas associated with the early English Enlightenment, and the concurrent proliferation of England’s Caribbean slave societies.¹¹ More specifically, this work will argue that Britain’s West Indian sugar estates were major sites of early Enlightenment thought and practice, and were imagined as such by planters, merchants, political economists, natural scientists, and even social reformers on both sides of the Atlantic.

⁹ CSP III, 1103.

¹⁰ *The Fundamental Constitutions of Carolina*, March 1, 1669. Accessed through The Avalon Project, Lillian Goldman Law Library, Yale University. http://avalon.law.yale.edu/17th_century/nc05.asp#2.

¹¹ The word “science” is a slippery term in the early modern period, and is also anachronistic. “Science” as the formal practice we know today did not exist, and many of the practices that we today associate with science had a variety of names including natural science, natural philosophy, and experimental philosophy. These different practices, and their similarities and differences from modern scientific techniques, will be discussed later in this work. In this work I use the term s“science” and “natural science” as a convenient shorthand to refer to the entire loose collection of practices mentioned above, rather than science in a modern context. For more information on the etymology of this word and its problems, see Pamela Smith, “Science on the Move: Recent Trends in the History of Early Modern Science*” *Renaissance Quarterly* 62 (2009), 345.

From the mid-seventeenth century until the American Revolution, two of the most significant developments within the Atlantic region were the proliferation of Enlightenment ideas on reason, order, and progress, and the unprecedented expansion of slave-based work regimes. Yet despite this concurrence historians have almost always treated these topics separately, juxtaposing them as opposing forces within early modern thought. This approach has stymied historians when seeking to explain how a terror-based, exploitative labor system could prosper during the period of Enlightenment. Such a problem has forced historians either to ignore slavery's role within Enlightenment narratives, or to characterize slavery as the Enlightenment's shadow-double with expressions like "The Peculiar Institution" or "The American Paradox." I address this problem through a study of early English sugar plantations, and in doing so I demonstrate how both slavery and the Enlightenment shared common roots within several Enlightenment discourses of the mid to late-seventeenth century. These include the expansionist attitudes inherent within experimental or "Baconian" science, the era's novel nexus of ideas regarding rational innovation and national improvement, and the biopolitical transformation of people into resources via nascent political economy theories. In each of these instances English intellectuals, reformers, and transatlantic entrepreneurs equally employed the dual categories of knowing and dominating within their theories and pursuits. Moreover, these categories were understood as synergic outcomes of an Enlightened ethos which stressed both a systematic exploration of knowledge and a rational application of that knowledge towards various worldly problems. In particular, these ideas advocated using new discoveries to streamline artisanal industries and to more thoroughly organize labor routines, all for the sake of

national plenty and profit. Because of this focus, thinkers and reformers from this period perceived little moral, scientific, or economic distinction between the coercive practices of the West Indies and other developmental or experimental projects within British dominions. Instead, Caribbean plantations were simply understood as another example of the period's moral, natural, and economic improvement—hallmarks of early Enlightenment thought.

I: Slave Historiography and the Liberal Modernity

There are several reasons why the historiography of slavery, in both Britain and the United States, has not analyzed plantations as part of the larger Enlightenment project. However a primary reason deals with historical understandings of modernity—seen as many to be the offspring of Enlightenment thought—and the fact that slavery cannot fit into the particular paradigm of modernity that is employed by most slave historians. More specifically, slave historians have typically posited modernity as a static category based in the ideas of democratic politics and free markets which came to prominence during the late eighteenth century. Working from this starting point, it has been difficult for these historians to see slave institutions as anything but the antithesis of both modernity and its Enlightenment origins.

This traditional juxtaposition of slavery, the Enlightenment, and modernity has a long and storied tradition within the history of slavery, in many ways predating the inception of the professional historical discipline. Prior to the emergence of the Atlantic history paradigm in the 1980s, the history of slavery in the British Americas was divided into separate nationalist historiographies: American texts which focused upon the Antebellum U.S. south, and British texts which focused upon the West Indies and the

international slave trade.¹² In the U.S., early twentieth-century works on slavery were dominated by southern historians who typically defended slavery by favorably comparing antebellum society to the post-Reconstruction U.S. South. Chief among these was the slavery scholar U.B. Phillips and the Reconstruction historians of the William Dunning school.¹³ Such authors argued that African-Americans were racially inferior, that the old slave system was benevolent regarding its treatment of blacks, and that blacks were thus better off when kept under the supervision of white masters, rather than being left alone to participate in democratic politics and the free market. These arguments also characterized slave plantations as a system of benign paternalism, a form of hierarchical order through which a slave's labor was reciprocated by a master's care and provisioning. This idealized view of the "Old South" was then contrasted with the supposed mistakes of the Reconstruction era, when idealistic northerners attempted to reform African-Americans by granting them suffrage and the ability to choose their own occupations. This allowing of blacks into modern economics and politics, they argued, was the cause of many of the South's post-war problems. Importantly, by defending slavery through this paradigm, historians of the Dunning school argued that slavery, for all of its supposed benefits, was nevertheless a system out of sync with modernity. Such ideas were particularly emphasized by Phillips who, although he praised planters for their

¹² The seminal works which gave Atlantic history a platform for a program of sustainable research was Bernard Bailyn's *The Peopling of British North America: An Introduction* (New York: Knopf, 1986), and his *Voyagers to the West: A Passage in the Peopling of America on the Eve of the Revolution* (New York: Knopf, 1986). See also Bernard Bailyn, *Atlantic History: Concepts and Contours* (Cambridge: Harvard University Press, 2005). Other authors approached history from a transatlantic paradigm prior to the 1980s, however Bailyn's work—and his efforts in creating Harvard University's Atlantic History seminar program—gave Atlantic history the platform for a sustained program of research which has continued into the present.

¹³ Ulrich Bonnell Phillips, *American Negro Slavery: A Survey of the Supply, Employment and Control of Negro Labor as Determined by the Plantation Regime* (1918). William Archibald Dunning, *Reconstruction: Political & Economic, 1865–1877* (1905). See also E. Merton Coulter, *The South During Reconstruction, 1865–1877* (1947).

efficiency and management skills, nevertheless concluded that slavery could not compete with modern factories and argued that U.S. slavery would have died on its own without the Civil War. Such beliefs amongst these historians often led to a measured lamenting over the loss of antebellum society, and during this time the Old South was—not unlike the American frontier—imagined as an idyllic economic and cultural space that was inevitably sacrificed to the advancing dictates of human progress. This idealized space was then populated with pre-modern values such as chivalry, adherence to tradition, and respect for family bonds and social hierarchies, all of which were seen to be lacking in the modern and impersonal free market.¹⁴ This cultural trope was not limited to academic works, but was an enormous influence on popular culture in the early twentieth century, culminating with blockbuster films such as *The Birth of a Nation* (1915), and *Gone with the Wind* (1939).

This initial historiography on U.S. slavery began to unravel in the 1940s through the work of seminal authors such as Herbert Aptheker and Melville Herskovits, who began to challenge many of the racist assumptions of Phillips and the Dunning school.¹⁵ This newer paradigm argued that plantations were anything but benevolent, and that African Americans were intelligent and perseverant human beings who, despite the horrid conditions of the slave plantation, managed to both maintain significant elements of their

¹⁴ For an extended discussion on this trope within academia and wider public culture during the early twentieth century, as well as a thorough cultural analysis of its origins and impetuses, see David Blight, *Race and Reunion: The Civil War in American Memory* (Cambridge, Cambridge University Press, 2000). See also Peter J. Parish, *Slavery: History and Historians* (New York: Harper & Row Publishers, 1989).

¹⁵ Herbert Aptheker, *American Negro Slave Revolts*, (1943); Melville Herskovits, *The Myth of the Negro Past* (New York: Harper and Brothers, 1941). See also Raymond and Alice Bauer, “Day to Day Resistance to Slavery.” *The Journal of Negro History*, Vol. 27, No. 4. (Oct. 1942.) pp. 388-419; and Kenneth Stampp, *The Peculiar Institution: Slavery in the Antebellum South* (New York: Alfred A. Knopf, 1956). Prior to these authors there were some notable black historians who challenged the ideas of Phillips and Dunning, in particular the work of W.E.B. Dubois and Carter Woodson, who founded the *Journal of Negro History* and was a forerunner of the 1960s social history movement by creating works which emphasized the history of socially marginalized peoples.

African culture and to challenge plantation rule through both overt and subtle acts of resistance. These ideas grew slowly within academia during the 1940s and 50s, but gained significant intellectual and cultural traction with the advent of the U.S. Civil Rights movement. They were also part of a broader shift within the historical profession towards the new “social history” paradigm of this period, a novel research approach centered upon studying the world’s marginalized and hitherto understudied historical peoples.¹⁶ By 1970, U.S. historians had fully replaced the old racist paradigm of slavery as an honorable, if outdated, institution. In its place were histories that emphasized the endemic racist oppression within American plantations, works that focused upon slave life and culture, and studies on the ways in which slaves chipped away at plantation power through various acts of covert and overt resistance.¹⁷

However despite this massive shift in emphasis, the social histories of the 1960s and 70s were similar to the works of Phillips and Dunning insofar as they continued to characterize plantations as backwards, non-modern institutions. Indeed, one reason why these new authors managed to win over the opinion of academia was that they agreed with the traditional assertion that plantations were outdated and doomed to extinction. However rather than blaming the plantation’s inefficiency upon racist assumptions about the stupidity and laziness of slaves, these new historians argued that blacks intentionally mired the plantation’s output through work-slowdowns, machine breaking, and other acts

¹⁶ A seminal work which describes the program of the new social history program is Barton Bernstein, ed. *Towards a New Past: Dissenting Essays in American History* (New York: Random House, 1968). See also Peter Novak, *That Noble Dream: The 'Objectivity Question' and the American Historical Profession* (Cambridge: Cambridge University Press, 1988).

¹⁷ Quintessential works from this school include Stamp, *The Peculiar Institution*; John Blassingame, *The Slave Community: Plantation Life in the Antebellum South* (Oxford, Oxford University Press, 1972); Eugene Genovese, *Roll, Jordan, roll: The World the Slaves Made* (New York: Pantheon, 1974); Orlando Patterson, *The Sociology of Slavery: An Analysis of the Development and Structure on Negro Slave Society in Jamaica* (Farleigh Dickenson University Press, 1975); and Herbert Gutman, *The Black Family in Slavery and Freedom* (New York: Pantheon, 1976).

of day-to-day resistance. Through these actions, slaves successfully challenged the master's theoretical power monopoly within the plantation complex. This new portrayal of plantations was then combined with broader currents in the new social history movement, and these historical narratives which stressed a backwards and oppressive south were then juxtaposed with recent Civil Rights achievements and other modernizing social programs of the 1960s. The result of this combination meant that within larger American historical narratives, abolition was translated from a regrettable yet necessary sacrifice to modern systems, into an example of the steady yet inevitable expansion of modern individualism, personal freedom, and American democracy.¹⁸

There were two notable exceptions to this trend. The first was Stanley Elkins' *Slavery: A Problem in American Institutional and Intellectual Life* (1959).¹⁹ This work, written in the wake of WW II, posed serious questions about the role of modern governmental systems in modifying people's behavior, and how these concepts might be applied to America's slave heritage. Elkin's work also built upon previous authors of the 1950s who stressed the effects of horrific plantation conditions upon slave workers, but brought these ideas to an extreme conclusion. Calling slavery a "total institution," Elkins compared plantations to Nazi concentration camps and also attempted to apply 1950s psychoanalysis techniques (a now-dated but at the time cutting edge methodology in history) towards understanding how American slaves could be reduced to an almost infantile mentality through generations of systematic debasement and abuse.²⁰ A second

¹⁸ For an excellent review of the social context in which these works were produced, and the effect of that social context upon slave scholarship in the 1960s and 1970s, see Stanley Elkins, "The Slavery Debate," *Commentary* 60, 6 (Dec., 1975), 40-54.

¹⁹ Stanley Elkins, *Slavery: A Problem in American Institutional and Intellectual Life* (Chicago: University of Chicago Press, 1959).

²⁰ Another example of this kind of psychoanalysis used in early slave studies comes from the award-winning yet highly controversial William Stryton, *The Confessions of Nat Turner* (New York: Random

challenge to the idea of the plantation as a backwards institution came from Robert Fogel and Stanley Engerman's *Time on the Cross* (1974).²¹ This work relied upon a novel cliometric methodology and challenged many traditional assumptions of slave plantations. In short, *Time on the Cross* argued that slave plantations were far from moribund on the eve of the Civil War, that plantations often out-produced northern farms on a per-worker basis, that slaves worked harder than northern workers despite plantation conditions, and that the material provisioning of slaves was much better than what historians had previously assumed.

Both works were highly controversial and attacked on a variety of fronts.²² Regarding Elkins, while some specifically attacked his equation of slave plantations and concentration camps as too extreme, most historians from the 1960s took issue with his caricature of the infantile slave, which they saw as reifying the racist stereotypes of the previous generation.²³ Elkins' desire here was to demonstrate the intensely powerful debasing effects that institutions can have on individuals, but here his ideas were out of step with the new social history's emphasis on creating a "useable past" for society's marginalized peoples. Thus many historians in the subsequent decade took efforts to

House, 1967). See also Douglas Barzelay and Robert Sussman, "William Stryton on *The Confessions of Nat Turner: A Yale Lit Interview*," *Yale Literary Magazine*, 137 (Fall, 1968), 24-35.

²¹ Stanley Engerman and Robert Fogel, *Time on the Cross: The Economics of American Negro Slavery* (New York: Norton, 1995 [1974]).

²² On Elkins, see George Fredrickson and Christopher Lash, "Resistance to Slavery," *Civil War History* 13 (1967, 315-29); John Bracey, ed. *American Slavery and the Question of Resistance* (Belmont, CA: Wadsworth, 1971); Ann Lane, ed. *The Debate over Slavery: Elkins and his Critics* (Urbana: University of Illinois Press, 1971); Nathan Huggins, "The Deforming Mirror of Truth: Slavery and the Master Narrative of American History," *Radical History Review* 49 (1991), 25-48. For a review of the critiques of *Time on the Cross*, see Herbert Gutman, *Slavery and the Numbers Game: A Critique of Time on the Cross*, (Urbana: University of Illinois Press, 1975) and Thomas Haskell, "The True and Tragical History of Time on the Cross," *New York Review of Books*, (Oct 2, 1975). See also Robert Fogel, *The Slavery Debates, 1952-1990: A Retrospective* (Baton Rouge: University of Louisiana Press, 2003), and Jennifer Alexander, *The Mantra of Efficiency: From Waterwheel to Social Control* (Baltimore: Johns Hopkins, 2008), Ch 6.

²³ On the concentration camp metaphor, see the criticisms in Eugene Genovese, "Rebelliousness and Docility in the Negro Slave: A Critique of the Elkins Thesis," *Civil War History* 13, 4 (Dec, 1967), 293-314.

critique Elkin's caricature by researching examples of slaves who, rather than succumbing to the dictates of planter power, persevered and succeeded in attempts to circumscribe the plantation's domination over their lives and culture. In regards to Fogel and Engerman, many took issue with the cliometric methodology employed within the work, arguing it lent itself to faulty conclusions.²⁴ A second problem was Fogel and Engerman's conceptualization of plantation slave life. The two authors argued that because slaves managed to out-perform northern farm workers, the descendants of slaves should take pride in their ancestor's persevering work ethic. Several took issue that this type of calculation did not fully grasp the extra-economic effects of the plantation upon slave workers, in particular the effects of gang labor upon productivity figures, and charged the authors with falsely assuming that slaves had assimilated their master's white, protestant work ethic. Some went so far as to accuse Fogel and Engerman of covert racism, due to their argument that the material well-being of slaves was much better than what previous historians had acknowledged.

Note that when both of these works try to relate slavery to the modern world, they do not start from the standard premise that modernity is simply the expansion of free markets and politics. Elkins stresses modernity's tendency for total institutional control over worker populations, while Fogel and Engerman see industrial-era worker efficiency as the prime standard of modernity. These subtle shifts in emphasis, not explicitly central

²⁴ The particular work of note here is Gutman, *Slavery and the Numbers Game*. Fogel later refined his cliometric data and published it as a part of Robert Fogel, *Without Consent or Contract: The Rise and Fall of American Slavery* (New York: Norton, 1989). Fogel's later work reiterates his stance on the relative superior efficiency of slave plantations over northern farms, but characterizes efficiently differently and places a higher emphasis on the effects of gang labor. By 1989 cliometric history was in decline within academia so his revised figures did not receive a lot of attention, and his second work was received in many ways similar to his first. However importantly, while Fogel was again attacked for his appraisal of the relationship between slave work and culture, nobody has yet tried to disprove his more recent cliometric data regarding the superior productivity of slave labor, nor have they sought to contemplate the ramifications of this study in regards to how slavery fits into current conceptions of modernity.

within either work, inform their positions and allow them to reach conclusions unattainable to those using the traditional modernity paradigm. An unfortunate aspect of the subsequent criticism towards these two works is that their alternative vantage points regarding modernity were dismissed along with the rest of the works' conclusions. Both were primarily attacked for their (supposedly) negative portrayal of slave character *per se*, and critics ignored the larger implications of how these authors found similarities between slavery and modern work and surveillance routines. Today, most studies on U.S. slavery continue to be dominated by what many title the "resistance paradigm," meaning a focus on slave life, culture, and resistance strategies. Indeed, the paradigm has dominated the field for so long that the phenomenon now has its own historiographical literature associated with it, and recently several authors have explored in a reflective way what is gained and lost through such a heavy focus on resistance and culture within slavery studies.²⁵ This recent debate is germane to this study insofar as that by focusing upon the lives of slaves over slaveholders, and upon resistance over productivity, slave historiography has typically not been in a position to address questions about slavery's contribution towards modern scientific, economic, and political orders. Because of this, the assumption that plantations are antithetical to modernity continues to go unexamined, and mainstream U.S. slavery research continues to accept the original Phillips thesis, now a century old, that plantations were backwards institutions and incompatible with the modern order.

²⁵ On critiques of the resistance and culture paradigms, see Elkins, "The Slavery Debates,"; Stephen Palmie, ed. *Slave Cultures and the Cultures of Slavery* (Knoxville: University of Tennessee Press, 1995); Robert Fogel and Stanley Engerman, "Changing Views of Slavery in the United States South: The Role of Eugene D. Genovese," in Robert Paquette and Louis Ferleger, eds., *Slavery, Succession, and Southern History* (Charlottesville: University of Virginia Press, 2000); and Walter Johnson, "On Agency," *Journal of Social History* (Fall, 2003), 113-124.

The trajectory of Britain's historiography on slavery has similar contours to the American literature in terms of slavery's relationship to modernity, although there remain some important differences. Interestingly enough, the father of slavery's British historiography was also one of Britain's chief abolitionists in the early nineteenth century: Thomas Clarkson. In 1808, the year after Parliament voted to abolish the British international slave trade, Clarkson published a work chronicling the movement's rapid rise and success.²⁶ Clarkson's work does little to consider the question of why antislavery achieved so much in so little time, as he believed the accomplishment was simply the hand of Godly providence and the inevitable consequence of both moral progress and the triumph of the modern liberal world as he saw it. Abolition represented both a victory of British civilization over more barbarous institutions, and proof that mankind existed within a progressive linear framework, one which ultimately replaced cruel practices of the past with more refined, benign sensibilities. Clarkson's narrative then served as the template for British abolition histories for the next hundred and forty years.²⁷ Most of these works from the nineteenth and early twentieth centuries viewed slavery as a backwards and reprehensible evil, and these narratives typically take a self-congratulatory tone regarding Britain's trendsetting efforts to replace the slave system with a modern, liberal world order.²⁸ This progressive narrative was then buttressed with Britain's almost dogmatic conviction regarding the superiority of wage workers and liberal economics as the best form of labor organization. Like American historians, these

²⁶ Thomas Clarkson, *The History of the Rise, Progress, and Accomplishment of the Abolition of the African Slave Trade by the British Parliament*, (London, 1808).

²⁷ See Christopher Leslie Brown, *Moral Capital: The Foundations of British Abolitionism* (Chapel Hill: University of North Carolina Press, 2006), 5-10.

²⁸ Examples of this historiography in the early twentieth century include Sir Reginald Coupland, *Wilberforce: a Narrative* (Oxford: Clarendon Press, 1923), and Frank Klingberg, *The Anti-Slavery Movement in England* (New Haven: Yale University Press, 1926).

authors consoled themselves that slavery was an outdated system, incompatible with modern economic and government orders, and doomed to inevitable extinction.²⁹

As a narrative which stressed Britain's role in spreading free markets and moral progress across the globe, this liberal interpretation of British antislavery was inevitably bound to Britain's imperial endeavors of this same period, helping to justify Britain's civilizing mission vis-à-vis the inhabitants of its imperial possessions.³⁰ It is perhaps not surprising therefore that the first challenges to "Clarkson thesis" came not from domestic Britons, but from provincial scholars born and raised within the colonial West Indies.³¹ The most important of these was Eric Williams, a black native of Trinidad and a one-time Oxford student under Sir Reginald Coupland, one of the prime proponents of the Clarkson thesis in the early twentieth century. Williams' 1938 doctoral dissertation under Coupland, published in the U.S. in 1944 as *Capitalism and Slavery*, departs from previous works by applying a strict Marxist framework to the British abolition story.³² According to Williams it was economic interests, not altruism, which destroyed the British slave complex. Williams charts the rise of a protective, mercantile, and slave-based economy during the seventeenth-century, which he argues produced the capital responsible for Britain's growing affluence in the eighteenth century, culminating with the onset of the Industrial Revolution. Once this transformation was achieved, this very

²⁹ There were a series of political economy debates in the early nineteenth century on this issue, and British economists repeatedly asserted the invalidity of slavery compared to free labor, despite the fact that their empirical studies on this matter often gave contradictory results. On Britain's cultural obsession with free labor during this time see Seymour Drescher, *The Mighty Experiment: Free Labor Versus Slavery in British Emancipation* (Oxford: Oxford University Press, 2004).

³⁰ Importantly, many outside of Britain saw these narratives as hallow attempts to justify British imperial agendas, while some within Britain accused British moralists of holding antislavery as a triumphant national program so as to deflect attention from the English working class. William Cobbett was particularly critical of these histories in the latter regard. See Brown, *Moral Capital*, 12.

³¹ *Ibid*, 8, 12-16.

³² Eric Williams, *Capitalism and Slavery* (Chapel Hill: University of North Carolina Press, 1944).

system became restrictive to the nation's growth and was thus destroyed in favor of free markets and wage labor. Williams also argues that abolition was the result of contemporary sugar overproduction and decaying West Indian profit margins in the early nineteenth century, which were then remedied by restricting the slave labor pool through halting new African imports. Finally Williams chastises older historians who encapsulate abolition as a moral achievement. "Historians," says Williams, "writing a hundred years after the fact, have no excuse for continuing to wrap the real interests [of abolition] in confusion."³³

Williams' work initially received little attention in Britain, and was not even published there until twenty years after its initial release. However despite its slow start, the book had gained substantial traction within U.S. and West Indian scholarly communities by the 1960s.³⁴ Over the next fifty years, Williams' thesis became easily the most researched, debated, and contentious topic within slave historiography. On one level, the strict economic determinism of Williams' work has been discredited through a series of cliometric studies on West Indian plantations, which prove that these spaces were quite profitable and anything but moribund upon the eve of abolition.³⁵ However as

³³*Ibid.*, 211. Williams continues by explicitly citing his adviser Coupland as "a deplorable example" of such writing.

³⁴ Many in the Caribbean were particularly interested in the work because its arguments spoke against the pro-imperialist leanings of earlier histories, and the work itself became an important symbol within the Caribbean independence movements of this time. Williams himself left history for politics and became one of the most important Caribbean leaders of the twentieth century. He founded the People's National Movement Party in Trinidad, helped the colony secure its independence from the United Kingdom, and served as Trinidad's Prime Minister from 1956 until his death in 1981. He is still known as Trinidad's most prominent "founding father." On works by Caribbean authors who supported the Williams thesis, see Elsa Goveia, *A Study on the Historiography of the British West Indies to the Nineteenth Century* (Mexico City: Instituto Panamericano, 1956); Alistair Hennessy, ed. *Intellectuals in the Twentieth Century Caribbean: Spectre of the New Class—The Commonwealth Caribbean* (London: Macmillan, 1992); and Heather Cateau, ed. *Capitalism and Slavery Fifty Years Later: Eric Eustace Williams—A Reassessment of the Man and His Work* (New York: Peter Lang, 2000).

³⁵ Chief among these works is Seymour Drescher, *Econocide: British Slavery in the End of Abolition* (Pittsburgh: University of Pittsburgh Press, 1977). These arguments were repeated more thoroughly in

Williams had also thoroughly discredited the altruism thesis, these cliometric studies only created a void as to how best to explain abolition's rapid success. Most subsequent works have employed a combination of economic and religious factors to explain abolition, however the exact combination is something that continues to be debated, and is a question that will probably never be officially settled.³⁶

As with the American historiography, one of the continuities between older and newer works on British slavery is that both assume plantations to be an institution that is antithetical to modernity. Whether this incongruity is due to an older conception of moral progress or a newer conception of economic development, both assume plantations to be a part of an older, non-modern world order. This assumption is particularly striking given the cliometric data which suggests that slave plantations were far from economically moribund in the early nineteenth century.³⁷ Moreover, as with America's historiographical focus on slave resistance and culture, the channeling of British historiography into questions of *why slavery ended* means this literature has essentially locked scholars into seeing slavery within an anti-modern paradigm. Consequently, this

David Etlis, *Economic Growth and the Ending of the Transatlantic Slave Trade*, (Oxford: Oxford University Press, 1987).

³⁶ Works over the last thirty years include Roger Anstey, *Atlantic Slave Trade and British Abolition. The Atlantic Slave Trade and British Abolition*. (Atlantic Highlands, New Jersey: Humanities Press, 1975), which returned an emphasis to the moral convictions of Britain's Abolitionists. Other works sought to place the actions of abolitionists within a broader argument about the arrival of a new bourgeois class in Britain, such as Seymour Drescher *Capitalism and Antislavery: British Mobilization in Comparative Perspective* (Oxford: Oxford University Press, 1987). The most recent works include Brown, *Moral Capital*, which returns the emphasis towards the abolitionist activists of the late century, and Dave Ryden, *West Indian Slavery and British Abolition, 1783-1807* (Cambridge: Cambridge University Press, 2010), which, conversely, returns to Eric William's original argument of contemporary economic factors during the early nineteenth century. See also Barbara Solow and Stanley Engerman, eds. *British Capitalism and Caribbean Slavery: The Legacy of Eric Williams* (Cambridge: Cambridge University Press, 1987); William Darity Jr., "The Williams Abolition Thesis before Williams," *Slavery and Abolition*, XVIII, 3 (May, 1988); and Selwyn H.H. Carrington "The State of the Debate on the Role of Capitalism in the Ending of the Slave System," *Journal of Caribbean History* XXII (1990), 20-41.

³⁷ Unlike the work of *Time on the Cross*, has data not been challenged on an empiric or economic basis. However even the work of Robert Fogel has not been entirely discredited from a purely cliometric standpoint. See FN 23.

situation effectively occludes questions on whether or not slavery was truly incompatible with the nineteenth century's emerging liberal order, and ignores questions about what, if anything, slave plantations contributed towards the development of modernity during the period of slavery's Atlantic dominance.

By employing a paradigm that equates modernity with the rise of democratic politics and the free market, slave historians have typically treated modernity as a static category rather than charting how the concept of modernity itself has shifted throughout the past four centuries. Such conceptions are not unique to slave histories, and until recently have been common to historical studies on modernity itself.³⁸ Prior to World War II, works which speculated on the origins and condition of modernity were largely informed by the nineteenth-century's liberal philosophical tradition, which understood the modern age to be the child of the eighteenth-century Enlightenment and the natural consequence of moral and material progress.³⁹ Furthermore, studies from this period frequently maintained that the particular incarnation of modernity historians experienced at that time of their writing—the combination of free labor and markets which meshed so well with the imperialist civilizing mission of Western nations—was modernity's final or finished product. After World War II ideas of liberal progress rapidly decayed within

³⁸ Note that modernity scholars have used a few other key concepts to identify and/or characterize modernity in addition to the key role played by liberal economics and politics. These include an emphasis on the rational, individual subject, the spread of a mass consumer culture, and the dominance of secularism. Some slave historians have tackled these ideas, in particular the works of David Brion Davis. However most slave scholars simply subsume these other concepts into a larger narrative on liberal politics (e.g. the rise of the individual) and economics (e.g. mass consumer culture). For a review of historiography works regarding modernity see Michael Saler, "Modernity and Enchantment: A Historiographic Review," *American Historical Review* 111, 3 (June, 2006), 694.

³⁹ Origins of this tradition can be found in many of the "stages" theories on human development which became popular in the late eighteenth century, including Adam Smith, *Wealth of Nations* (1776); Condorcet, *Sketch Toward the Progress of the Human Mind* (1795); and were later expanded in nineteenth century works such as G.W.F. Hegel, *Phenomenology of Spirit* (1807). By the nineteenth century the linear mode of human progress had achieved canonic status within Anglo-American thought. Furthermore the idea of a liberal economic and political order as the paragon of modern achievements was typified through the work of utilitarian authors such as Jeremy Bentham and John Stuart Mill.

philosophical thought, however a tendency to equate modernity with economics and politics continued inside history and political science departments through the mid-twentieth century. This was chiefly through a host of Marxist and global developmental studies that took both the English Industrial Revolution and the political French Revolution as modernity's starting points. Such studies saw these twin developments as the origins for both the post-war free-market zones characteristic of modern western nation states, and similarly, the inception of class consciousness which led to the creation of Communist states as an eventual response to industrial production.⁴⁰ This long consensus on markets and suffrage has only come under scrutiny during the last thirty years, mainly through works characteristic of the postmodern and linguistic turns. Such studies destabilized our conventional understanding on modernity by questioning the importance of economic and political narratives within history, and have instead looked to a variety of cultural signifiers for the marks of our modern world. Chief among the authors of this latter group is Michel Foucault, whose emphasis on discourse, discipline, and governmentality attempt to reframe the questions we ask about modern life.⁴¹ Rejecting items such as the free market and the voting booth, Foucault centers modernity within the etymology of evolving language, his ideas on the creation of biopolitical

⁴⁰ One of the most popular theories on modernity from this period is the concept of the "Dual Revolution," in Eric Hobsbawm, *Age of Revolutions, 1789-1848* (Cleveland: World Publishing Company, 1961), 1-4. See also the stage development theories of Immanuel Wallerstein, *The Modern World System, Vol I-III* (New York: Academic Press, 1974, 1980, 1989). Note that this discussion of modernity in the liberal sense continued within history departments despite the rapid waning of the liberal philosophical paradigm in the wake of World War II. On seeing World War II—and in particular the Holocaust—as the end of the Enlightened, modern liberal tradition see Jürgen Habermas, *The Philosophical Discourse of Modernity: Twelve Lectures* (Boston: MIT Press, 1990); see also Theodor Adorno and Max Horkheimer *Dialectic of Enlightenment* (Stanford: Stanford University Press, 2007).

⁴¹ Michel Foucault, *Discipline and Punish: The Birth of the Prison* (New York: Pantheon, 1978); Foucault, "On Governmentality," in Paul Rainbow and Nicholas Rose, eds. *The Essential Foucault* (New York: The New Press, 1994). See also Graham Burchell and Colin Gordon, eds. *The Foucault Effect: Studies on Governmentality* (Chicago: University of Chicago Press, 1991).

subjects, and the development of new disciplinary institutions such as the prison, school, and hospital.

II: Pre-liberal Modernity and Baconian Science

Foucault and other authors of the post linguistic turn have had a significant impact upon how academic historians theorize modernity and its origins, showing how our understanding of this category is neither stable nor static over time, but rather is grounded in a series of culturally-specific discourses about the past and its relationship to the present. Yet surprisingly, these recent ideas have had little impact within slavery studies, particularly insofar as to how modernity relates to the slave plantation complex of the early modern period.⁴² Slave historians largely continue to treat modernity as a static concept, and take the liberal ideas of the nineteenth century to represent modernity *tout court*. However, just as the dominance of the liberal modernity has rapidly declined over the past few decades, it is equally important to recognize that this liberal framing of modernity also had a beginning in the politics and economics of the late eighteenth century. Thus there was a considerable period, prior to the late eighteenth century, where it was not a significant paradigm for understanding the modern condition and human progress. As the institutions of both slavery and the Enlightenment precede the period in

⁴² There have been a couple of works (by non historians) who have tangentially addressed this issue. Giorgio Agamben's *Homo Sacer: Sovereign Power and Bare Life* (Stanford: Stanford University Press, 1995) is one which traces the modern condition as a relationship between individuals and community. It focuses on those marginals who exist outside of community or kinship relationships—a condition he calls “bare life”—and are thus at the mercy of raw state power. According to Agamben this condition of bare life has, due to the advancement of biopolitics in recent centuries, proliferated in the modern period as states assume many of the caretaking roles of pre-modern social organizations such as the family, clan, or church. The state, now with a near-monopoly on social belonging, can then confer or retract the category of bare life at will, and thus apply it to onto larger and larger population groups. This trend has culminated with German concentration camps and other refugee settlement of the twentieth century, which places entire populations at the open mercy of state power. While Agamben does not mention slave plantations specifically, his ideas have been adopted in Achille Mbembe's “Necropolitics,” *Public Culture* 15,1. (2003), which links this condition of pure sovereign power over an individual's life to plantations, arguing that, as plantations were spaces in which the sovereign power of life and death were held by slaveholders, they prefigure the many colonial genocides and refugee camps of the twentieth century.

which the liberal modernity was invented, it is worth questioning how early modern thinkers attempted to connect slavery, Enlightenment, and modernity prior to late eighteenth-century developments. This work is an attempt to answer this. During the seventeenth century English natural scientists, political economists, and other reforming intellectuals crafted a conception of modernity which significantly differed from the latter liberal framework. While these individuals placed little emphasis on free politics and markets, they nevertheless possessed a highly developed sense of how their own age differed from the past, and attributed these differences to society's crossing of new thresholds in regards to moral, material, and scientific progress. Most important, because their conceptions of modernity did not emphasize liberal conceptions of freedom, these notions of progress easily incorporated both the foreign products of England's novel colonial societies, and the forced labor programs used to operate those societies. During this time, as modernizing intellectuals gazed from England towards their American plantations, they approved of what they saw.

There were many English social nodes where connections between slavery and progress were articulated, and this work will review several of them. However a primary space for these connections was among an informal confederation of seventeenth-century thinkers who labeled themselves "experimental philosophers." In brief, adherents to experimental philosophy advocated a new methodology of knowledge collection and production, ideas initially drafted as a series of tenets by Sir Francis Bacon.⁴³ This experimental or "Baconian" methodology relied on several general yet fundamental principles: a skepticism towards established or canonic knowledge forms; a preference

⁴³ Natural Philosophers of this period typically referred to their method as Experimental Philosophy, while subsequent historians of science prefer the term Baconian philosophy. On sixteenth-century precursors to Bacon's ideas, see Chapter one, FN 62.

for empirical observations as the base of their new epistemology; and the subsequent development of a cumulative reservoir of “useful knowledge” based upon this new methodology. This program included a strong emphasis on tangible experiments over abstract theorizing and favored ideas which led to technical innovations, preferably ones that improved society through practical benefits. By the late seventeenth century this new philosophy had found influential advocates amongst many of the English gentry, and its principles were given institutional weight through the establishment of the Royal Society in 1660, England’s first institution dedicated exclusively to scientific endeavors. While the Society and other experimental philosophers are remembered chiefly for their contribution to modern scientific thought (many historians of science see the experimental method as the precursor to the contemporary scientific method), the interests and goals of these individuals were originally more diverse, encompassing concepts such as empiric investigation, economic theories, social reform, and even imperial expansion. As such, the early Royal Society housed an eclectic variety of individuals, ranging from scientific forefathers like Robert Boyle and Isaac Newton, to nascent political economists such as William Petty, and as mentioned above, the early imperialist and liberal political philosopher John Locke. By the end of the seventeenth century both the Society and its Baconian methodology had become extremely influential in terms of contributing not only towards modern science and thought, but in creating highly developed theories on moral and material progress which were hallmarks of the early English enlightenment.⁴⁴

⁴⁴ For more on Baconian Science, see for example Michael Hunter, *Establishing the New Science: The Experience of the Royal Society* (London: Boydell Press, 1995); and Larry Stewart, *The Rise of Public Science: Rhetoric, Technology, and Natural Philosophy in Newtonian Britain, 1660-1750* (Cambridge: Cambridge University Press, 1992).

The history of science discipline contains a long and vibrant historiography on Bacon, the Royal Society, and experimental philosophy, yet until very recently the connections between this new methodology and English imperial endeavors have been neglected. The seminal work here is Robert Merton's 1938 *Science, Technology and Society in Seventeenth-Century England*.⁴⁵ Merton's work was inspired by the "Protestant Work Ethic" thesis of Max Weber, and Merton's publication was partially an attempt to connect Puritanism to early science as Weber had to early capitalism.⁴⁶ Like Weber, Merton detected a distinctly novel ontology within the natural scientists and social reformers of sixteenth and seventeenth-century England. To Merton, both groups placed unprecedented value on the utility of new knowledge, and developed a new empiricist methodology for discovering and employing said knowledge within social improvement tasks. Merton devotes substantial portions of his work to the worldly, practical use of early experimental philosophy ideas in areas such as gunnery, sailing, and mining, and in conclusion he argues that it was this emphasis on utility—inspired by Protestantism—which gave birth to the modern scientific method.⁴⁷

Like with Eric Williams' thesis on slavery, the "Merton Thesis" became one of the most heavily debated topics within history of science studies during the twentieth

⁴⁵ Robert K. Merton, *Science, Technology and Society in Seventeenth-Century England* (New York: Harper and Row, 1970), originally published in *Osiris* 4,2 (1938), 360-632. Note that Merton was not the first to link the events of the early Scientific Revolution to the broader social and cultural movements of early modern Europe. Important precursors to Merton's work include the German-language works of Leonardo Olschki (1919-1927), and the Marxist work of Soviet historian Boris Hessen, "The Social and Economic Roots of Newton's Principia," in *Science at the Cross Roads: Papers Presented to the International Congress of the History of Science and Technology Held in London from June 29th to July 3rd, 1931, by the Delegates of the USSR* (London, 1931).

⁴⁶ Max Weber, "Die protestantische Ethik und der Geist des Kapitalismus" in *Gesammelte Aufsätze zur Religionssoziologie* (Tübingen: Mohr, 1920). It is worth noting here that Merton's work was not entirely about Puritans, but about the role of formal vocations within early modern English science. Nevertheless, the section of his work connecting Puritans to the Scientific Revolution—dubbed the "Merton Thesis" by his successors—is what his work is primarily remembered for.

⁴⁷ Cohen, *The Scientific Revolution*, 316.

century. Much of that debate can be summarized by saying that during the subsequent decades, history of science scholars became divided between “internalist” and “externalist” camps.⁴⁸ In general, when explaining scientific change over time, internalists emphasize the intellectual products of specific individuals who, through isolated acts of cerebral (and often mathematic) genius, were able to change Europe’s scientific ontology in discrete, discernable steps.⁴⁹ Conversely externalists, like Merton, focus on broader social and cultural cues when explaining the evolution of scientific ideas.⁵⁰ More recently, externalists have become the dominant school within the history of science, and new methods since the 1970s have even moved the discipline’s center of focus into areas far beyond what was initially proposed by the original externalist scholars. These more recent scholars have adapted what is now called a “constructivist” paradigm. A subtle yet important shift from the earlier internalist/externalist dichotomy, a constructivist approach states that external social forces not only influence scientific thought, but that these forces create it. In other words all knowledge, including scientific laws, are not discovered as if existing in an unknown a priori space, but are instead

⁴⁸ By the 1950s there were so many works contesting and supporting Merton’s ideas, that one reviewer titled the entire debate the “Merton Morass.” Like with many popular theses, the concept soon took on a life of its own, and Merton himself spent a fair amount of time having to defend against ideas which he claimed to never advance within his original study. For details see Cohen, *Scientific Revolution*, 314-21. On internalists and externalists in general see *Ibid*, Ch. 1.

⁴⁹Note that while Merton’s work was explicitly tied to the case of early modern England, the internalist/externalist debate contained works on all European countries involved in early modern science. Notable internalist works include A. Rupert Hall, *The Scientific Revolution, 1500-1800* (London: Longmans, 1954); and Alexandre Koyré, *From the Closed World to the Infinite Universe* (New York: Harper, 1957).

⁵⁰ Notable externalist works include Edgar Zilsel, “The Sociological Roots of Science,” *American Journal of Sociology* 47, 1941/2, 544-62; Reijer Hooykaas, “Humanism and the Voyages of Discovery in Sixteenth-Century Portuguese Science and Letters,” in *Mededelingen der Koninklijke Nederlandse Akademie van Wetenschappen, Afdeling Letterkunde*, Nieuwe Reeks Deel 42, 4 (1979); and Joseph Ben-David, *The Scientist’s Role in Society: A Comparative Study* (New Jersey: Prentice Hall, 1971).

created through cultural mediums. Thus all knowledge is culturally specific.⁵¹ Equally important, is that constructivists also dismiss traditional narratives about the rise of science. Constructivists claim that older studies create an unfair hierarchy because they privilege and essentialize certain institutionalized scientific practices of the present (such as physics and chemistry), and then simply look backwards to discover the origins of these practices within the past. This teleological approach, they argue, dismisses practices that would have been important knowledge-making activities within the original culture (such as astrology and alchemy) simply because these activities are no longer considered legitimate scientific practices. The constructivist approach on the origins of science has slowly gained adherents throughout the last few decades, and only within the last twenty years has it become a dominant paradigm within history of science departments.

The recent development of constructivism has important ramifications for this study, as this approach opens the field of science and allows historians to examine hitherto neglected areas of the past within a scientific framework. Like with earlier

⁵¹ The key seminal work for the constructivist paradigm is Thomas Kuhn, *The Structure of Scientific Revolutions* (Chicago: University of Chicago Press, 1962), although Kuhn was unhappy with the course taken by later constructivists and spent the rest of his career denouncing his work's unanticipated contributions to the constructivist paradigm. Other key early influences here include the "Strong Program" of the 1970s, and later a field entitled the Sociology of Scientific Knowledge (SSK). Key to these programs was the Symmetry Postulate, which argues that all forms of knowledge are scientifically valid insofar as they meet the needs of the culture which performs/produces them. These works, which focus on sociological causes for scientific development, have lately been challenged by what many call the Actor-Theory Network (ANT). Developed mainly by Bruno Latour and Michel Callon, ANT argues that material objects and circumstances are as important as cultural or social influences within scientific development, and promote a paradigm that takes all of these actors—both material and human—as equal players within scientific development. For more on the history of the constructivist paradigm within the history of science, see Jan Golinski, *Making Natural Knowledge: Constructivism and the History of Science* (Chicago: University of Chicago Press, 2005), Ch 1. See also Steven Shapin and Simon Scheffer, *Leviathan and the Air-Pump: Hobbs, Boyle, and the Experimental Life* (Princeton: Princeton University Press, 1989); Steven Shapin, *A Social History of Truth: Civility and Science in Seventeenth-Century England* (Chicago: University of Chicago Press, 1995); Margaret Jacob, *The Cultural Meaning of the Scientific Revolution* (New York: Knopf, 1988); and Barbara Shapiro, *A Culture of Fact: England, 1550-1720* (Ithica: Cornell University Press, 2000).

studies of modernity, older history of science studies have been limited by a static conception of what science *is*, a conception that is rooted within our understanding of science at present. By acknowledging that the category of science is malleable and shifts over time, historians of science have been able to bring new insights into how older, neglected practices have informed the modern scientific enterprise. This new paradigm has allowed for a burgeoning scientific literature on many areas within the early modern world, but the area where this shift has been most conducive to new study is within the emerging field of Atlantic science.⁵² In short, Atlantic science emphasizes three things. First, in many ways it is an extension of the larger Atlantic history paradigm created in the 1980s, and thus it attempts to unite Europe's knowledge-making activities with the other regions of the Atlantic rim. While earlier externalist works linked early modern natural science to broader economical and cultural movements, an important drawback to most of these older studies is that they did not include Europe's New World imperial activities. While ballistics and mining were important to Merton's understanding of physics and chemistry, the strictly European focus of his and other studies meant that colonial endeavors—including the activities on American plantations—were excluded from their analysis. Second, works in Atlantic science emphasize not only the inclusion

⁵² For reviews of the new Atlantic Science, see Smith, "Science on the Move," 368-375. See also Marcelo Arunda et al. "The History of Atlantic Science: Collective Reflections from the 2009 Harvard Seminar on Atlantic History." *Atlantic Studies* 7, 4 (Fall, 2010), 493-509. There have been literally dozens of works within the last decade which embrace the Atlantic science paradigm. Some of the more prominent include Margaret Jacob and Larry Stewart, *Practical Matter: Newton's Science in the Service of Industry and Empire* (Cambridge: Harvard University Press, 2004); Londa Shiebinger, *Plants and Empire: Bioprospecting in the Atlantic World* (Cambridge: Harvard University Press, 2004); Antonio Barrara, *Experiencing Nature: The Spanish American Empire and the Early Scientific Revolution* (Austin: University of Texas Press, 2006); Harold Cook, *Matters of Exchange: Commerce, Medicine, and Science in the Dutch Golden Age* (New Haven: Yale University Press, 2007); and James Delburgo and Nicholas Dew, eds. *Science and Empire in the Atlantic World* (New York, Routledge 2008). Another important earlier work is Charles Webster, *The Great Instauration: Science, Medicine, and Reform, 1626-1660* (London: Duckworth, 1975). Webster's book does not take a constructivist approach, but he offers a very externalist reading of Baconian science in the early and mid-seventeenth century. Moreover, unlike many other works from that era, Webster also stresses the imperial connections amongst the early Baconian advocates.

of Atlantic spaces such as Africa and the Caribbean, but assert that these places took active roles in helping to form early modern science within Europe's imperial centers. Traditional scientific narratives posited that science was essentially a European affair, and once created, the new ideas of Europeans flowed outward to colonial and other non-European societies. Atlantic science instead emphasizes a mutual exchange between center and periphery. While most natural scientists may have been active within European learning centers, they were nevertheless influenced by a deluge of foreign reports, correspondence from colonial field agents, and novel transatlantic material objects which influenced their thinking on the surrounding world.⁵³ Finally, Atlantic Science is concerned with the motion of people and objects across space as it pertains to knowledge making. The act of motion, specifically the migration of people and goods into new societies and spaces, triggered changes in cultures all around the Atlantic rim, causing them to re-evaluate long-standing epistemologies and world-views, all of which was conducive to novel scientific thinking. This last emphasis is important as it demonstrates how historical actors need not be members of formal learning institutions, nor do they need to exchange formal scientific ideas, to be deeply engaged in early modern knowledge production. In sum, the Atlantic science paradigm allows historians to study a much broader range of actors, areas, and activities within a scientific framework, including the practices of Atlantic plantations.

⁵³ Key works in this regard include Bruno Latour, *Science in Action: How to Follow Scientists and Engineers through Society* (Cambridge: Harvard University Press, 1987); and Susan Scott Parrish, *American Curiosity: Cultures of Natural History in the Colonial British Atlantic World* (Chapel Hill: Omohundro Institute, 2006).

III: Towards the Enlightenment of Locke and Colleton

This work offers insights into the field of slave studies by applying the ideas of constructivism and Atlantic science to the history of slavery. The constructivist view of science has led to a broader awareness of scientific development by examining hitherto neglected aspects of early modern knowledge within a scientific context, areas which were previously considered “pseudo-scientific” because they do not fit into our contemporary understanding of the scientific enterprise. Similarly, this work broadens our understanding of slavery’s relationship to modernity by looking at early Enlightenment discourses which were amenable and even encouraging towards slavery. While these ideas and practices were important markers of modernity to those in the seventeenth century, they fell out of modernity’s canon during later periods and have thus remained unexamined within comparative studies on slavery and modernity. Similarly, while the new Atlantic science sharpens our understanding of science’s history by breaking down center/periphery binaries within scientific studies, this work tackles how Atlantic developments—chiefly West Indian slave plantations—contributed to the early Enlightenment of both England and the larger transatlantic. If we take ideas on slavery and modernity within early Enlightenment thought, and try to analyze them within the discourses and paradigms of the early Enlightenment period instead of interpreting them through later modern frameworks, connections between science, slavery, the Enlightenment suddenly come into focus. Most important, because this process shows how plantations were once integral to notions of Enlightenment and modernity, it also shows how plantations—which are now considered pre-modern backward spaces—contributed to shaping modernity as we know it.

This returns us to the friendship and enterprises of Peter Colleton and John Locke. Until recently the Carolina horticulture activities directed by these two were not studied within a scientific context, mainly because history of science narratives typically did not view either colonization or agriculture as proper subjects of study. However, now that the definition of early modern science has been broadened through the Atlantic science paradigm, historians are allowed to understand these practices as important markers of early modern science. Similarly, concerning the relationship between slavery and the Enlightenment, historians have long been stymied in regards to how to interpret the Carolina partnership of Colleton and Locke. Locke has literally hundreds of works devoted to him and his writings, yet for centuries his colonial endeavors were ignored as they were viewed as unfit for works on European philosophical thought. Since the development of the Atlantic paradigm scholars have taken Locke's American interests more seriously; however, these efforts have mainly been spent attempting to disentangle the "paradoxes" of someone who was a champion of both liberal freedoms and Atlantic slavery. Conversely, the provincial planter Sir Peter Colleton has been strictly confined by historians to texts on slave societies. In these works, Colleton is usually flattened into an archetype of the debauched, single-minded planter, and his improving endeavors beyond the Americas have been largely ignored. In each of these cases, the actions of these individuals have been filtered and interpreted through disparate historiographical canons. These canons were in turn influenced by traditional liberal understandings of slavery, the Enlightenment, and modernity, understandings which position these categories as antithetical towards one another. Thus, it is the teleological readings of

these categories which make this friendship seem so dissonant to the modern reader, rather than the original actions of these friends *per se*.

This work is divided into four chapters, each detailing an aspect of early Enlightenment discourse which allowed plantations to be seen in a progressive context. These discourses were unique to neither Europe nor America, but were transatlantic in scope and were developed via inter-oceanic correspondence, migration to and from America (both forced and unforced), and even through the physical transport of colonial goods. In England, natural philosophers admired a host of planter activities and were captivated by America's horticultural potential for increasing both empiric knowledge and imperial profit. In the Caribbean, planters kept abreast of the latest scientific practices through the above-mentioned communication channels, while daily practices on sugar estates were informed by novel discourses on efficiency and progress. By directing these activities, planters imagined themselves as participating in a broader cultural dialogue regarding Enlightenment ideals. Chapter One examines the Experimental Philosophy movement in seventeenth-century England, and how Francis Bacon, the Royal Society, and other prominent natural scientists reacted to England's colonial expansion during this time. In particular it examines their appraisal of Barbados and its booming sugar industry, which was by far England's wealthiest and most populated colony during this period. As shall be seen, experimental philosophy's reformers and natural scientists portrayed the sugar plantation as a modern innovation *par excellence*, and the equivalent to other recent marvels such as gunpowder and the magnetic compass. Chapter Two examines sugar plantations in relation to the "projecting" ethos of the seventeenth century. Working from Daniel Defoe's *Essay on Projects*, it examines this

period's novel discourses regarding the systemization of national improvement, the use of large-scale public and private enterprises to produce national wealth, and contested ideas on the proper role of individual profit within the public sphere. It then takes an in-depth look at the development of Jamaica between 1655-70, showing how a rational and projecting impulse took an immediate and central hand within the first fifteen years of the colony's development, directing the colony's rapid formation into a settlement based upon large landholdings, commodity exports, and forced labor. Chapter Three focuses on the role of coercion beyond Jamaica, as seen within the many transatlantic improvement projects proposed by experimental philosophers and other English reformers. In particular it examines the connections between Caribbean plantations and English workhouse designs. Seeing the poor as a commodity to be marshaled, developed, and profited from, English reformers advocated labor improvement programs which centered on establishing a focused and controlled space whereby the individual energies of the poor could be bent towards collective economic tasks. Such plans were often developed with work routines and surveillance measures strikingly similar to those employed within Caribbean slave plantations. Chapter Four returns to the initial development of milling technology in Barbados around 1650, and the subsequent reactions of experimental philosophers to this event. However this chapter departs from chapter one by focusing on worker technological expertise and how it is effaced within formal natural science accounts. By comparing scientific narratives with Barbadian archival material, it demonstrates the array of tacit knowledges embodied within an ingenio workforce, and the crucial role of slaves and other workers in sustaining and reproducing an effective plantation complex. Thus it shows how, in this case, Atlantic knowledge production

relied more upon the physical migration of objects and people than upon the formal exchange of scientific ideas.

Chapter One: Experiment

John Houghton was an early member of the Royal Society. Admitted in 1677, he was a member of their “Georgical Committee” (a special board dedicated to agricultural inquiries), and for a time helped manage the Society’s financial affairs. Outside the Society he ran a London apothecary which specialized in exotic imports from American plantations, most of which he got from his brother, a Virginian factor.⁵⁴ In 1681 Houghton began publishing his serial *Letters for the Improvement of Husbandry and Trade*, a popular weekly publication which ran for twenty years, reviewing recent discoveries from the Royal Society and other natural scientists.⁵⁵ Houghton’s goal with the *Letters* was to disseminate recent scientific discoveries to the broadest possible audience, and in doing so he hoped these new ideas would be put to the greatest public use.⁵⁶ Like many other seventeenth-century publications, the *Letters* paid special attention to agricultural innovations. Improving crop yields was a science of particular importance during this time, and the comparative study of other, more bountiful societies was a popular topic within intellectual circles. Houghton’s inaugural issue reflected this. Formatted as an open epistle to fellow agriculturalist and Royal Society member John Beale, the letter laid out Houghton’s aspirations for his new publication, including his desire for improved English agriculture. To that end, he declares the following:

⁵⁴ A “factor” was an English merchant who specialized in selling merchandise and advancing credit to colonial plantations.

⁵⁵ John Houghton, “Letters for the Improvement of Husbandry and Trade”, Sept. 8, 1681. Republished as *Letters for the Improvement of Husbandry and Trade* (1728) Vol. IV, p 4. Accessed through Eighteenth-Century Collections Online (ECCO). <http://gdc.gale.com/products/eighteenth-century-collections-online>. Houghton meant his serial to serve as a companion to the *Philosophical Transactions*, the Royal Society’s official publication.

⁵⁶ As mentioned in the introduction, both “natural science” and “science” are troublesome words, yet I use them as convenient shorthand for referring to the entire loose collection of improving knowledge practices used by experimenters during this time. For more information see this work’s introduction, FN 11.

“I make bold to dedicate this; advising you, that my design is often to publish such papers, as shall cause this kingdom to be so well husbandry’d, as to exceed not only the *United Provinces*, but also what on another occasion you were pleased to stile the garden of the world, Barbados.”⁵⁷

Houghton was not alone in this assessment of Barbados, England’s premier slave colony in the 1680s. During this time English mercantilists and natural philosophers were impressed by Barbados’ population density, novel sugar industry, and its ability to produce wealth. Of all English dominions, only Barbados rivaled the Netherlands in population density, surpassing the Low Countries after 1654. Mercantile theories from this period underscored connections between population density and material development, and thus English natural philosophers saw Barbados’ crowded plantation landscape as proof of technological sophistication and economic plenty.⁵⁸ In later years, Houghton’s *Letters* ran an extensive article of sugar which spanned several issues. It relied heavily upon the testimony of author and one-time slave overseer Richard Ligon, whose book *True and Exact History of Barbados* was considered a premier West Indian reference work amongst English natural scientists during this time. The article also contained detailed sugar import statistics which Houghton had collected from London’s customs houses, and concluded that Barbados “‘tis the best cultivated spot of ground in the world.”⁵⁹

As seen above, Houghton’s writings aimed to improve English agricultural and commercial techniques, partly by introducing the public to foreign comparative examples. However beyond this Houghton’s writings, like most other natural science

⁵⁷ Houghton, *Letters*, IV, 2-3.

⁵⁸ On Barbados’ population density see Robert Carlyle Batie, “Why Sugar? Economic Cycles and the Changing of Staples in the English and French Antilles, 1624-54,” *Journal of Caribbean History* 8 (Nov, 1976), 23. For more examples of political economists commenting on importance of population density, see Joyce Appleby, *Economic Thought and Ideology in Seventeenth-Century England*, (Princeton: Princeton University Press, 1978), 136-7.

⁵⁹ Houghton, *Letters*, III, 300-328; 322.

texts from this period, sought to foster what he and others called an “experimental philosophy,” meaning a method of empiric investigation set according to principles laid out by Sir Francis Bacon. As mentioned in the introduction, experimental or Baconian philosophy was a new methodology regarding the collection and production of knowledge. It played a key role in the Scientific Revolution and the early English Enlightenment of the seventeenth century, but its broad program of knowledge and social reform meant that experimental philosophy was not limited to strictly intellectual or theoretical pursuits. As seen in Houghton’s writing, experimental philosophers were a novel group insofar as they found ways to link the distinct concepts of scientific experiment, improving inventions, and commercial trade into a single program of progressive national development. This program included the chattel slavery systems of the Anglo-Caribbean. Indeed, unlike Britain’s later scientists and economists of the late eighteenth and nineteenth centuries, these thinkers perceived little fundamental distinction between Caribbean plantation practices and other British developmental projects. Instead, all were folded into a single holistic, optimistic program of national growth. This chapter will demonstrate this phenomenon by examining the extent to which experimental philosophers wrote and participated in West Indian colonial ventures within their works, the contexts and discourses in which they couched these ventures, and what this says about the Caribbean’s role within seventeenth-century English science and thought. While today we rarely associate Barbadian sugar estates with paradigms of technological or economic progress, these thinkers understood plantations in a radically different context, allowing them to compare Caribbean innovations to other recent wonders like gunpowder and the loadstone.

I: Experimental Philosophy

Before continuing it is useful to further flesh out the basic contours of this loose group of natural philosophers who called themselves experimental philosophers, and their particular intellectual and social vision. Today, Royal Society members such as Robert Boyle and Isaac Newton are frequently associated with the formalized study of physics, chemistry, and other laboratory-orientated sciences. However it is important to note that in the seventeenth century science did not yet exist as this collection of esoteric laboratory practices, nor was it a specialist occupation insulated from larger social or economic concerns.⁶⁰ Thus while the isolated testing and examination of nature within laboratories was a significant component of experimental philosophy, it was only one piece of a larger, comprehensive social vision. An experimental philosopher might examine objects with a new microscope one day, debate demography and its effect on poverty the next, and draft a Latitudinarian sermon on the third.⁶¹ More important, while today we might see this combination of activities as eclectic, to experimental philosophers these pursuits were synergetic. Each was seen as equally important components of a larger program of comprehensive intellectual, social, and moral reform. Observation and experiment upon the natural world led to an increased awareness of

⁶⁰ Of course even today the stereotype of the secluded scientist is largely a myth, as scientists often work on concrete social problems and are funded by corporate and government interests who expect developments very much attuned to specific social, political, and military problems. For a good review on the social interests of those who produce and fund science, see Bruno Latour, *Science in Action: How to Follow Scientists and Engineers through Society* (Cambridge: Harvard University Press, 1987). On the connection between experimental science and social planning in the seventeenth century, see Charles Webster, *The Great Instauration: Science, Medicine, and Reform, 1626-1660* (London: Duckworth, 1975), 31, 345-6, 383, 493.

⁶¹ The religious viewpoints of experimental philosophers were actually quite diverse and included both Anglicans and a host of non-conformists. However in general the majority of the most active experimental philosophers were of a Puritan bent prior to the Restoration, while later generations tended to express a more Latitudinarian outlook. See Webster, *The Great Instauration*, Ch 1; and Stewart, *Public Science*, Ch. 1-3.

Providently and natural laws. These God-given laws could then be harnessed to invent improvements in economic sectors such as husbandry, navigation, commerce, and the various skilled trades. These improvements would, in turn, elevate England's living standards through increased employment, an improved work ethic, and a plenty of diverse foodstuffs and other novel products. As one seventeenth-century Baconian put it, their efforts blended together in a comprehensive system of "knowledge causing piety, piety breeding industry, industry procuring plenty."⁶²

Sir Francis Bacon is for all practical purposes considered to be that father of this empiric program in England.⁶³ Born in 1561 to a Puritan gentry household, Bacon received a traditional humanist education before pursuing a long and active career in law and politics. He spent most of his life ascending the rungs of the English court, culminating in his appointment as Lord Chancellor to James I in 1618. Despite holding one of England's most powerful government positions, his career ended in disgrace in 1621 when he was accused of accepting bribes in exchange for granting government patents. He remained in court exile until his death in 1626. This active political career had a significant impact on his scientific writings, which he developed in his spare time away from court duties. In particular, this background was responsible for Bacon's

⁶² Webster, *Instauration*, 34.

⁶³Seventeenth century experimental philosophers were not the first in Europe, or even England, to conceive of ideas in this fashion, as many proto-forms of experimental philosophy can be found in the previous Tudor period. Nevertheless the concept became more concrete within the minds of its practitioners after Bacon's publications in the 1620s. See William Eamon, *Science and the Secrets of Nature* (Princeton: Princeton University Press, 1994). On Bacon's legal career and its influence on his later theories see Shapiro, *A Culture of Fact*, Ch 5. In the seventeenth century, these new ideas in natural science engendered a fierce intellectual battle between those who upheld the authority of ancient authors versus those that jettisoned these older scholastics in favor of contemporary theories and conclusions drawn from empirical research. The seminal work on this topic is Richard Jones, *Ancients and Moderns, A Study of the Rise of the Scientific Movement in Seventeenth-Century England* (New York: Dover, 1961). More recently this conflict and transformation, and its foundations within Spanish colonial enterprises, is found in Antonio Barrera-Osorio, *Experiencing Nature: The Spanish American Empire and the Early Scientific Revolution* (Austin: University of Texas Press, 2006).

emphasis on research with concrete, practical applications. Through a series of publications between 1605 and 1626 Bacon progressively laid out the basics of what he titled “The Great Instauration,” meaning a comprehensive program for collecting and organizing all human knowledge for mankind’s benefit. The schematics of these writings formed the base of Baconian science, which would thereafter play a preeminent role within England’s scientific revolution.⁶⁴

After Bacon’s death his ideas began to acquire currency amongst English elites, and two mid-century groups became actively involved in promoting his empiric program. The first was headed by the German-born merchant and publicist Samuel Hartlib. Hartlib was both a devout nonconformist protestant and member of a prominent Baltic commercial family. He immigrated to England in the 1630s and quickly assembled a remarkable range of intellectual correspondents, called the Hartlib Circle by subsequent historians. Hartlib was heavily devoted to Bacon’s Great Instauration and fancied himself an “intelligencer,” whose job was to connect experts in all areas of human knowledge so as to facilitate the exchange of ideas. Members of Hartlib’s circle were mainly Puritans and were highly active in a host of experimental reform activities during the English Civil War and Interregnum periods.⁶⁵ The second active experimental

⁶⁴ Bacon’s ideas contained several tenants, some of which will be explained later in this chapter. As mentioned in the introduction, these ideas and their influence on the Scientific Revolution have been the topic of literally dozens of works on the history of science in seventeenth-century England. A thorough review of this literature can be found in Cohen, *The Scientific Revolution*, esp. Ch. 5. Important works include Robert Merton, *Science, Technology, and Society in Seventeenth-Century England* (London: Howard, 2002), which was initially released in 1938. Other crucial works to this debate include Edgar Zilsel, “The Sociological Roots of Science,” *The American Journal of Sociology* 47, 4 (Jan., 1942), 544-562; Thomas Kuhn, *The Structure of Scientific Revolutions* (Chicago: University of Chicago Press, 1962); Margaret Jacob, *The Cultural Meaning of the Scientific Revolution* (New York: Knopf, 1988); and most recently Pamela Smith, *Body of the Artisan: Art and Experience in the Scientific Revolution* (Chicago: University of Chicago Press, 2006). See also Walter Houghton Jr., “The History of Trades and its Relation to Seventeenth-Century Thought: As Seen in Bacon, Petty, Evelyn, and Boyle.” *Journal of the History of Ideas*, 2,1 (Jan., 1941).

⁶⁵ Webster, *Great Instauration*, 84, 499-501, 512-3.

philosophy group at mid-century was the “Invisible College,” an informal correspondence network of intellectuals and reformers who operated in and around London in the 1640s and who included such prominent natural philosophers as John Wilkins and Robert Boyle. As these two informal groups shared similar interests, their membership overlapped in several areas. After the Restoration these experimental philosophers petitioned Charles II for a formal academy for their projects, which the king granted through a charter for the Royal Society in 1662. Both the Hartlib Circle and the Invisible College were well represented in the new Society, although a few of Hartlib’s more zealous Puritan associates fell out of favor after this time. Initially, the Royal Society continued in the Baconian tradition of linking experimental knowledge, mechanical invention, and social reform, although by the end of the century it had become more focused upon specialized scientific studies that more closely resemble the lab-orientated scientific practices of the present. This shift was accompanied by a decline in Royal Society membership, as many of the non-specialist members grew somewhat discontent with the Society’s direction during this time. Nevertheless, powerful strands of the experimental philosophy program remained, within both the Royal Society and broader English culture into the eighteenth century and beyond.⁶⁶

II: The Wonder of Sugar

Experimental philosophers did not single out the West Indies as an area of particular promise within their plans for increasing knowledge and benevolent inventions.

⁶⁶ The most significant mutation to the experimental philosophy program in the late seventeenth-century was the loss of its initial Puritan zeal for social improvement. This strand of Baconian science was the strongest within the Hartlib Circle during the interregnum, and was manifested through a wealth of social projects aimed at improving the life of the English poor. Later generations continued to link experiment and social improvement, although they mainly did so through emerging abstract economic theories that focused on increasing the wealth of the nation as a whole rather than directly helping the poor *per se*. See Stewart, *Public Science*, esp Ch 1-2.

Their works which speculate on the undiscovered potentials of the natural world rarely make the Caribbean their focus. Yet neither are the West Indies neglected, and unlike later scientists and thinkers, experimental philosophers did not see the region as a space of particular moral, economic, or intellectual deficiency. To seventeenth-century natural scientists, this region of imperial plantations was fundamentally no different or less useful than any other geographical region, either in its potential for contributing to natural knowledge, or in its ability to host an improved society based upon novel inventions. This was partly due to the extremely inclusive view of knowledge favored by experimental philosophy, which treated even the most mundane natural objects as worthy of study. However the West Indies were also more than marginal or overlooked spaces during this time and had several particular qualities which attracted the experimental philosopher's attention. First, Bacon and his followers were captivated by the incredible diversity of the Caribbean's natural features, and theorized on the particular natural "secrets" which could be extracted through observing and comparing the region's unique phenomena. Beyond the natural world, American colonies appealed to Baconian reformers as virtual laboratories and blank canvasses upon which they could imagine their social engineering schemes. The possibility of reconstructing society anew in America whetted their appetite for imagining communities which would eagerly adapt their reformist ideas on invention and improvement, as these places could theoretically be without interference from traditional landed or political interests.⁶⁷ Finally, experimental philosophy theories on knowledge and inquiry were heavily interwoven with ideas on

⁶⁷ On the nature and strength of traditional social and landed interests within England, and the types of resistance experimental philosophers needed to overcome when advocating their reform programs at home, see Appleby, *Economic Thought*, esp. Ch 2. When imagining settlements created fresh from the American wilderness, experimental philosophers imagined they would not have to face the resistance from such groups.

living standards and material abundance, to the point where trade and economic profits factored heavily into their reforming visions.⁶⁸ The West Indies, home to a variety of new and incredibly profitable enterprises, thus drew enthusiasm from experimental philosophers insofar as these industries could and did provide ideal examples of Baconian invention, improvement, and economic plenty in action.

This was most clearly represented in the case of West Indian sugar. Today, sugar's ubiquitous usage has acculturated us into considering it a mundane, commonplace material. Furthermore sugar's past reliance on bondage, forced labor, and corporal punishment have made it justifiably difficult for past historians to imagine how sugar-making could be viewed as a progressive force. Yet to the seventeenth-century English, sugar was a modern wonder. Not only was it an exotic material, early modern innovations in milling technology and land organization patterns allowed sugar plantations to rapidly proliferate in the New World, to the point where the West Indian sugar industry appeared as a radical break from sugar-making in earlier periods.⁶⁹ These innovations subsequently engendered a massive upsurge in English sugar usage, and what was a trickle of sugar imports in 1600 passed above 5,000 annual tons by 1650 and was five times that by 1700.⁷⁰ This increased sugar consumption had profound effects on

⁶⁸ While some natural philosophers were primarily interested in personal gain, many were nevertheless deeply concerned with trade and profits because of the connection between economics and social prosperity. See Webster, *Great Instauration*, 244-5, 383.

⁶⁹ Primarily these improvements consisted of the massive availability of land that was unavailable in the Mediterranean, allowing plantations to produce on a larger scale. In terms of technology, the invention of the three-cylindrical vertical press in sixteenth-century Brazil allowed processing to keep pace with the increased crop yields of the larger estates. See J.H. Galloway "Tradition and Innovation in the American Sugar Industry, *Annals of the Association of American Geographers*, 75, 3 (Sept, 1985). Chapter four of this work will examine the differences between the older sugar industry and the new one of the seventeenth century, pointing out many of the continuities which experimental philosophers intentionally avoided within their writings.

⁷⁰ For statistics on English imports see McCusker and Menard *The Economy of British America* (Chapel Hill: UNC Press, 1991), 151-158, and Russ Menard, *Sweet Negotiations: Sugar, Slavery, and Plantation Agriculture in Early Barbados* (Charlottesville: University of Virginia Press, 2006), 68.

English culture and society writ large, as sugar metamorphosed from an exotic material used sparingly by elites to a commonplace consumable of all social classes.⁷¹ As sugar's uses shifted and diversified, the cultural meanings inscribed onto this heretofore rare material were radically altered. Previously thought of as a trifle and only interesting to apothecaries and elite bakers, sugar suddenly had important ramifications on areas as diverse as diet, trade, health, industry, leisure, and politics. These changes did not go unnoticed by natural philosophers and other English elites, who took serious interest in this novel commodity and its diverse potentials. Moreover to experimental philosophers, this highly profitable new industry was exemplary of what can be achieved both through studying exotic materials and applying attitudes of inquiry and improvement towards industrial trades. For these thinkers, sugar was a bona-fide seventeenth-century invention.

Aside from sugar's increased visibility and social importance, the process of sugar-making itself was interesting to experimental philosophers. In turning the pith of the sugar cane plant into white crystalline sucrose, Atlantic sugar mills relied upon a series of mechanical and chemical processes which were both novel and highly sophisticated for their day.⁷² After cutting, sugar canes were hauled to a large vertical three-rollered press for grinding. The press consisted of three massive, iron-plated rollers spun by a system of overhead gears which were in turn powered by wind, water, or animal power (see fig. 1). Slaves would force canes between the rollers, crushing them

⁷¹ The key work for charting this transformation is Sidney Mintz, *Sweetness and Power: The Place of Sugar in Modern History* (New York: Penguin, 1985).

⁷² Several works contain detailed descriptions of the sugar-making process. One of the most detailed, which also stresses the novelty and complexity of English sugar-making in the seventeenth century, is Ward Barrett, "Caribbean Sugar-Production Standards in the Seventeenth and Eighteenth Centuries," in John Parker, ed., *Merchants and Scholars: Essays in the History of Exploration and Trade* (Minneapolis: University of Minnesota Press, 1970), 145-170.

while the extracted cane juice accumulated in a pan below. The press was built on a hill, and a pipe connected the accumulation pan to the boiling house at the hill's bottom. Once there, other slaves would boil the cane juice in a series of in-line copper cisterns. Each kettle would be hotter than the previous, and additives such as lixivium (meaning potash or lye), lime juice, and ox blood were added at various stages to "temper" the juice, meaning to alter its alkaline content. Eventually the concoction would begin to granulize and at the precise moment of this transformation the juice would be "struck," meaning removed from the heat, strained, put into clay jars, and sent to cure in the climate-controlled purging house. There it could either be left alone to form into muscovado (brown sugar), or it could be "clayed" into white sugar. Claying involved placing the sugar in large pots and sealing the top with a damp claying compound. Slaves poured measured amounts of water atop the clay, keeping it moist. The water then would filter through the clay, percolate through the sugar, and finally drain out through a small hole in the pot's bottom. This process, continued over a couple weeks, would purge the sugar of any residual elements, creating the pure sucrose that is refined white sugar.⁷³ Of course throughout the entire process there were many variables involving speed, temperature, duration, moisture, additives, etc. which had to be closely monitored if the sugar was to be refined correctly. While sugar had been created from canes since ancient times, it was never done so to this extent or complexity, making sugar production seem a modern mechanical and chemical wonder.

Thus sugar was a novelty in both its consumption and production aspects, and attracted the attention of early modern natural philosophers. In fact, sugar's increasing

⁷³ This was one method of turning muscovado into white sugar, and was the only process allowed in the colonies because of the British Navigation Acts. Other methods of refining brown to white sugar were practiced in Europe, via methods similar to those described above.

supply and changing usage patterns began as early as the late medieval period, which drew several early modern explorers and authors to ruminate on the plant and its potential prior to Bacon's lifetime. Christopher Columbus brought sugar canes to America on his second voyage in an attempt to found a plantation there, and Hispaniola had over thirty *ingenios* in operation by the mid-sixteenth century.⁷⁴ The Portuguese had similar plantations in Brazil, Africa, and the Fortunate Isles during this same time. The sixteenth-century cosmopolitan author Leo Africanus crafted a careful description of the sugar works in Portuguese São Tomé in his *Geographical Historie of Africa*. That same work catalogs a variety of African cultures which this author encountered in his travels, and his writings make a consistent and careful distinction in between those groups that merely know of sugarcane and those that operate *ingenios*.⁷⁵ A similar French Traveler, Vincent Leblanc, also visited São Tomé and likened the mills there to the massive waterworks of Paris' Pont Neuf bridge.⁷⁶ By the late sixteenth century English authors had similarly become interested in sugar, its properties, and potential. Both Walter Raleigh and Richard Haklyut wrote about the prospective riches to be had from operating

⁷⁴ *Ingenios* is a Spanish term which means the cluster of core buildings or "works" of a sugar estate: primarily the mill, boiling house, and curing house, as well as any other auxiliary structures. Portuguese colonies used the similar term *engenho*, and both terms translate loosely into "engine" or "device." When the English in Barbados first developed their sugar industry they referred to their mills as *ingenios*. After the 1660s the term fell out of use in favor of "sugar works," however John Beale was still referring to *ingenios* in the *Philosophical Transactions* as late as the 1680s, and at this point the word was being applied to many types of English processing machines such as cider presses. See Stuart Schwartz, *Tropical Babels: Sugar and the Making of the Atlantic World, 1450-1680*. (Chapel Hill: University of North Carolina Press, 2004.), 2. For a review of the Spanish and Portuguese sugar industry in the sixteenth century see J.H. Galloway, *The Sugar Cane Industry: An Historical Geography from its Origins to 1914* (London Cambridge University Press, 1989), For Hispaniola *ingenio* figures see Schwartz, *Tropical Babels*, 66. For Beale's use of the term see John Beale, "Advertisements on the Vinetum Britannicum..." *Philosophical Transactions* 11 (1671), 583-4.

⁷⁵ Leo Africanus, *A geographical historie of Africa* (1600). Accessed through Early English Books Online Database, Text Creation Partnership (EEBO), <<http://eebo.chadwyck.com>> Africanus' work was initially published in Italian in 1550 and went through several reprints in the late sixteenth century. An English translation was published in 1600.

⁷⁶ Vincent Leblanc, *The World Surveyed, or the Famous Voyages and Travailes of Vincent le Blanc...* (1660). Accessed through EEBO.

sugar mills in the Indies, and Thomas Harriot brought canes to Roanoke in 1585. While British North America ultimately proved too cold for large scale sugar production, as late as 1622 Edward Waterhouse was still encouraging Englishmen to plant canes in Virginia, arguing that the true wealth of the New World was not in minerals, but in transplanted exotic commodities, including the “mighty wealth of Sugars.”⁷⁷

Given this tradition, it is unsurprising that in the early seventeenth century Francis Bacon spoke highly of sugar and sugar-making within his agenda of economic and intellectual development. Yet in addition to sugar’s growing importance during this period, Bacon’s particular program contained an additional impetus for studying the nascent sugar industry. As mentioned above, the core of Bacon’s program contained a plan to relocate society’s traditional conception of knowledge, away from ancient texts and abstract theorizing and towards a discovery of unknown empiric facts about the universe. This new emphasis also argued that experimental philosophy should inquire into *all* unknown knowledge elements, and to Bacon this included studying the “vulgar trades:” artisan professions which previous scholastics had deemed unworthy of serious inquiry. Such trades included husbandry, printing, various skilled crafts, and new maritime and colonial enterprises. These professions were partially worth studying because Bacon meant to leave nothing out of his range of inquiry, but more importantly he believed they also held important “hints” about the natural world within their practices, secrets unknown to those scholastics who had for centuries ignored these professions. Sugar-making was not exempt from this artisanal emphasis.

⁷⁷ Edward Waterhouse, *A declaration of the state of the colony and affaires in Virginia...* (1622). Accessed through EEBO.

Bacon often considered himself a “bell-ringer,” meaning he imagined his social role was to convince more people to adapt his program for the Great Instauration.⁷⁸ To that end, many of his works are filled with passages which attempt two things. First, they attest to the superiority of seventeenth-century England over the ancient world. This argument was a part of experimental philosophy’s larger belief in social and moral progress, and Bacon frequently tried to prove that mankind existed along a modern, linear timeline by comparing societies’ recent advancements to previous human achievements. A popular rhetorical tactic within this argument was to enumerate society’s recent inventions, many of which came from new advancements in the vulgar trades: husbandry, navigation, etc. Next, Bacon spurs the reader to attempt further empirical inquiry into the natural world and in particular into the trades, so that knowledge of them can be cataloged and disseminated for society’s benefit. While several previous historians have commented on the role of trades within the Baconian progressive vision, for our purposes it is important to note how sugar-making was consistently awarded a spot in his honor role of recent artisan developments.⁷⁹ In 1620 Bacon published his *Preparative Towards a Natural and Experimental History*, the first segment of his program for the Great Instauration.⁸⁰ In the preface Bacon proclaims that if “the whole earth had been or shall be nothing but academies and colleges and schools of learned men, still without a natural and experimental history such as I am going to prescribe, no progress worthy of the human race could have been made or can be made in philosophy and the sciences.”⁸¹

⁷⁸ Markku Peltonen, ‘Bacon, Francis, Viscount St Alban (1561–1626)’, *Oxford Dictionary of National Biography*, Oxford University Press, 2004; online edn, Oct 2007.
<<http://www.oxforddnb.com/floyd.lib.umn.edu/view/article/990>>

⁷⁹ See FN 59, 62,63 for works which deal with Bacon and the trades.

⁸⁰ Francis Bacon, *A Preparative Towards a Natural and Experimental History* (1605). Accessed online at <<http://www.constitution.org/bacon/preparative.htm>>.

⁸¹ *Ibid.*

This initial proclamation is followed by a series of aphorisms regarding his new method, and in the fifth he outlines the importance of “mechanical arts” for the accumulation of knowledge, they being “of most use.” He continues to list the most important examples of these: “Husbandry, Cookery, Chymistry, Deying, the Workings of Glass, Esmalta, *Sugar*, Gunpowder, Artificial Fires, Paper, and the like.”⁸² His subsequent works echo this. The *Novum Organum* (1620) outlines a series of recent “noble inventions” and their relation to the new experimental philosophy, they being gunpowder, silk, magnets, and sugar.⁸³ In the *Sylva Sylvarum* (1626) he conducted experiments on honey and sugar and their roles as a sweetener. This was prompted by his assertion that sugar, although “to the Ancients it was scarce knowne, and little used,” had recently replaced honey as the sweetener of choice because of its increasing abundance and declining price.⁸⁴ These experiments were matched by others scattered in his works, including ones for preserving different fruits in sugar, dissolving sugar and salt within various liquid solutions, striking sugar loaves to produce sparks, and attempting to make a sugared wine that prevents drunkenness.⁸⁵

The best example of how Bacon’s plan for the reformation of knowledge included a positive appraisal of sugar-making and other colonial affairs comes from his *New Atlantis* (1626).⁸⁶ His final text and a posthumous release, the *New Atlantis* is a fictional narrative styled after Thomas More’s *Utopia*. It tells the story a merchant ship blown off course in the Pacific Ocean which stumbles upon a secret, idyllic island community

⁸² *Ibid*, My italics on sugar.

⁸³ Francis Bacon, *Novum Organum: or True Directions Concerning the Interpretation of Nature*, 1620. Accessed online at <http://www.constitution.org/bacon/nov_org.htm>.

⁸⁴ Francis Bacon, *Sylva Sylvarum or A Naturall Historie In Ten Centuries* (1626), 156. Accessed through EEBO.

⁸⁵ Most of these experiments can be found in *Ibid*.

⁸⁶ Francis Bacon, “The New Atlantis,” found in *Sylva Sylvarum* (1626). Accessed through EEBO.

named Bensalem. Like with More's *Utopia*, Bacon used the fictional island's government and society as a metaphor to describe the reforms he would like to see enacted in England. The centerpiece of the work is Bacon's description of the island's "House of Salomon," which was Bensalem's enormous, comprehensive, and state-sponsored academy devoted to organized research into all areas of human knowledge. Here, Bacon's emphasis on artisanal trades is demonstrated through the fact that the House of Salomon organizes much of its inquiry along the lines of what were contemporary mechanic professions. There are underground mining laboratories, horticultural gardens, medical hospitals, maritime navigational programs, and even brew-houses and bake-houses where new foods and drinks are discovered. Within the last of these, sugar is a primary ingredient utilized for research. At the end of the work, the story's European visitors are taken to a central museum at the House of Salomon which contains statues of the world's "Principal Inventors," meaning the individuals responsible for creating each of the world's most important recent innovations. Here, there are statues of people responsible for inventing ships, gunpowder, music, printing, astronomy, metal and glass works, silk, wine, bread, and finally sugar.⁸⁷

During Bacon's lifetime sugar was only beginning its long ascent into the daily lives of England's consumer population, and as sugar imports increased through the rest of the century subsequent writers repeated and expanded upon Bacon's ideas. In 1664 Royal Society member Henry Power published *Experimental Philosophy*, a collection of discoveries and experiments related to the recently invented microscope.⁸⁸ His work's introduction is a panegyric to experimental philosophy's methodology, and like with

⁸⁷ *Ibid*, 46.

⁸⁸ Henry Power, *Experimental philosophy, in three books containing new experiments microscopical, mercurial, magnetical*, (1664). Accessed through EEBO.

Bacon's earlier works, it includes a section which admonishes those opposed to experimental philosophy, speculating on what the present age would lack were it not for those few intrepids who had embraced the new science:

“Had the winged Souls of our modern Hero's been lime-twig'd with such ignoble conceptions as these* they had never flown up to those rare Inventions with which they have so enrich'd our latter dayes; we had wanted the useful Inventions of Guns, Printing, Navigation, Paper, and *Sugar*; we had wanted Decimal and Symbolical Arithmetick, the Analytical Algebra, the Magnetical Philosophy, the Logarithms, the Hydrargyral Experiments, the glorious Inventions of Dioptrick Glasses, Wind-guns, and the Noble Boyle's Pneumatick Engine.”⁸⁹

Others concurred. In 1697 the prolific author and prominent Royal Society member John Evelyn wrote a treatise on metals wherein he advocated that English coins be re-minted so that, like Dutch Guilders, they bear the likeness of individuals who have contributed to the nation's glory via inventions or explorations. Evelyn suggests that this coin series includes one to commemorate those involved in “Refining, and indeed inventing Sugar.”⁹⁰ In H.M. Herwig's 1700 medical treatise, the author begins with remarks about the recent advancements in medicine, stating how the modern world possesses “a great many sorts of Medicines ... all of which were unknown in Hippocrates time.” He then compares the ancients medical knowledge to the present by presenting the past as a period where “Rhubarb had not yet purged bitter Choler, nor Senna the sower juice of the Milt, nor Agarick the sweet Phlegm, nor had Cassia, Sugar or Manna filled the Apothecaries boxes...”⁹¹

⁸⁹ *Ibid*, 190. My emphasis on sugar. By “ignoble conceptions” Power means: “A diffidence and desperation of most men (nay even of those of more discerning faculties) of ever reaching to any eminent Invention; and an inveterate conceit they are possess'd with of the old Maxim, That Nil dictum, quod non prius dictum.”

⁹⁰ John Evelyn, *Numismata, a Discourse of Medals...*, (1697). Accessed through EEBO.

⁹¹ H.M. Herwig, *The art of curing sympathetically, or magnetically, proved to be most true by its theory and practice exemplified by several cures performed that way*, (1700). Accessed through EEBO.

Perhaps the best example of this type comes from Charles de Rochefort's immensely popular *Historie Naturelle et Morale des Antilles* (1658). Translated into English as *The History of the Caribby-islands* (1666), it, went through several English editions and was frequently referenced by Royal Society members throughout the rest of the century. Rochefort was a Parisian lawyer and scholar, and while he never visited the West Indies himself his massive and long-anticipated work was a collaboration between him and several other French chroniclers, including a host of eye-witnesses from whom Rochefort gained his information.⁹² Rochefort was also invested in this period's ancient-versus-moderns debate, and his work is organized so as to frequently juxtapose the Caribbean's novel features and developments with the ancient Mediterranean. Through this arrangement he is able to make judgments between that older time and his own. Such is the case with his account of sugar-making, which he prefaces by stating:

“Though it may be granted, that the Plant of the Sugar-Cane was known to the Ancients, yet is the invention of making the Sugar but of late years: The Ancients knew no more of it then they did of Sena, Cassia, Ambergreece, Musk, Civet, and Benjamin: They made no other use of this precious Reed, then in order to drink and Physick. And therefore we may well oppose all these things, with much advantage, as also our Clocks, the Sea-Compass, the Art of Navigation, Prospective-glasses, Printing, Artillery, and several other excellent Inventions of the last Ages, against their right way of dying Purple, their malleable Glass, the subtle Machines of their Archimedes, and some such like.”⁹³

While Rochefort was neither English nor a Royal Society member, his work was popular with both. It went through several English editions, was cited and copied on many occasions, and even drew the attention and praise of the eminent chemist and

⁹² See Preface from the English version of Charles de Rochefort, *The History of the Caribby-islands*, (1666). Accessed through EEBO. See also Keith Sandiford, *The Cultural Politics of Sugar* (Cambridge: UC Press, 2000), 41.

⁹³ Rochefort, *History*, 194.

leading Royal Society member Robert Boyle. As will be shown later, while sugar was never the main focus of any of Boyle's works, the commodity is featured in many of Boyle's arguments due to its seemingly unusual chemical properties. In his *Certain Physiological Essays* (1669), Boyle argues with other chemists over the issue of salts, and whether or not salt as a rule had a "hardening" effect on objects. In the course of his argument Boyle turns to sugar production, mentioning that "ingenious French Publisher" Rochefort, who demonstrates that, though sugar was thought to be a form of salt and thus should coagulate easily, yet the Atlantic sugar-making process relied on a complex mixture of heat, lye, and acids for the transformation to occur.⁹⁴ Boyle corroborates Rochefort's testimony by mentioning other sugar-making experts with whom Boyle had "purposely inquir'd" on the issue, while also adding that Rochefort's work is also "not to be distrusted"⁹⁵ Based upon these transatlantic informational sources, Boyle concludes that sugar may not in fact be a variety of salt.

III: "Empire in Learning"

Accolades by experimental philosophers for West Indian affairs were not restricted to sugar making *per se*, and their accounts contain passages which are ebullient about the West Indies writ large. The most common expressions of this excitement are statements which juxtapose the discovery of knowledge with the expansion of empire, placing both within a single framework of early Enlightenment thought. In Bacon's works this is most clearly seen through his Bensalem metaphor in the *New Atlantis*, which was an island equally devoted to both geographic and intellectual exploration.

⁹⁴ Boyle, *Certain Physiological Essays*, (1669) 270.

⁹⁵ Robert Boyle, *Certain Physiological Essays and Other Tracts*... (1661). Accessed through EEBO. Boyle also corresponded with Rochefort at one point, however the letters have been lost. See Michael Hunter, ed. *The Correspondence of Robert Boyle* (London: Pickering & Chatto, 2001), vol. VI, 518.

When the European travelers in Bacon's story are first introduced to the island's House of Salomon, their local guide informs them that: "The *End* of our *Foundation* is the Knowledge of *Causes*, and Secrett Motions of Things: And the Enlarging of the bounds of *Humane Empire*, to the Effecting of all Things possible."⁹⁶ Later, when the visitors enter the House of Salomon's Hall of Inventors, the initial statue they encounter is of Christopher Columbus, whose discovery of the West Indies is treated as one of humanity's greatest contributions to global knowledge.⁹⁷ This mixing of empire and knowledge was also accomplished via Bensalem's funding of experiments both on and off the island. On the island, as mentioned above, experiments were made within a variety of contexts to advance a number of diverse trades. Bensalem also pursued knowledge by annually sending twelve "Merchants of Light" to foreign locations. These explorers were sent to collect information on distant geographical areas, and to return it to the House of Salomon's central library.⁹⁸ Bacon's melding of foreign exploration and scientific advancement can also be seen in the opening illustration of *Sylva Sylvarum*, his final work which contains the story of *New Atlantis*. (see fig. 2) *Sylva Sylvarum* is a collection of miscellaneous writings by Bacon which were compiled by Bacon's assistant and posthumous promoter William Rawley. The front image contains a number of elements which demonstrate the Baconian blend of increasing knowledge, geographical expansion, and moral progress that are characteristic of early Enlightenment thought. The image is of a body of water flanked by the Pillars of Hercules, which represents both the unexplored areas of the Atlantic Ocean, and the metaphorical sea of knowledge which

⁹⁶ Bacon, *Sylva Sylvarum*, 31.

⁹⁷ *Ibid*, 46.

⁹⁸ Bacon states that these Merchants of Light would keep their true identity a secret while abroad, which is why none in Europe had ever heard of the island of Bensalem before.

was at present unknown to humanity. The center of the image contains another metaphor, a globe with the words “Mundus Intellectuals.” Above the ocean is a sun containing the Greek word for Yehweh which is flanked by two cherubs.⁹⁹ Between the sun and the globe is the Genesis verse: “And God saw the light, and it was good.”

After Bacon’s death subsequent natural philosophers evoked metaphorical connections between knowledge and empire, and Bacon’s utopian *New Atlantis* was especially influential to these later thinkers. In 1641 Samuel Hartlib published *Macaria*, a work by Gabriel Plattes which also depicts an idyllic and scientific island community.¹⁰⁰ Like with the *New Atlantis*, Plattes attempted to reform English laws through drafting the story of a fictional society built around Baconian principles. The island contained a government chamber highly responsive to new empiric inquiries and funded a central “house of experience” dedicated to medical and other scientific discoveries. Also central to Plattes’ *Macaria* was a set of five government “undercouncils” which organized all of the island’s economic affairs and had complete authority to enact laws for the improvement of knowledge or trade. These undercouncils included a “Council for new Plantations” which among other things was charged with annually sending settler expeditions to uninhabited places, and to continually restock these settlements with migrants and supplies until they were self sufficient.¹⁰¹ Platte’s *Macaria* was complimented by the works of John Comenius, a famous itinerant continental philosopher who, like Hartlib, spent much of his life dedicated to educational

⁹⁹ Pablo Alvarez, “Collection Highlight: Bacon, Sylva Sylvarum,” Department of Rare Books, Special Collections and Preservation, River Campus Libraries, University of Rochester, <<http://www.lib.rochester.edu/index.cfm?page=3613>>. Accessed July 24, 2012.

¹⁰⁰ Samuel Hartlib, *A Description of the Famous Kingdome of Macaria...* (1641). Accessed through EEBO.

¹⁰¹ Hartlib, *Macaria*, 3, 5. Platte’s work was part of a larger attempt to influence England’s new Parliamentary government, which will be described later.

and religious reform. Plattes released his *Macaria* partly to commemorate Comenius' arrival in England, and it was designed as an auxiliary piece to Comenius' work *Way of Light*, which was a Parliamentary proposal for an international network of scientists bound together through formal correspondence channels. This network was to have a central institutional repository in London for coordinating and organizing this correspondence, thus making London a bona fide House of Salomon.¹⁰² Like the House of Salomon, Comenius' proposed college treated global expansion as exemplarily of new knowledge types. While Bacon's Hall of Inventors eulogized the special role of Christopher Columbus, Comenius' college was to have a large central statue for Francis Drake, commemorating his circumnavigation of the globe.¹⁰³ Later in the century, Bacon's *New Atlantis* template was used by Royal Society member John Beale in his manuscript "From Utopia" (1681), which was an attempt to reform deficiencies which Beale saw within in the Royal Society itself. Written near the end of his life, Beale's unpublished work chastises many younger Society members for declining from the Great Instauration's original Puritan focus on innovations which improve the common weal, and for instead focusing on more insular and esoteric laboratory practices.¹⁰⁴ Finally, this common homage to Bacon's vision of state-sponsored experimental academies even produced tangible results during this period. The idea of idyllic, isolated

¹⁰² This system was to be implemented into Samuel Hartlib's Office of Address, an institution which will be described in chapter 3.

¹⁰³ Donald Dickson, *The Tessera of Antilia: Utopian Brotherhoods and Secret Societies in the Early Seventeenth Century* (Leiden: Brill, 1998), 170. The *Way of Light* was initially published in Latin as *Via Lucis, Vestigata & Vestiganda*.

¹⁰⁴ Mayling Stubbs, "John Beale, Philosophical Gardner of Herefordshire, Part II: The Improvement of Agriculture and Trade in the Royal Society (1663-1683), *Annals of Science* 46 (1989), 355-6. Because the manuscript was never published its exact date is uncertain, but is believed to have been created around 1681.

communities dedicated to piety and empiric learning were highly influential in both the settlement of New England and in the founding of Harvard University.¹⁰⁵

Other experimental philosophers followed Bacon's lead with more general rhetorical imagery that connected science, the Americas, and imperial expansion. In a 1676 reprint of Bacon's *Novum Organum*, the translator and introductory author claims that the larger goal within all of Bacon's works was to provoke an "improvement in all kind of Learning ...that we might sail to those Indies full of Gold and Jewels. I mean the Sciences not yet discovered to our World, and fetch from thence all the Rarities, the Knowledges, and Inventions, that might pleasure and benefit our humane life."¹⁰⁶ Such metaphors are also found in Thomas Sprat's *History of the Royal Society* (1667). The Royal Society was only a few years old at the time of Sprat's writing, and his work is a manifesto of the Society, its purpose, methodology, and role within Restoration society. Sprat's work makes frequent comparisons between territorial expansion and knowledge, boasting at one point that the Society shall soon have a "constant universal intelligence" due to its presence in so many foreign places. Elsewhere he claimed that their goal is nothing less than an "Empire in Learning," and that ranking and categorizing all of the world's hitherto unknown phenomena, "is truly to command the world; ...standing on the top of them, we may perfectly behold all that are below, and make them all serviceable to the quiet, and peace, and plenty of Man's life."¹⁰⁷ In another work he was more specific about these connections between science and empire. In 1665 Sprat temporarily suspended work on his *History* to draft his *Observations on Monsieur de Sorbier's*

¹⁰⁵ Webster, *Insturation*, 44-7.

¹⁰⁶ Francis Bacon, *The Novum Organum of Francis Bacon ... translated and taken out of the Latine by M.D.* (1676), 1. Accessed through EEBO. It is unclear who the introductory author M.D. is, but he published several introductions to works in the late seventeenth century.

¹⁰⁷ Thomas Spratt, *History of the Royal Society of London...* (1667), 20, 21, 110. Accessed through EEBO.

Voyage into England. Sorbier was a French natural philosopher who had recently published an English travelogue which suggested that the English were a “lazy” people and that England’s Royal Society lagged behind its informal French counterpart.¹⁰⁸

Sprat’s response is a caustic rebuttal which argues for both a high degree of experimental knowledge in England, and a vibrant and diverse economy which has benefited from this knowledge through various technological innovations. According to Sprat, highlights of England’s diverse industries include:

“the *Cole-pits* of New Castle, the *Clothworks* of the West, and the North, the *Lead Mines* of Derby, the *Orchards* of Hereford, the *Plough-lands* of Devon, the *New Rivers* of the Fenns, the *Tinn Mines* of Cornwall ... the *Sugar works* of the Barbadoes, the *Tobacco Plantations* of Virginia, the *Silk Trade* that is begun there, and the *Vast Mole*, which goes on at *Tangier*.”¹⁰⁹

What is most interesting here is that Sprat’s list contains no fundamental intellectual, industrial, or economic divisions between England’s domestic and imperial endeavors. Unlike later thinkers of the eighteenth and nineteenth centuries, the above passage incorporates all new English industries into a single paradigm of increasing knowledge and progressive economic growth.

English experimental philosophers also marshaled West Indian advancements within the aforementioned rhetoric of placing modern Baconian achievements above the intellectual shortcomings of ancient sources and contemporary scholastics. John Evelyn, a prolific virtuoso who wrote a number of works on diverse scientific topics, rebukes scholastics in his *Navigation and Commerce* (1674) for initially disbelieving the power of the loadstone. He argues that despite the scholastic’s poor appraisal of magnetism, it was because of the compass that the “Western Indies should no longer be a secret, ... by

¹⁰⁸ Thomas Spratt, *Observations on Monsieur de Sorbier’s Voyage into England* (1665), 88. Accessed through Google Books. The French Academy of Sciences was formerly founded in 1666.

¹⁰⁹ Spratt, *Observations*, 89-91. Quote also published in Stubbs, “John Beale,” 360.

vertue of this dull Pibble, such a Continent of Land, such Myriads of People, such inexhaustible Treasures, and so many Wonders should be brought to light.”¹¹⁰ Elsewhere in *Sylva* (1670), Evelyn’s work on husbandry, he optimistically writes that the trees of the New World may be useful for judging the veracity of ancient texts, as some American trees have been reported to match the sizes of great trees mentioned within certain classical authors.¹¹¹ Thomas Spratt similarly spends large segments of his *History of the Royal Society* pontificating on the errors of the scholastics, chiding them at one point for preferring “the Gold of Ophir, of which now there is no mention, but in Books, before the present Mountains of the West-Indies.”¹¹² The Indies were also used as a pretext to castigate other types of other types of traditional knowledge. In a published letter to Samuel Hartlib, the chemist and agriculturalist Robert Child makes lengthy comparisons between ancient and modern husbandry knowledge. At one point he argues that an important advantage of moderns over the ancients was that “infinite are the Plants which we have, and they knew not ...and daily new Plants are discovered, useful for Husbandry, Mechanicks and Physick.”¹¹³ This message is coupled with an exhortation to all foreign English merchants, to continue their tradition of collecting plants from exotic locations. Child, who himself lived for several years in New England, also chides English farmers for irrationally clinging to traditional methods and being “ignorant” of what new foreign examples could teach them. These examples included “divers things in

¹¹⁰ John Evelyn, *Navigation and Commerce...* (1674), 61. Accessed Through EEBO.

¹¹¹ John Evelyn, *Sylva, or, A Discourse of Forest-Trees...* (1670), 230-5. Accessed Through EEBO.

¹¹² Spratt, *History*, 25.

¹¹³ Robert Child, “A Large Letter concerning the Defects and Remedies of English Husbandry,” found in Samuel Hartlib, *His legacy of Husbandry...* (1655), 69. Accessed through EEBO.

our Plantations worth the taking notice of,” such as the “Southern Plantations” of Barbados, Antigua, St. Croix, St. Christopher, Nevis, and Montserrat.¹¹⁴

Aside from general metaphors on the value of West Indian plantations to Baconian reform programs, colonial activities were also of interest because they provided clear examples of specific innovations which natural philosophers saw as products of their experimental methodology. As plantations are primarily agricultural affairs, this feature was most pronounced within the realm of academic husbandry, a core area of experimental research in the seventeenth century. Bacon’s fictional House of Salomon contained extensive orchards and gardens for experimenting with a variety of planting and transplanting, while Bacon himself kept a garden where he practiced experiments with a variety of native and imported American plants, including tobacco. In the 1650s one of the most prominent spokespersons for Baconian husbandry was Cressy Dymock. Although Dymock was poor and at best a lesser member of the gentry, he was nevertheless an important member of the Hartlib Circle and corroborated with future Royal Society members such as Benjamin Worsley, Henry Robinson, and Robert Boyle. In 1651 Samuel Hartlib published Dymock’s *Essay for the Advancement of Husbandry-Learning...*, the centerpiece of which was Dymock’s plan for an official husbandry college. Obviously at this time husbandry was almost never taught through formal institutional channels, and farmers learned their craft through traditional community and kinship networks. This chagrined experimental philosophers as it meant farmers were more likely to practice and repeat traditional methods, rather than learn the latest Baconian techniques. Dymock and Hartlib’s solution for this problem was to professionalize husbandry learning through a formal academy. To teach farming like a

¹¹⁴ Child, “Large Letter,” 71-2.

trade was only natural they declared, as husbandry was “the *Mother* of all other *Trades* and *Scientificall Industries*.”¹¹⁵ The school would take in students for a seven year term—the traditional apprenticeship period—teach them the latest experimental husbandry techniques, and would be funded through tuition and private subscriptions. Similar ideas were put forward in Hartlib’s *Cornu Copia: a Miscellanium of Lucrififerous and Most Fructiferous Experiments...* (1652), which contained more arguments for Dymock’s proposed college. Both works were attempts to solicit private subscriptions for the new venture, and as such *Cornu Copia* lists the benefits that the college’s supporting members would receive. Among those was that, should any member happen to move to the American plantations, they would receive regular updates from the college of the latest farming advancements occurring in England. Equally important, Dymock did not imagine this flow of information to be a one-way channel from advancing England onto the backwards colonies. Instead, he envisioned that supporting members of his college would in time form a transatlantic correspondence network, sharing each region’s important information, commodities, “or any other reciprocall negotiation, or intercourse of friendship, of what importance soever.”¹¹⁶ Unfortunately like many of the experimental philosophers’ social projects, Dymock’s college was never realized. He was unable to raise the necessary subscriptions and died in 1660.

Dymock’s enthusiasm for husbandry was later matched by the aforementioned Royal Society member John Beale. Raised on an estate in western England in the 1630s, Beale’s father was an orchard advocate and is credited with developing the English

¹¹⁵Samuel Hartlib, *An Essay for Advancement of Husbandry-Learning ...*(1651), 3A. Accessed through EEBO.

¹¹⁶ Samuel Hartlib, *Cornu Copia, a Miscellanium of Lucrififerous and Most Fructiferous Experiments...* (1652), 15. Accessed through EEBO.

Redstreak variety of apple. This background gave Beale a lifelong interest in husbandry, particularly experiments with trees and orchards. Beale lectured for a time at Cambridge on both hermetic and Baconian philosophy before his career was disrupted by the Civil War. By the 1660s he had become a member of the Royal Society and its Georgical Committee, and was especially devoted to agricultural improvement. Like Dymock, Beale envisioned an exchange program for agricultural information. While he was also unable to accomplish anything as grand as Dymock's envisioned network, Beale did work heavily with Henry Oldenburg to create the *Philosophical Transactions*, the official publication of the Royal Society, which he believed would be the best way to disseminate new agricultural knowledge in the fastest possible time.¹¹⁷ Like other experimental philosophers, Beale's experiments frequently intersected with sugar and other West Indian commodities. In 1671 he wrote an article for the *Transactions* that describes a new kind of English fruit vine. While the fruit of this vine was not good enough for wine on its own, it could be mixed with sugar to create a sack drink. Now that sugar had become a cheap and common commodity, Beale wrote excitedly about this vine's suddenly new potential to both augment the sugar industry and decrease English dependence on foreign wine.¹¹⁸ On another occasion Beale emulated Francis Bacon by ruminating on the differences between honey and sugar, hoping in time that sugar drinks would be improved to a point where they replace honey altogether as a sweetener, "hony being better for the Apothecaries, and far Dearer than Sugar."¹¹⁹ His works also contain experiments on Barbados ginger within wine and cider, and he made frequent inquiries to

¹¹⁷ Stubbs, "John Beale," 329-30.

¹¹⁸ John Beale, "Advertisements on the Vinetum Britannicum..." *Philosophical Transactions* 11 (1671), 583.

¹¹⁹ John Beale, "Some Agrestic Observations and Advertisements..." *Philosophical Transactions* 12 (1677-8), 820.

the West Indies about their islands' soil consistencies, which he published in the *Transactions*.¹²⁰ In some cases he even envied West Indian colonial husbandry advancements. In a 1663 letter to Robert Boyle, Beale lamented the relative backwardness of English livestock breeding compared to other places. Speaking on England's hog population, he wishes how "the best of English [pigs] be amended by a race from Spaine, Portuguall, or such as Ligon in his Barbados mentions; Soe of the Oxe and Bull for labour, of the Cowe for milke, &c."¹²¹

From a husbandry perspective, the West Indies were also valued for the array of unique plants they could provide to the greater English empire. Part of this value stemmed from the early modern idea that each region of the earth yielded unique flora and fauna, and that it was up to the explorer and merchant to gather these diverse items under a single roof. The above-mentioned John Evelyn was a chief proponent of this idea. Evelyn was born in 1620 to a wealthy English merchant family which held a patent monopoly on the nation's commercial saltpetre manufacturing. By the early 1650s he had taken a serious interest in horticulture, created an experimental garden at his estate, and begun translating the latest French gardening treatises into English. In the late 1650s he became a member of the Hartlib Circle, a close associate of John Beale and Robert Boyle, and was among the Royal Society's founding members. He thereafter published on an immense variety of topics including botany, orchids, soil, precious metals, sculpture, poetry, drama, education, navigation, and trade. In his treatise *Navigation and Commerce* (1674), Evelyn begins by arguing that the world is a "stupendious mixture of Plenty and Want," and that the best way for a nation to acquire diverse and abundant

¹²⁰ See for example *Philosophical Transactions* 2 (1667), 565-7; 29 (November, 1667), 399-400; and 117 (Sept, 1675), 357-67.

¹²¹ John Beale to Robert Boyle, November 30, 1663. Found in Hunter, *Correspondence*, II, 211-12.

products was through a vibrant global exchange. He continues by making an example of the Netherlands, who he says are unmatched in their ability to fetch the world's varied commodities:

“[Holland] affords neither *Grain, Wine, Oyle, Timber, Mettal, Stone, Wool, Hemp, Pitch*, no, almost, any other Commodity of Use; and yet we find, there is hardly a *Nation* in the World, which enjoys all these things in greater affluence: and all this, from Commerce alone, and the effects of Industry, to which not onely the Neighbouring parts of *Europe* contribute, but the *Indies*, and *Antipodes*: So as the whole World (as vast as it appears to others) seems but a *Farm*, scarce another *Province* to them.”¹²²

This description of Holland's diversity of foodstuffs is then used to promote Evelyn's program whereby England would mimic the United Provinces and increase their efforts to gather commodities from foreign places. The idea was repeated within *Silva* (1670), Evelyn's work on trees and orchards. Like with his navigation work, the West Indies are heavily featured within his plan of horticultural and commercial diversity. Evelyn argues for the increased importation of nuts and wood samples from Caribbean Cocoa and Pimento trees for both experimental and commercial purposes. Using the East Indian fig tree as an example, Evelyn talks about how the Dutch have been able to use the sap of that tree to develop a potent commercial beverage, and is hopeful that with enough experiments trees from the English Caribbean could yield similar products. He was also convinced that experiments on the sap of these trees would help experimental philosophers better understand tree sap from their own climate, such as the birch.¹²³ Imports of tree specimens were to be accompanied by imports of soil. Jamaica in

¹²² John Evelyn, *Navigation and Commerce...* (1674), 7. Accessed through EEBO.

¹²³ Evelyn, *Sylva*, 75-77.

particular was rumored to be a place of fertility, and Evelyn received numerous batches of Jamaican earth for conducting experiments on the soil's nutrient properties.¹²⁴

Evelyn and other experimental philosophers were especially interested in the chili peppers native to Jamaica and frequently requested samples for experiments in England. Evelyn went so far as to work with the Council of Trade and Plantations (of which he was a member), to pass preservation laws for these plants in the colonies.¹²⁵ John Houghton was similarly interested in the plant and wrote an article on the pepper in his *Letters*, arguing that its discovery was a recovery of ancient knowledge.¹²⁶ Other interested natural philosophers included one-time Royal Society president Robert Moray and the chemist Robert Boyle, who conducted experiments on the pepper's chemical properties and similarly used the discovery of its properties to judge between the knowledge of the ancients and moderns.¹²⁷ Like with sugar and other tropical imports, this interest was in part tied to the rising imports of peppers into England throughout the seventeenth-century and its effect on the nation's society and economics. Thus by 1690 Royal Society member and early political economist William Petty could write confidently about the benefits the Jamaican pepper had brought to England, arguing that it "may be said of Sugar, Tobacco, and Pepper; which custom hath now made necessary to all sorts of people; and which the over-planting of them, hath made unreasonably

¹²⁴ John Evelyn, *A Philosophical Discourse of Earth...* (1676), 71-8, 102-7. Accessed through EEBO. The supposed abundance of Jamaica's fertility had been a frequent topic of discussion in the seventeenth century. See for example the English travelogue account in Vincent Harlow, ed. "The Voyages of Captain William Jackson," *Camden Miscellany, Vol. XIII* (London: Offices of the Society, 1923), 16-22.

¹²⁵ Evelyn was worried that they were being destroyed by "prodigals" in Jamaica who found tearing the bush down the fastest way to pick the peppers off the tree. See Evelyn, *Sylva* 131-2. See also Houghton, *Letters*, III, 113.

¹²⁶ *Ibid.*, III, 121.

¹²⁷ Robert Boyle, *Some Considerations Touching the Usefulness of Experimental Naturall Philosophy...* (1663), 12.

cheap: I say it is not absurd, that the Publick should be advantaged by this extraordinary plenty.”¹²⁸

In addition to importing a variety of West Indian products, Baconian philosophers were interested in experimenting to see if any of these plants could be transplanted to England’s colder climate. Of particular interest was the Potato, which was native to Barbados and Jamaica during this time. Transplanting potatoes was a common call from the experimental philosophers in the seventeenth-century, beginning with the experiments by physician and agricultural experimenter John Gerard in the 1590s. Half a century later they were being praised in Robert Child’s published letters to Samuel Hartlib, who saw their British cultivation as more evidence of modern society’s superiority over the ancients.¹²⁹ The Royal Society’s Georgical Committee began a program in 1664, corroborating with English landlords for increased cultivation of Caribbean potatoes. However by the 1670s they were still relatively rare in the British Isles, which incited John Beale to produce another article about their benefits within the *Philosophical Transactions*.¹³⁰ Interestingly enough, in this case Beale was advocating potatoes in Britain and Ireland as a way to prevent famine. The article recommends that all Englishmen construct individual gardens if possible, as they “are a kind of *under-ground Granaries*” which can help protect against crop failure. This is particularly true, he says, if they contain “the Potado’s of *Barbados*, or of *Virginia*,” and that “the Potado’s of *Barbados* (in our fresh memory) relieved *Ireland* from two years of famine, when their

¹²⁸ William Petty, *Political Arithmetick, or, A Discourse Concerning the Extent and Value of Lands, People, Buildings...* (1690), 46. Accessed through EEBO.

¹²⁹ Hartlib, *His Legacy of Husbandry* (1662), 69-71. On the general development of British agriculture in the early modern period, see Mark Overton, *Agricultural Revolution in England: The Transformation of the Agrarian Economy, 1500-1800* (Cambridge: Cambridge University Press, 1996). See also Joan Thirsk, *The Agrarian History of England and Wales*, Vol. IV and V (Cambridge: Cambridge University Press, 1967, 1985).

¹³⁰ Stubbs, “John Beale: Philosophical Gardiner of Herefordshire,” 340.

Corn failed there.”¹³¹ Such sentiments were later repeated by Houghton, who boasted erroneously in his *Letters* that potatoes were first planted in Ireland by none other than Sir Walter Raleigh “where they have thrived very well and to good purpose”¹³²

Other plants were deemed fit for transplanting both to and from the West Indies. Samuel Hartlib contrived and published an extensive plan for introducing both silkworms and mulberry trees into Virginia, as he saw it as a more profitable crop than tobacco.¹³³ John Evelyn argued for transplanting cedar trees and other hardwoods from America to England to help meet the demands of the nation’s shipbuilding industry. Moreover to justify the viability of this plan, Evelyn gives an example from Brazil where the Dutch governor there once transplanted “six hundred Coco-trees of eighty years growth,” which he accomplished by “waft[ing] upon Floats, and Engines, four long miles, and planted them so luckily, that they bare abundantly the very first year.”¹³⁴ Evelyn and Robert Boyle later advocated a complex plan for transplanting many of the Dutch spice trees from the East Indies into the English Caribbean colonies, so as to be less dependent upon foreign imports. Boyle corresponded with a Barbadian doctor on this possibility while Evelyn claimed in his *Sylva* that Charles II should make a law encouraging the growth of these commodities in Jamaica.¹³⁵ Finally, Evelyn’s book on soil promotes a recent invention by Sir Hugh Platts which is supposed to till English soil in a special manner, making it “able to receive an exotie Plant from the farthest Indies, and cause all Vegetables to prosper in the most exalted degree.”¹³⁶

¹³¹ Beale, “Continuation of the Hortulan and Rural Advertisements,” 849.

¹³² Houghton, *Letters*. II, 469.

¹³³ Samuel Hartlib. *The Reformed Common-wealth of Bees. ... With The Reformed Virginian Silk-Worm* (1655). Accessed through EEBO.

¹³⁴ Evelyn, *Sylva*, 20.

¹³⁵ Hunter, Boyle Correspondence, VI, 404; Evelyn, *Sylva*, 22-3.

¹³⁶ Evelyn, *Philosophical Discourse on Earth*, 66.

Aside from its unique husbandry aspects, the West Indies were also interesting to experimental philosophers interested in the mechanic arts. Due to the artisan emphasis within experimental philosophy, mills, presses, and other workshop tools always held a special place within the writings of Bacon and his followers, and this emphasis has been noted in a variety of historiographical works.¹³⁷ Bacon's *Advancement of Learning* (1605) claims that the "use of History Mechanical is of all others the most radical and fundamental towards natural philosophy," while his House of Salomon contained tools and engines for almost every European trade.¹³⁸ During the Interregnum Cressy Dymock was a principal advocate of mechanics who, in addition to his plans for a husbandry college, was interested in mills and other inventions for facilitating farming and other trades. He spent the years around 1650 developing new milling and tilling machines which he publicized in his 1651 work entitled *An Invention of Engines of Motion Lately Brought to Perfection*.¹³⁹ The short work begins by citing a passage from Bacon's *Novum Organum* on the importance of mechanical arts to experiential philosophy, and then moves to an open letter to Samuel Hartlib, which explains Dymock's recent work on a perpetual motion engine. While he admits that he has yet to perfect such an engine, he claims to have produced a human-powered mill which, though small, can mimic the workload of other heavier mills powered by wind, water, or livestock. After giving a demonstration on how his mill grinds wheat more efficiently than those currently used by London's brewers, he then comments on how the mill would work equally well for other

¹³⁷ See FN 63 and especially Houghton, "Trades."

¹³⁸ Francis Bacon, *Of the Proficiencie or Advancement of Learning, Divine and Humane...* (1605), II, 10. Accessed through EEBO.

¹³⁹ Cressy Dymock. *An Invention of Engines of Motion Lately Brought to Perfection Whereby May be Dispatched any Work Now Done in England or Elsewhere (especially Works that Require Strength and Swiftness) Either by Wind, Water, Cattel or Men ...* (1651). Accessed through EEBO.

crops. “Let [wheat] serve as a Scale to measure all other Applications by; for what ever wil hold in grinding Wheat, will hold (to give the advantage to my Engines) much more in any other Application, and particularly for Grinding or squeeing of Sugar-Canes, and raising water.”¹⁴⁰ His specific mention of West Indian sugar-making is likely an acknowledgement of Barbados’ thriving industry in 1650, and his hopes to profit by introducing his new mill to the expanding Caribbean market. Dymock’s efforts interested other, more prominent experimental philosophers who funded and encouraged his work. In 1650 Dymock received a letter signed by Hartlib, Boyle, and others, encouraging him to continue his work with these engines, and not to be discouraged should any setback befall him.¹⁴¹

This interest in mills and mechanical inventions was later shared by John Beale. In the same *Philosophical Transactions* issue where Beale praises the contribution of the nascent English sugar industry to domestic wine and cider efforts, he also gives homage to local Herefordshire millwrights and their skills in constructing “*Ingenios* for cider mills.” Calling cider-presses *ingenios* is important here, as the etymology of this word in the English language comes most certainly from *engenho*, the Portuguese word for sugar mills which was adapted by early Barbadian sugar planters and then brought to England via Ligon’s popular *History of Barbados*.¹⁴² Thirty years after Ligon’s publication, we find Royal Society members such as Beale referring to innovative English agricultural machinery by the same title. This linguistic path further demonstrates the importance of the Barbadian sugar industry upon the collective consciousness of English experimental innovators, especially within the field of Husbandry. In his article Beale also refers to a

¹⁴⁰ *Ibid*, 7-8.

¹⁴¹ Hunter, *Boyle Correspondence*, I, 88.

¹⁴² See FN 73 for more information.

few ingenio-makers (meaning cider press-makers) by name, where they live, how much they charge for constructing cider presses, and their relative efficiency. While Beale makes no mention of West Indian millwrights who constructed sugar ingenios, it seems clear that this omission was because he could only publicize those millwrights he knew in his local area, not because of any wholesale dismissal of Caribbean *ingenio* technology.

If grinding sugarcanes provided an example of mechanical innovation on West Indian plantations, activities inside the boiling house provided an equivalent example of chemical advancement. Here the best evidence comes from Sir Robert Boyle, a leader of the experimental philosophy movement. Born in Ireland in 1627, Boyle's father was the first Earl of Cork and one of Ireland's richest English landlords.¹⁴³ Boyle maintained wealthy financial ties to Ireland throughout his life including large personal estates there, although he spent most of his life in London. In the 1640s he became interested in experimental philosophy and was a primary member of the mid-century Invisible College. He went on to become a founding member and leader of the Royal Society and spent the rest of the century as one of experimental philosophy's most prolific authors, publishing over two dozen works on chemistry and other experimental topics. Boyle was also an exceptionally religious man and his main interest in experimental philosophy came from a belief that this new method provided an epistemology which was consistent with a revealed and providential religious worldview.¹⁴⁴ He believed that the new Baconian science could be used to combat competing Cartesian and Aristotelian

¹⁴³ Michael Hunter, 'Boyle, Robert (1627–1691)', *Oxford Dictionary of National Biography*, Oxford University Press, 2004; online edn, May 2006
[<http://www.oxforddnb.com/floyd.lib.umn.edu/view/article/3137>, accessed 27 Nov 2010]

¹⁴⁴ The best biography available on Boyle is Michael Hunter, *Boyle: Between God and Science* (New Haven: Yale University Press, 2010). Hunter makes repeated assertions about Boyle's religiosity and how it influenced all other areas of his life.

doctrines then popular in Universities, which he associated with atheism and paganism. Furthermore Boyle's religiosity was amenable to experimental philosophy's blend of progressive science and social reform, and his concern for improvement beyond the workshop is evinced through his involvement in many improving associations, in particular the Society for Propagation of the Gospel in Foreign Parts, of which he was president for many years.¹⁴⁵

Throughout his lifetime Boyle's experiments ranged over an enormous variety of topics including plants, animals, earth, metals, air and weather, and temperature. It is therefore not surprising that, like Francis Bacon, several of Boyle's experiments dealt with sugar. While sugar was never the main focus of any of Boyle's publications, the commodity is featured in many of his arguments due to its seemingly unusual chemical properties. Scattered within his essays are notes on sugar's preservative qualities, how to use sugar as a corrosive, how to create sparks from striking hardened sugar-loaves, the use of sugar within several medical recipes, the differences between honey and sugar, the effect of dissolved sugar upon water's freezing and boiling points, and how to use alchemical components for creating a sweet-tasting sugar substitute for flavoring food.¹⁴⁶ These experiments were accompanied by other research on tropical commodities which were of similar interest to Boyle including cassava, chili peppers, mauby, garapa, rhubarb, muskmelons, tobacco, plantain and banana leaves, Spanish and Brazilian wines,

¹⁴⁵ See chapter three for more information on Boyle's activities in the SPG.

¹⁴⁶ Boyle's works also contain many references to *Saccharum Saturni*, or Sugar of Saturn, which is a separate entity. Sugar of Saturn, known today as Acetic acid, is an element found in vinegar and was often boiled in lead to create a sweet tasting substance (which if consumed repeatedly results in lead poisoning). The above-mentioned essay was an attempt by Boyle to create a sweet-tasting, non sugar substitute that was not Sugar of Saturn. For examples of sugar within Boyle's works see *Some Considerations Touching the Usefulness of Experimental Naturall Philosophy*; 1664; *Experimental Notes of the Mechanical Origine or Production of Fixtness...*, 1675; *The Origine of Formes and Qualities...*, 1666; and *Certain Physiological Essays and Other Tracts*, 1669. Each accessed through EEBO.

West Indian minerals, ceramic stones which purify water, sulphurous experiments from New World volcano minerals, and even experiments on the effects of sleeping in hammocks. Finally since these West Indian items were native to a region far removed from his London workshop, Boyle frequently corroborated his own observations with foreign correspondence letters and published travelogues from the American colonies. His works are thus filled with citations from writers such as Jose Acosta, Vincent le Blanc, Walter Raleigh, Guilielmus Piso, Richard Ligon, and Charles De Rochefort, all of whom Boyle asserted were trusted and learned experts on Caribbean topics.

Boyle's publication *Usefulness of Experimental Philosophy...* (1663, 1671) provides a good example of how his above interests might be linked within a single text. Written in two parts, both volumes were immensely popular in Restoration England and were considered primary sourcebooks for experimental philosophy knowledge.¹⁴⁷ They were also typical of Baconian publications insofar as they were attempts to explain the value of experimental philosophy to a broader public and to defend the methodology against its critics. *Usefulness* is written as a series of open epistles to a fictional reader named Pyrophilus, and these open letters attempt to convince Pyrophilus of experimental philosophy's utility, partly through enumerating society's array of recent discoveries and improvements. The second volume focuses on recent advancements in the medical profession, and contains a lengthy essay on experimental philosophy's contribution to food. Boyle begins by arguing to Pyrophilus the importance of proper diet, and how ill-prepared foods and poorly-fermented drinks can enervate one's health. He then argues how experimental philosophy can make unwholesome items healthy, because through experiment one can discover the right method of preparation. To prove this he gives

¹⁴⁷ Michael Hunter, 'Boyle, Robert (1627–1691)', *Oxford Dictionary of National Biography*.

some recent examples, the first being the West Indian cassava plant. Eaten raw the cassava contains a “rank Poyson” and killed many European settlers who first discovered it. However through various inquiries (in particular from the Carib Indians) these early settlers discovered “by the rude Indians ordering” how to transform it into a wholesome bread.¹⁴⁸ In reciting this process whereby Indians extract the poison from cassava, Boyle adds authority to his account by referencing the works of Piso, Ligon, and some of his personal French and English correspondents from St. Christopher. To Boyle, this emulation of Native American foodways appeared as a triumph of experimental philosophy, as it exemplified collecting unknown facts from distant places and using them to increase social well-being.¹⁴⁹ His work continues by listing a variety of other novel foods, drinks, and cooking methods from the Caribbean and their particular medical benefits. When arriving at sugar, Boyle remarks that the plant “is (at least in these Western Regions) but an almost recent discovery,” and points to the many other foods that sugar has recently “not onely preserv'd, but rendred exceeding grateful to the taste.”¹⁵⁰ To Boyle, sugar was so good an example of experimental philosophy’s fruits that he believed it should serve as an inspiration for continued experiment. Because sugar was both new to society and possessed such a wide variety of uses, he reasoned that other plants may soon be found which mimic sugar’s unique properties, should people continue to research New World flora. To this end, he mentions some East Indian plants which might possibly produce a sugar substitute, and recommends more information be

¹⁴⁸ Boyle, *Usefulness*, 96.

¹⁴⁹ Several scholars have recently investigated the extent to which early modern natural philosophers would appropriate the knowledge of non-whites, transforming what they considered “vulgar” or improper knowledge into something that was fit for incorporation into the new European scientific paradigms. For a good review of this process, see Londa Schiebinger, *Plants and Empire: Colonial Bioprospecting in the Atlantic World* (Cambridge, Harvard University Press, 2007).

¹⁵⁰ Boyle, *Usefulness*, 110.

gathered on these species. Next he speaks of a recent visit he had “by an ancient Virtuoso, Governor to a considerable Colony in the Northern America.” This individual provided Boyle with considerable information on New England Maple trees and how they might be made into a companion industry for sugar in northern climates.¹⁵¹

IV: Lights and Fruits

The “virtuoso” referenced in Boyle’s *Usefulness* was John Winthrop Jr., the colonial governor of Connecticut. Winthrop was also a lifelong alchemical enthusiast, a Royal Society member, and frequently contributed to the Society by submitting reports on New England’s natural features and resources. Winthrop’s dual role as natural scientist and colonial governor provides a window into another important facet of experimental philosophy’s relationship to the West Indies and other English imperial possessions: not only did natural scientists praise the Americas within their texts, but they embodied this enthusiasm in action as well as word. The initial works of Francis Bacon made frequent delineations between what he called Experiments of Light (general studies which increased human understanding world through discovering natural laws), and Experiments of Fruit (specific, tangible initiatives which attempted to increase the public weal). Bacon insisted that a proper experimental philosophy would encompass equal parts of these, and his later followers agreed.¹⁵² Thus, English natural scientists not only wrote works for promoting general West Indian knowledge and development, they took it upon themselves to undertake Experiments of Fruit by participating in a wide variety of specific colonial endeavors. Their involvement ranged from personal correspondence to and from the Americas, to financial investment within speculative colonial ventures, to

¹⁵¹ *Ibid.*, 112-3.

¹⁵² See for example Ralph Austin, *Observations of Francis Bacon’s Natural History, as it concerns Fruit-trees, and Flowers: ...* (1665), preface. Accessed through EEBO.

active participation within imperial projects. In the final case, these initiatives could range from individual designs for developing personal West Indian plantations, to participation in imperial regulatory bodies such as the Committee on Trade and Plantations. Through these activities, experimental philosophers sought to enact the Baconian mantra of not only furthering knowledge within an abstract sense, but to apply knowledge to a variety of material projects for social and national improvement. Finally, just as English experimental philosophers were not isolated from transatlantic mercantile dealings, England's Atlantic merchants and planters were similarly not isolated from the latest experimental philosophy discourses. Colonial entrepreneurs frequently evoked Baconian connections between empire, knowledge, and improvement, and the experimental ethos was often used as a bona fide impetus for imperial actions. Established natural scientists within England not only approved of experimental philosophy's adaptation amongst these colonial agents, they encouraged these colonists through personal assistance.

“[K]nowledge causing piety, piety breeding industry, industry procuring plenty.” This previously mentioned phrase which so clearly encapsulates the Baconian reformist impulse was written by John White. A member of the Hartlib circle, a Puritan minister, and a colonial entrepreneur, White embodied this ethos in action as well as words. In the 1620s he became pastor of Dorchester parish and used this position to oversee construction of a local library, public workhouse, and a free school for the parish poor. At the same time he helped found the Dorchester Company, an enterprise whose mission was to establish a godly community in the New World. White had become a vocal proponent of colonial enterprises, believing that God had directed England to propagate

Christianity in distant places, “especially ... in the *West Indies*.”¹⁵³ In 1630 he published his proposal for a New England colony in *The Planter’s Plea*, a tract which contains several arguments for colonization, including the belief that “shifting into empty Lands, enforceth men to frugalitie, and quickneth invention.”¹⁵⁴ White’s Dorchester Company ultimately settled in what became the town of Salem, and White himself later became a chief executive and legal representative of the highly successful Massachusetts Bay colony.

Others echoed White’s combination of Puritan zeal, colonial entrepreneurship, and social betterment, many of whom had interests extending far beyond New England. One such individual was Robert Rich, the Second Earl of Warwick. Like John White, Warwick played a leading role in the New England Company, although he initially urged America’s original Pilgrim settlers to migrate to South America near the Orinoco River, advice based upon Walter Raleigh’s famous expedition to the region in 1595.¹⁵⁵ When they instead settled in New England Warwick was instrumental securing their legal charter in London, as well as the subsequent patents for Massachusetts Bay, Connecticut, and Rhode Island. Beyond New England he was a founding member and manager of several other colonial ventures including the Somers Islands, Providence Island, and Guinea companies, and frequently financed privatizing raids against the Spanish

¹⁵³ John White, *The Planter’s Plea...*(1630), 11. White’s meaning of the term “*West Indies*” here is unclear. It may refer specifically to the Caribbean colonies or to the New World in general. Shortly after his above reference to the “Indies,” the text is missing the next two pages where he explains his opinion on why he valued the Indies in particular. Nevertheless he speaks highly of Virginia, Barbados, and St. Christopher throughout the rest of the work. Book accessed through EEBO. On White’s connections with Hartlib see Webster, *Instauration*, 34.

¹⁵⁴ White, *The Planter’s Plea*, 5.

¹⁵⁵ Sean Kelsey, ‘Rich, Robert, second earl of Warwick (1587–1658)’, *Oxford Dictionary of National Biography*, Oxford University Press, 2004; online edn, Jan 2008 [http://www.oxforddnb.com.floyd.lib.umn.edu/view/article/23494, accessed 17 April 2011].

Caribbean.¹⁵⁶ Warwick also embodied the Baconian vision of increasing knowledge via transplanting indigenous flora and fauna throughout English dominions. In the 1630s Warwick was a leading member of the Providence Island Company, a Puritan merchant body who ran a small settlement off the present-day coast of Nicaragua. During this time he encouraged the migration of a variety of colonial products to and from this island. In 1632 he ordered a colonial supply ship to be loaded with cotton, pomegranate, tobacco, pepper, silk grass, mulberry, fig seeds, and sugar canes, all for experimenting with their reproduction in that locale.¹⁵⁷ Amongst Warwick's myriad colonial dealings, his interests in the Somers Islands Company were of particular importance, as he was Bermuda's largest holder of both land and slaves by his death in 1658.

Another reformer with substantial interests in the Americas was Nathaniel Rich, nephew and business partner of Warwick. The two worked closely, managing Warwick's many colonial companies and privateering enterprises, especially on Providence Island where Nathaniel served briefly as Lieutenant Governor of the early slave society.¹⁵⁸ He was also a member of the Hartlib Circle and worked with Hartlib on establishing silkworm plantations in Virginia. In Bermuda, Nathaniel was the second largest landowner after Warwick. Warwick relied upon his nephew to oversee his estates there, and corresponded with Rich about experimenting with a variety of Baconian agricultural

¹⁵⁶ The Guinea company was an early incarnation of the Royal African Company. The most famous of these raids was a fleet commanded by Captain William Jackson, who roamed the Caribbean for three years between 1641 and 1643, sacking several Spanish settlements and even capturing Jamaica and holding it for ransom for several weeks. V.T. Harlow, Introduction to "The Narrative of Captain William Jackson" in *Camden Miscellany Vol. XIII* (London, 1923).

¹⁵⁷ Noël Sainsbury, ed. *Calendar of State Papers, Colonial Series*, Vol. I (London: Longman and Green, 1860), 146,148.

¹⁵⁸ Robin J. W. Swales, 'Rich, Sir Nathaniel (c.1585–1636)', *Oxford Dictionary of National Biography*, Oxford University Press, 2004; online edn, May 2009 [<http://www.oxforddnb.com/floyd.lib.umn.edu/view/article/23488>, accessed 17 April 2011]. It was under Nathaniel Rich's encouragement that John Winthrop sent his son to tour Providence Island during this time to learn more about naval fortifications for strengthening New England's ports.

techniques for growing sugar, wine, and other exotic commodities. Nathaniel was the manager of the Somers Islands Company by the time of his death in 1636, and he left almost half his company stock as an endowment to create and maintain a Bermudian college, both for teaching Christianity to the island's Native Americans and to spread the latest Baconian ideas.¹⁵⁹ The executor of Rich's will subsequently recruited Richard Norwood as headmaster for this school.¹⁶⁰ Norwood had been an early English settler of Bermuda and as a young man created the first systematic survey and map of the island's topography.¹⁶¹ Thereafter he resettled in London and published several influential works on both navigation and trigonometry. Norwood's works included theories and discoveries on latitude, longitude, and compass accuracy, and two of his works stayed in print for almost fifty years. Upon invitation to the Bermuda collage, Norwood returned to the island as an educator and planter. He remained there for the rest of his life, and in his final decades corresponded with Royal Society Henry Oldenburg and contributed to the *Philosophical Transactions* via entries on Bermuda's natural features.¹⁶² When he died in 1675 he left a moderately wealthy estate of almost £500, about a third of which was valued in his ten slaves.¹⁶³

¹⁵⁹ Henry Wilkinson, *The Adventurers of Bermuda: A History of the Island From Its Discovery Until the Dissolution of the Somers Island Company in 1684* (Oxford: Oxford University Press, 1933), 266-7.

¹⁶⁰ Sir John Henry Lefroy, *Memorials of the Discovery and Early Settlement of the Bermudas, 1515-1685*. (London: Longmans, Green & co., 1877), Vol. I, 621.

¹⁶¹ This iconic map was republished within several atlases of the seventeenth and eighteenth centuries. See for example John Speed, *Theatre of the Empire of Great Britain* (1627).

¹⁶² Sarah Bendall, 'Norwood, Richard (1590-1675)', *Oxford Dictionary of National Biography*, Oxford University Press, 2004 [<http://www.oxforddnb.com/floyd.lib.umn.edu/view/article/20365>, accessed 15 April 2011]; Oldenburg to Boyle, December 3, 1667. In Hunter, *Correspondence*, III, 374. During his second Bermuda tenure he was not always in charge of the college school, as political complications caused by the Civil War prompted his resignation and reinstatement at points. During the times when he was not employed by the college he remained a private teacher.

¹⁶³ Inventory of Norwood's Estate, found in Frank Craven and Walter Hayward, eds. *The Journal of Richard Norwood* (New York: Scholars Facsimiles & Reprints, 1945), 133-142.

As the Norwood example illustrates, one need not have been an elite entrepreneur to entertain interests which encompassed science, colonization, and reform. Indeed, for each elite example like the Earl of Warwick there are several examples of more modest individuals who perused transatlantic Baconian careers. In 1659 Hartlib wrote to Robert Boyle about a questionnaire packet on New World phenomena he was preparing to send to his American correspondents. Hartlib writes that he was sending ten or twenty copies of this questionnaire to Jamaica, “to my good friend there Dr. Browne, that from those places they may disperse them to other English plantations.”¹⁶⁴ Hartlib’s warm appraisal of this Jamaican informant was more than courtesy, as the two had a history of shared experimental philosophy programs. Dr. Thomas Browne was a puritan lawyer and minister who for a time owned a London apothecary and contributed to Hartlib’s experimental philosophy publications.¹⁶⁵ In 1655 Hartlib published his *Reformed Commonwealth of Bees*, a tract of experimental beekeeping innovations, which includes a chapter on a “New Bee-Hive” design by Dr. Brown. Brown’s hive consisted of a series of modular canisters made from old wine casks which was intended to make harvesting honey easier and reduced the number of bees killed in the collecting process. To justify his design Brown mentions that the ancients “made a constant Revenue of their Bees without killing them at any time” and that he wished to restore this old knowledge as

¹⁶⁴ Hunter, *Correspondence*, I, 384.

¹⁶⁵ On Browne owning an apothecary, see Samuel Hartlib, *Samuel Hartlib, His Legacy of Husbandry...* (1655), 260. Accessed through EEBO. Hartlib mentions that Brown’s shop carried a variety of novel seed products that were popular amongst experimental and improving landlords during this time, including “Three Leaved Grasse, or Lucern, Spurry, Clover-grasse and Sinkfoile Seeds.” Likewise, Hartlib advertised that curious improvers could “see some of the Hay made of this three Leaved Grasse” at Brown’s apothecary.

“this so profitable Government of Bees is now utterly lost.”¹⁶⁶ Hartlib prefaces Brown’s contribution to his work by stating that it is “Left as a Farewell to his Native Country,” as shortly thereafter Brown was appointed minister to a Bermuda parish by the Protectorate.¹⁶⁷ He preached there for three years, and in late 1657 was among a group of about two hundred settlers who migrated from Bermuda to the New English colony at Jamaica. Brown either had Cromwell’s favor or was viewed as a leader amongst these immigrants, as an English military frigate was dispatched from the Jamaican fleet to transport these settlers. The orders given to this ship’s captain refer specifically to Brown and mention several letters to be delivered directly to him, presumably from Whitehall and/or the Jamaican military command.¹⁶⁸ A year later, Brown was either still in charge of these Bermuda migrants or was operating a substantial Jamaican plantation, as there is a receipt for him to receive one hundred pounds of bread and other victuals from the army’s central food bank.¹⁶⁹ Thereafter Brown may have perished in Jamaica’s plague-ridden early years, as after Hartlib’s 1659 letter to Boyle, Brown disappears from the archival record.

Of these dozens of connections between natural philosophers, colonial entrepreneurs, and Baconian social improvement schemes, it is unsurprising that Samuel Hartlib stood at the center of many of them. During his life he drew upon staggering array of patronage support networks, and his sponsors included potentates like Warwick, Francis Rous, and William Pym, all leaders in both the Providence Island colony and the

¹⁶⁶ Samuel Hartlib, *The reformed Common-Wealth of Bees...* (1655), 3. Accessed through EEBO. During this time the standard method of harvesting honey usually destroyed the bee colony in the process.

¹⁶⁷ *Ibid.*, 3; Lefroy, *Memorials*, I, 694.

¹⁶⁸ S.A.G. Taylor, ed. “Edward D’Oyley’s Journal, Part II,” *Jamaican Historical Review* 11 (1974), 74. During this time Jamaica was ruled by a provisional military government under general Edward D’Oyley.

¹⁶⁹ *Ibid.*, 95. During this time Jamaica was not yet self-sufficient and many of those on the island, military and civilian alike, were supplied via food shipped from England and centrally distributed by the military. See chapter 2.

subsequent Puritan cause in the Civil War. This patronage culminated during the interregnum when he was given a salary by the Commonwealth state as “an agent for the advancement of universal learning and the publick good,” and continued to work on a bewildering array of domestic and colonial improvement projects.¹⁷⁰ Like Bacon, Hartlib epitomized this period’s blending of increasing knowledge and social improvement, and most of his works feature proposals for concrete institutions dedicated to advancing utilitarian knowledge projects, rather than speculating on knowledge in an abstract sense. He was particularly influenced by Bacon’s metaphors of the utopian Bensalem community and its academic House of Salomon, and spent much of his life working to create tangible versions of these institutions both in and beyond England.¹⁷¹ As early as the 1630s Hartlib (from a prominent Baltic Merchant family) was corresponding with fellow Puritan itinerant John Durie about creating a utopian community on a Baltic island and/or somewhere in the Americas, places that were to combine ecumenical Protestantism with a Baconian learning program.¹⁷² Hartlib later helped found two schools for youths in London, and in 1640 drafted proposals for turning London’s aging Chelsea College into a real House of Salomon, meaning a new, state-funded academy organized according to the epistemologies proposed in Bacon’s Great Instauration. He brought his proposal before Parliament in 1640, and the following year he published Platte’s *Macaria* and translated Comenius’ *A Reformation of Schools* as part of this larger

¹⁷⁰ J.K. Fuz, *Welfare Economics in English Utopias from Francis Bacon to Adam Smith* (The Hague: Martinus Nijhoff, 1952), 33.

¹⁷¹ Bacon’s ideas here fit within a pan-European reform and utopian movement during this time. Hartlib, originally from Poland, was equally and influenced by this continental reform literature. For a good review of these connections see Dickson, *Tessera*, esp. ch. 5-6.

¹⁷² Dickson, *Tessera*, 148-9; M. Greengrass, ‘Hartlib, Samuel (c.1600–1662)’, *Oxford Dictionary of National Biography*, Oxford University Press, 2004; online edn, Oct 2007. [<http://www.oxforddnb.com.floyd.lib.umn.edu/view/article/12500>, accessed 29 Nov 2010]. Many of the ideas presented in the 1641 *Macaria* were informed by the ongoing debate about the fate of Chelsea College during this time.

political effort.¹⁷³ Plans for an experimental college at Chelsea were shelved by Parliament because of the looming Civil War, however Hartlib and his followers persevered in their efforts. In 1652 Hartlib published Durie's *The Reformed Spiritual Husbandman*, a tract which blends religious and agricultural metaphors into yet another attempt to reform Chelsea College into a space for an international community of ecumenical Protestants, grounded in the Great Instauration's tradition of piety, empiricism, and social improvement.¹⁷⁴ Hartlib's associate John Hall worked to evoke similar sentiments in his *Model of a Christian Society* (1647).¹⁷⁵ In his preface Hall argues that great minds, like the world's various commodities, are distributed across the globe according to God's providence, and thus a state-sponsored exchange of intellectual ideas would be as beneficial to nations as international trade agreements. He also points to the Jesuits as proof that such an international knowledge order could be easily achievable, and argues that a Protestant version of this network would have immediate tangible benefits.¹⁷⁶

After Cromwell's death in 1658 the now aged Hartlib made one final push at establishing a real Macaria, and he and his partners scouted several global locales for their utopian society. One letter from Hartlib mentions a protestant captain and Irish landlord who had pledged one thousand acres for the society, land likely won through Cromwell's recent conquests. Hartlib also looked to Germany, intensely collaborating with some Moravian communities during this time. At one point it appeared as if this

¹⁷³ Dickson, *Tessera*, 147, 168. These efforts by Hartlib were not successful, partly because Parliament had more important things on its plate in regards to their wars against Charles I and a looming conflict in Ireland.

¹⁷⁴ John Dury, *The Reformed Spiritual Husbandman...* (1652), Accessed through EEBO. See also Dickenson, *Tessera*, 157-8.

¹⁷⁵ John Hall, ed. *A Model of A Christian Society* (1647). The work was a translation of a treatise by German reformer Johann Andreae. Accessed through EEBO. See also Dickenson, *Tessera*, 176.

¹⁷⁶ John Hall, ed. *A Model of A Christian Society* (1647), A3.

continental venture was close to succeeding, however by 1659 the German plans had come to naught as Hartlib and his English companions were misled and perhaps even swindled by their continental partners.¹⁷⁷ Thereafter Hartlib and his followers looked to Bermuda “as the fittest receptacle for the gallantest spirits to make up a real Macaria.”¹⁷⁸ He worked with others including William Brereton, another founding Royal Society member, in an unsuccessful attempt to raise £2,000 pounds for purchasing Bermuda’s charter from the Somers Islands Company. Their interest in the Atlantic colony was perhaps inspired or related to the later efforts of Anglo-Dutch reformer Pieter Plockhoy, who in the previous year also attempted to found a settlement for persecuted nonconformists in Bermuda. Plockhoy named his venture Macaria.¹⁷⁹

Hartlib died in 1662, around which time the religious and political landscape of England changed dramatically due to the Restoration. While efforts to promote science within the context of national improvement continued after the Commonwealth, much of the pious zeal of previous decades was absent from later natural knowledge endeavors. This muting of Puritan rhetoric and action was partly an attempt by English reformers to appease their new sovereign and to move beyond the upheavals of the previous two decades. However beyond these immediate political concerns a subtle cultural shift also

¹⁷⁷ After telling Hartlib for months that they were nearing the completion of their society, the Germanic partners failed to make it a reality. It is unclear if this failure stemmed from deception, incompetence, or other unforeseen difficulties in Germany. Hartlib and his partners definitely had negative feelings towards them after the venture dissolved. Dickenson, *Tessera*, 229-234.

¹⁷⁸ Hartlib to Dr. John Worthington, Oct. 12, 1660. James Crossley, Esq., ed. *The Diary and Correspondence of Dr. John Worthington*. London: (Chetham Society, 1847), Vol. I, 211-2.

¹⁷⁹ Fuz, *Welfare Economics*, 33. It is unclear if anyone ever settled in Bermuda under Plockhoy’s plan. Plockhoy repeated his settlement schemes his 1662 work *Kort Klar Ontwerp*. That year Plockhoy also created a small religious colony in New Netherland, which was destroyed in the 1664 English conquest. See Dickenson, *Tessera*, 234; Wilhelm Roscher, *Zur Geschichte der englischen Volkswirtschaftslehre* (Leipzig: Weidmannsche Buchhandlung, 1851), 107. Plockhoy also published a plan for an ideal English workhouse community. See Pieter Corneliszoon Plockhoy, *A way propounded to make the poor in these and other nations happy, by bringing together a fit, suitable, and well qualified people unto one household-government, or little-common-wealth ...* (1659). Accessed through EEBO.

occurred in English life during the latter part of this century. In terms of religion, the nation moved away from the Puritan austerity of the interregnum towards a culture marked by latitudinarian sentiment. Commercially, England's expanding imperial network brought home an increasing variety of exotic commodities and foodstuffs, marking London as a vibrant and cosmopolitan commercial center.¹⁸⁰ The writings and actions of England's later experimental philosophers reflect these changes, in particular within the creation of the Royal Society. Formed in 1660, the Society was granted its charter two years later from Charles II. In an attempt to convince their new sovereign that their academy would not prove a breeding ground for Puritan or political dissent, members of the new Society were careful to couch their reforming aims within limited terms. The radical Macarian proposals of the Hartlib circle found little favor in the Restoration's political climate, and Royal Society founders could not boast of their new House of Salomon as a holistic center of scientific, religious, and political reform. Instead, new Society advocates such as Thomas Spratt were careful to only stress their institution's reliance on practical Baconian empiricism, and what this methodology could contribute to national strength and prestige. This shift in emphasis obviously did not sit well with all of England's experimental philosophers, and older leaders such as Hartlib and his friend Comenius looked upon the new Society with relative suspicion, as a Macaria only half complete.

However despite this declension in spiritual and radical politics, the new Royal Society inherited much from experimental philosophy's previous generation and there

¹⁸⁰ These changes were pervasive throughout English society during this time and effected all types of intellectual writing. For example Joyce Appleby has noted that during this time economic writers spent increasingly less time defending the necessity of providing for the poor, and more on the "faceless relations of algebra." See Appleby, *Economic Thought*, esp. Ch 3. See also Webster, *Great Instauration*, 244-5.

remained a substantial overlap between the Royal Society's founders and those who comprised earlier groups like the Hartlib Circle and the Invisible College. These similarities included a continuing interest within West Indian colonies and their diverse potentials for improving the nation. While this subsequent generation of natural scientists no longer perused Hartlib's utopian House of Salomon within the Americas, they remained intrigued by the regions unique properties and how they might be translated into successful commercial endeavors. A transitional figure who exemplifies both the breaks and continuities of this period is Benjamin Worsley. Born in 1617, Worsley burst upon the experimental philosophy scene with a 1645 proposal to create an English saltpetre manufactory. England had previously imported much of its saltpetre from India, and Worsley's proposal combined the latest chemical, economic, and public policy ideas to promote a domestic program that would use experimental philosophy to both reduce foreign imports and employ the poor. The proposal resulted in the "Saltpetre Act" by Parliament and put Worsley in high standing with other experimental philosophers, in particular the young Robert Boyle whom Worsley inspired to begin studying chemistry. Worsley soon took up residence in London near Lady Ranelagh, Boyle's sister and another important experimental philosopher of this period, and together these three formed the original nucleus of the Invisible College in the late 1640s.

¹⁸¹ Finally Worsley became fast friends with Hartlib, who considered Worsley his most important correspondent since the death of Gabriel Plattes in 1644.

Yet for our purposes, the most important facet of Worsley's career is not his status as one of experimental philosophy's rising stars in the 1640s, but the extent to which trade and colonial endeavors inform, indeed dominate, his scientific ideas and

¹⁸¹ Webster, *Insturation*, 378-9; 59-62.

projects. After the success of his saltpetre proposal he expanded his ideas on trade, experiment, and social improvement into a national development program entitled “Profits Humbly Presented to this Kingdome” (1647).¹⁸² Like Platte’s *Macaria*, the work offered a comprehensive economic and political reform plan for England. Unlike *Macaria*, Worsley’s manuscript is not a fictional utopia narrative but rather a litany of bold, concrete proposals. It reiterates his saltpetre manufactory and augments it with other designs, including a network of “well regulated” foreign plantations. Indeed, West Indian plantations were central to Worsley’s comprehensive vision of Baconian improvement and much of the tract is dedicated to explaining their diverse benefits. He saw them as tools for promoting employment, reducing dependence on foreign imports, promoting domestic industries, and addressing England’s negative balance of trade. In advocating American plantations, he argues that the world’s “Southern and Westerne parts” are naturally be more fertile than “any part of christendome,” and that they could be made “farr richer being further improved and Cultivated.” The only thing they required was an influx of “disciplined and governed” planters, and Worsley argued that if this condition was met England would soon enjoy a variety of “Wines, Fruyts, Sugars, [and] Drugs.”¹⁸³

Like most experimental philosophers, Worsley’s deeds were not restricted to drafting abstract proposals and he played a major role within several specific improvement initiatives during these years. For example in 1649 the new Commonwealth government was still struggling to subdue England’s American colonies,

¹⁸² Benjamin Worsley, “Profits Humbly Presented to this Kingdome” (1647). Unpublished manuscript found in the Hartlib Papers, XV II (23), Sheffield University Library. Republished as an Appendix in Webster, *Instauration*, 539-46.

¹⁸³ *Ibid*, 541.

most of whom remained loyal to the Royalist cause. That year Worsley worked with other Hartlibean and mercantile notables on a Parliamentary proposal to wrest control of Virginia away from that colony's recalcitrant leaders. Part of his rationale behind these efforts was personal: while working to displace the current Virginia leadership he was also raising stock to create a new Virginia company, of which he would be a leader. Beyond this, his actions demonstrate his idea of a pragmatic Macaria at work. While imagining the parameters of this new Virginia Company, he speculated on employing artesian and horticultural specialists, so "that part of it shall be ventured in Tryalls, for planning and introducing new commodities ... or for setting up new manufactures."¹⁸⁴ Most important, Worsley's Virginia proposals contained a new policy whereby Virginia's commodities could only be transported via English ships. Throughout the 1640s Dutch interlopers had engrossed much of Virginia's colonial shipping, partly because of the distractions caused by the Civil War. Taking a holistic view of trade, empire, and improvement, Worsley argued that political allegiance was inseparable from control over colonial exports, and that when American colonists allow the Dutch to ship their English commodities, they directly attenuate England's wealth and power. The solution to this in his proposal was to create a central, state-run apparatus for controlling both economic and political colonial policy, a bureaucratic institution with national improvement as its central mission.

Worsley's plan for a new Virginia Company was not successful. However Parliament listened closely to his proposals, and the following year it established the new Council of Trade in an attempt to apply Worsley's ideas to their American empire writ

¹⁸⁴ Worsley to Dury, 17/27, August, 1469. Hartlib Papers XXXIII, 2. Reprinted in Webster, *Instauration*, 460.

large. Worsley was invited to be secretary of the new Council, which contained other members of the Hartlib circle.¹⁸⁵ The Council was directed by Parliament to systematically gather information on each of England's foreign settlements, and to propose ideas for furthering their demographic and economic development. These directions were also informed by Parliament's belief, inspired by Worsley, that English plantations should reduce the nation's need on foreign commodities and shipping. It was to that end that the Council of Trade passed its most significant piece of legislation: the first Navigation Act of 1651. The Act was a direct descendant of Worsley's earlier Virginian proposals, and during its deliberations he was said to be its "first sollicitour."¹⁸⁶ Shortly after its passage Worsley published *The Advocate* (1651), a tract defending the Council of Trade's recent actions. The work attempts to demonstrate the necessity of excluding foreign shipping, and argues the threat which Dutch interloping posed to English national advancement. It also compared the new Navigation Act to other recent attempts at social improvement, and at one point Worsley states that his ideas stem from "remembering the advice of *Salomon*, and knowing nothing ...of no more Import to bee looked after, or to bee very heedlfully taken into Consideration, then Matters of Trade."¹⁸⁷

The Navigation Acts play a major role within the history of imperial British policy. Many have written on the myriad reasons for their drafting and passage, and the relative success or failure of this attempt at colonial economic control. However what is

¹⁸⁵ *Ibid.*, 462. It also contained some eminent colonial projectors such as Maurice Thompson and Martin Noell, individuals who will be dealt with in depth in chapter 2.

¹⁸⁶ Quoted in Charles Webster, 'Worsley, Benjamin (1617/18–1677)', rev. *Oxford Dictionary of National Biography*, Oxford University Press, 2004 ;online edn, Jan 2008 [http://www.oxforddnb.com.floyd.lib.umn.edu/view/article/38153, accessed 1 Dec 2010]

¹⁸⁷ Benjamin Worsley, *The Advocate, or A Narrative of the State and Condition of Things Between the English and Dutch Nation, in Relation to TRADE...*(1652), B2. Accessed through EEBO.

important here is the ways in which this piece of concrete policy grew from an earlier Baconian interest in advancing knowledge, social reform, and state-run institutions designed to facilitate national plenty and improvement. Worsley's plan was not merely a rapacious attempt of colonial merchants to capitalize on English shipping profits, but tied into a broader progressive vision with economic, scientific, and even religious aspects.¹⁸⁸ The genealogy of his ideas can be clearly traced back to Plat's *Macaria*, Bacon's House of Salomon, and even Hartlib's utopian moment. Today, it is difficult for the modern reader to reconcile ideas of Christian utopia with what was ultimately the sharp tool of an aggressive imperial agenda. Yet this early modern ideological nexus exemplifies the very constellation of values and discourses which allowed experimental philosophers to embrace West Indian plantations without having to reconcile the ideological contradictions expressed by later British thinkers.

Despite successfully passing the Navigation Acts, the Council of Trade quickly invoked resentment from Parliament's more economically conservative pockets and was quietly disbanded in 1651. Worsley however continued a career of navigating the fluid categories of science, economics, and empire. He spent much of the 1650s in Ireland, working mainly as surveyor-general of forfeited estates from Cromwell's conquests. After the Restoration he played no official role in the Royal Society, partly because of a deep personal animosity between himself and Society founder William Petty during this time.¹⁸⁹ At the Restoration he was invited to return to the re-established Council of

¹⁸⁸ To be sure, rapacious profit was part of the motives of others on the council. See chapter 2.

¹⁸⁹ Worsley was initially granted a large contract for surveying Ireland after the English conquest in the 1650s. However he was usurped from this job by William Petty, who used his own influence at court to convince the government that his own plans for surveying the island were superior to Worsley's. Petty's survey was indeed an ingenious work and has been commented on at length by historians of both Ireland and science. However the two experimental philosophers bore a deep enmity after this event.

Trade, and from that point he sat almost continuously on one government colonial committee or another until his death in 1677. On a more personal level, he organized a Barbadian venture in 1666 to mass produce the medicinal herb senna for the English market. It is unclear whether Worsley was an absentee Barbadian landlord during this time or if he was merely collaborating with local Barbadian planters, but he did engage in lengthy correspondence with at least one Barbadian on how best to grow the plant in the Barbadian climate. After some period of trial and error, his correspondent sent Worsley some samples with the assurance that by the next season he could “make his senna presently a Comodety & to Multeplie it to great quanteties.”¹⁹⁰ At this point Worsley approached Parliament for a commercial patent on English senna, seeking to both end its foreign importation and to gain a personal monopoly on the crop. During this time Worsley ran into trouble gathering the necessary and substantial patent fees, and inquired his friend Boyle on whether or not he would like to become a partner in the Barbadian venture.¹⁹¹ It is unclear whether or not Boyle became an investor, but Boyle’s sister Lady Ranelagh advised Boyle that the plan seemed “neither disengenious nor unpoleticke.”¹⁹² Worsley did indeed win his patent, however it is uncertain how much he profited from his scientific-colonial experiment.

Other experimental philosophers of the Restoration followed Worsley’s example in carving careers that spanned scientific, economic, and colonial endeavors. As mentioned above, Boyle spent decades as the President of the Society for the Propagation of the Gospel in Foreign Parts, working extensively with New England agents to Christianize the region’s Native Americans. His activities here were extensive

¹⁹⁰ Lady Ranelagh to Boyle, September 18, 1666. In Hunter, *Correspondence*. III, 235, 239.

¹⁹¹ *Ibid.*, III, 235. On Worsley’s patent petition and the crown’s response, see *CSP*, II, 1299.

¹⁹² Hunter, *Correspondence*, III, 239.

enough that in 1684, New England commissioner Edward Randolph approached him about funding a new timber colony in Maine.¹⁹³ Boyle also sat on the Council of Foreign Plantations from 1661 to 1664, working alongside several Caribbean magnates including Sir Peter Colleton, Thomas Kendall, and Sir James Drax.¹⁹⁴ During these meetings Boyle wrote of meeting “a chief member of the Council for Trade and Plantations, a very understanding and religious gentlemen, and one that has a great interest in the merchants.”¹⁹⁵ Boyle recruited this person to assist in his project of translating the Bible into Arabic for distribution into Turkey and the Levant. Royal Society virtuoso John Evelyn also served on the Council of Trade and Plantations in the 1670s, and as Commissioner of the Sick and Wounded during this period’s Anglo-Dutch trade wars. Philosopher John Locke, whose contributions to modern political theory are well known, similarly served on the Council of Trade and Plantations and acted as its secretary for a time. Locke, also a member of the Somers Islands Company, became a Royal Society member and published a *Philosophical Transactions* article on the Bahamas’ poisonous fish, information he gained from a correspondent there.¹⁹⁶ A final example is Samuel Pepys, another early Royal Society member and its president from 1685 to 1687. While Pepys made few official contributions to the society he was held in high esteem by most of its members, maintaining close friendships with several of its most prominent

¹⁹³ On the Maine proposal see Hunter, *Correspondence*, VI, 44-6. Massachusetts had recently lost their claim to the territory of Maine because of the dissolution of their colonial charter. Randolph, one of the king’s officials who oversaw this transition, sought to capitalize on the suddenly unclaimed territory

¹⁹⁴ *CSP*, II, 1-2.

¹⁹⁵ Hunter, *Correspondence*, I, 445. It is unclear exactly who Boyle was referring to here, but given the predominance of colonial projectors on the CTP, it is likely with someone with a large stake in West Indian ventures, possibly Martin Noell, who earlier spent his own money to furnish 2,000 bibles for the English troops stationed in Jamaica.

¹⁹⁶ J. R. Milton, ‘Locke, John (1632–1704)’, *Oxford Dictionary of National Biography*, Oxford University Press, 2004; online edn, May 2008 [<http://www.oxforddnb.com.floyd.lib.umn.edu/view/article/16885>, accessed 9 May 2011]

contributors. Outside the Society, Pepys' main career was on the Royal Navy Commission where he served as secretary and eventually as its president. During the Anglo-Dutch wars he became one of the king's most trusted bureaucrats, using Baconian methods to streamline the Navy's provision and finance systems. His incorporation of experimental philosophy into tangible imperial projects can best be seen in his governorship of the boarding school at Christ's Hospital, where he helped establish a Royal Mathematical School and served for a time as its vice president. This emphasis on math education had a practical impetus for Pepys, as teaching it produced a nursery of young men skilled in both seamanship and navigation.¹⁹⁷

This Baconian blend of scientific and colonial discourses was often present within the experiments and inquiries pursued within Royal Society meetings. Between 1661 and 1691, Royal Society Secretary Robert Hooke kept extensive minutes of the institution's meetings, demonstrating the variety of ways in which the Society participated within this period's wider discourse of colonial expansion.¹⁹⁸ The log contains dozens of entries on experiments and discussions regarding the American colonies and their unique features, with topics ranging from weather, to tides, to exotic flora and fauna, to their commercial commodities and nascent industries. For example in a summer, 1679 meeting the Society passed around and dissected a coconut brought to them from Barbados. The event sparked arguments that lasted several weeks over how best to harvest coconuts, whether coconut oil was confined to the tree's fruit or if it ran through its trunk like sap, how this oil compared to English butter, and which English industries it might be useful for.

¹⁹⁷ The links between mathematics and navigation has a long tradition within early modern British history. See in particular E.G.R. Taylor, *The Mathematical Practitioners of Tudor and Stuart England* (Cambridge: Cambridge University Press, 1954.)

¹⁹⁸ Hook Folio Online. Centre for Editing Lives and Letters (CELL), Arts Research Centre, Queen Mary, University of London. Accessed through <http://webapps.qmul.ac.uk/cell/Hooke/Hooke.html>.

Throughout the affair members bolstered their arguments with references to both Piso's *Historia Naturalis Brasiliae* and to information each had gained from their personal West Indian correspondents.¹⁹⁹ A similar discussion later occurred over the use of double-refined sugar within a medicinal drink. On another occasion, they supplied a Captain Holmes of the Royal African Company a series of clocks and pendulums for conducting longitude experiments when he traveled to the West African coast. While the experiments were unsuccessful, society members made note to attempt the experiment again in the future.²⁰⁰ In the spring of 1665, Royal Society members even coordinated a global stargazing event, possibly regarding a comet, to take place in six months. Society members in England were to take nighttime observations on the upcoming October 25th, and notices were sent to correspondents in New England, Virginia, Bermuda, and Jamaica to do the same.²⁰¹

As seen in the example of Sir Peter Colleton within this work's introduction, it was not always the London members who led and directed the Society's experiments and inquires on colonial affairs, and at times these projects were initiated by American emigrants. In 1681 John Evelyn received a letter from a Barbadian planter which he read to the Society. The planter wanted to create an updated natural history of Barbados to replace the aging copy made by Richard Ligon thirty years earlier, and was inquiring the Royal Society on which aspects of his island they would like to know the most about. Furthermore, the planter had likely been inspired by Evelyn's *Sylva*, which advocated transferring various Dutch spice plants from the East Indies into the Caribbean. The

¹⁹⁹ CELL/RS/HF_315,351,353, 355. Centre for Editing Lives and Letters.

²⁰⁰ CELL/RS/HF_016, 042-044,049.

²⁰¹ CELL/RS/HF_024. Again the experiment was a failure, this time disrupted by the outbreak of the London plague.

planter asked Evelyn how he could obtain some of these East Indian saplings for replanting in Barbados. At this point, the minutes give a glimpse into the competitive world of international bioprospecting during this time, a world fostered by a century of colonial expansion and experimental improvement. Society members speculated on individuals who could provide such specimens, but admitted that most of these plants existed only in Holland and were a tightly guarded national secret.²⁰² In sum, Royal Society meetings were both highly vested in American colonial affairs and relied heavily upon foreign correspondents to both make and record their knowledge of the New World. Indeed, this early scientific body was so enmeshed within this network of colonial partnerships that the practice even earned the censure of Thomas Hobbes. Famous for his antipathy to the Royal Society on several levels, Hobbes quipped to the Society that "not everyone that brings from beyond the seas a new gin, or other jaunty device, is therefore a philosopher."²⁰³

This interest in colonial affairs was exacerbated by the patronage ties many Society members had with elite colonial entrepreneurs. As mentioned above, Samuel Hartlib earned much of his livelihood from colonial notables such as Francis Rous and the Earl of Warwick, and this tradition of mercantile interests financing Baconian improvement schemes continued after the Restoration. A prime supporter of the Society during this time was George Berkeley, the First Earl of Berkeley. Prior to the Restoration, Berkeley's father served as a patron of science by employing the prominent Invisible College member John Wilkins as his personal chaplain. Upon his father's death Berkeley inherited a heavily indebted estate, which he addressed by marrying the

²⁰² CELL/RS/HF_527.

²⁰³ Michael Hunter, *Science and Society* (London: Ashgate, 1993), 89. Quoted in Stewart, *Public Science*, 5.

daughter of the East India Company's treasurer. He thereafter restored his family fortune through a series of bold yet fortunate colonial endeavors, and by 1677 his estate was worth almost £26,000, about a third of which was in EIC stock.²⁰⁴ Berkeley also became a prime political figure in initiating the Restoration of Charles II, and was rewarded with an invitation to the new Council of Trade and Plantations in 1661. Two years later he simultaneously became a founding member of the Royal African Company and was invited into the Royal Society. Like Benjamin Worsley, he continued to serve on a variety of government councils for foreign affairs throughout the coming decades. While George Berkeley's own contribution towards the Royal Society was small, he did publish *Historical Applications and Occasional Meditations* in 1667, a series of aphorisms on various religious topics which again displays experimental philosophy's ideological nexus of knowledge, commerce, and religion. The work begins with a eulogy to the "ingenious and eminent Persons" of the Royal Society and their "endeavours to improve Arts and Sciences." Similarly, it includes an aphorism on Merchants, who when "sober, industrious, wise and well-governed, conduce much to the advantage and benefit of the kingdom."²⁰⁵ This is provided that, while in search of their "worldly Treasure," they do not neglect those "eternal Riches" gained through religious piety.

Berkeley's wealth and enthusiasm for Baconian ideas made him a primary sponsor of the Society during the Restoration, and earned him the admiration of his peers inside the institution. John Evelyn managed Berkeley's estate in the 1670s and referred

²⁰⁴ Andrew Warmington, 'Berkeley, George, first earl of Berkeley (1626/7–1698)', *Oxford Dictionary of National Biography*, Oxford University Press, 2004; online edn, Jan 2008 [http://www.oxforddnb.com.floyd.lib.umn.edu/view/article/2209, accessed 4 Dec 2010]

²⁰⁵ George Berkeley, *Historical Applications and Occasional Meditations upon Several Subjects Written by a Person of Honour* (1667). Accessed through EEBO, 7.

to Berkeley as “my old and noble friend.”²⁰⁶ Berkeley also maintained close friendships with other members, and during the London plague of 1665-6 he invited several of them to live with him on his estate, including Boyle, Robert Hooke, William Petty, and John Wilkins. There, these members continued their experiments together during the Society’s official hiatus.²⁰⁷

V: Conclusion

At the end of the seventeenth century Sir Dalby Thomas published his work *An Historical Account of the Rise and Growth of the West-India Colonies* (1690). Thomas was an influential merchant and factor who sold slaves and provisions to West Indian plantations. He was also a leader of the burgeoning West Indian lobby, and later worked as a chief administrator for the Royal African Company. In 1690 he addressed Parliament regarding the sugar duty and other laws on the West Indies, and his *Historical Account* was a chance to disseminate many of these Parliamentary arguments to the public in a published format. Moreover, like the earlier efforts of Barbadian planter John Colleton, Thomas’ work proposes a scheme to create a single pan-Atlantic, state-owned bank, from which planters could routinely draw upon credit at low interest rates. Not surprisingly, Thomas work goes to good lengths to lionize his Caribbean friends. It opens with an epistle to Barbadian magnate Sir Robert Davers and other leading Caribbean planters, stating:

“I have to the best of my knowledge given a Just Account of what Import you are to this *Nation*, by Encreasing of *Navigation*, consuming the *Woollen-Manufactory*, of all sorts of Apparell, Household-Goods, &c. that are made in

²⁰⁶ *Diary of John Evelyn*. Quoted in Andrew Warmington, ‘Berkeley, George, first earl of Berkeley’, *Oxford Dictionary of National Biography*.

²⁰⁷ Hunter, *Correspondence*, II, 513. See also Thomas Birch, *The History of the Royal Society* (1756.) Vol. II, 63. Accessed through Eighteenth-Century Collections Online (ECCO). Gale Cengage Learning. <http://www.gale.cengage.com/>.

England, and that which was formerly *Forreign Commodties*, and cost us Considerable yearly, by [your] Industry, is become Native,... and Lastly, all the Riches you get in the *Indies* by your great Care, Labour, and Industry, is brought to *England*, and here it Centers.”²⁰⁸

Due to his position as a West Indian lobbyist, subsequent historians have treated Thomas’ account with great skepticism, often portraying him as an opportunist willing to spin the vile institution of slavery in a positive light for personal gain.²⁰⁹ Yet while it is true his work was written for political purposes, it was not disingenuous to the ideas of the early English Enlightenment. Thomas’ publication fits squarely into the discourses of experimental knowledge, imperial expansion, and social benefit which had been evolving within England throughout the seventeenth century. In addition, his ideas for a pan-Caribbean bank were not the isolated musings of an aggrandizing merchant, but the product of a century of ideas steeped in traditions such as the House of Salomon, Macaria, and other schemes for increased national plenty through organized central institutions. Thomas’ Atlantic banking plan was not his only proposal to Parliament during his life, and like Samuel Hartlib he submitted several reform proposals, on ideas ranging from plantations to workhouses to the English fishery. Today, Thomas’ rhetorical work of trying to link plantations to national progress seems so jarring as to be almost comical. Yet as this chapter has shown, Thomas’ ideas, arguments, and proposals were neither unique nor unusual. Instead, they were widely shared by vast segments of the English gentry, and held by an array of occupational groups including natural scientists, commercial merchants, Puritan social engineers, nascent political economists,

²⁰⁸ Dalby Thomas, *An Historical Account of the Rise and Growth of the West-India Colonies* (New York: Arno Press, 1972).

²⁰⁹ See for example Gordon Lewis, *Main Currents in Caribbean Thought: The Historical Evolution of Caribbean Society in its Ideological Aspects* (Baltimore: Johns Hopkins Press, 1983), 73-74; and Hillary Beckles and Verne Shepard, eds. *Caribbean Slavery in the Atlantic World* (London: Ian Randle, 1999), 181.

and imperial architects. By couching his pro-planter arguments within these contexts, he was speaking a language that his listeners would be both familiar with and amenable to.

At the opening of the eighteenth century, when English society had not yet turned upon the evils of slavery or other coercive labor tactics, American plantations could stand as examples—at times as paragons—of intellectual, economic, and social progress. To the experimental philosophers of the seventeenth century, several facets of colonial plantations provided clear examples of the benefits that a Baconian program could bring to England. Experimental philosophy's insisted synergy between geographic and intellectual expansion made it easy for these early scientists to imagine positive links between colonial ventures and increased scholarly knowledge. This connection was augmented by the array of exotic flora and fauna native to the West Indies, which threw ancient and scholastic theories into doubt and provided grist for a host of novel scientific experiments. It was also augmented by experimental philosophy's preference for practical inventions which advanced English trades, and these natural scientists reserved their highest praise for England's most innovative craft industries. During this same time, novel commercial operations in the New World were causing a meteoric increase in the production of tobacco, cocoa, sugar, and other commodities for the English market. Such developments made West Indian plantations ideal candidates for championing the Baconian message of experiment and invention. Lastly, while English natural scientists could praise Caribbean planters for adapting new cultivation and milling techniques, they also witnessed the domestic benefits these planters provided through a greater variety of medicines and foodstuffs. To experimental philosophers, this increasing national abundance signaled a decrease in dependence on foreign trade, an alleviation of English

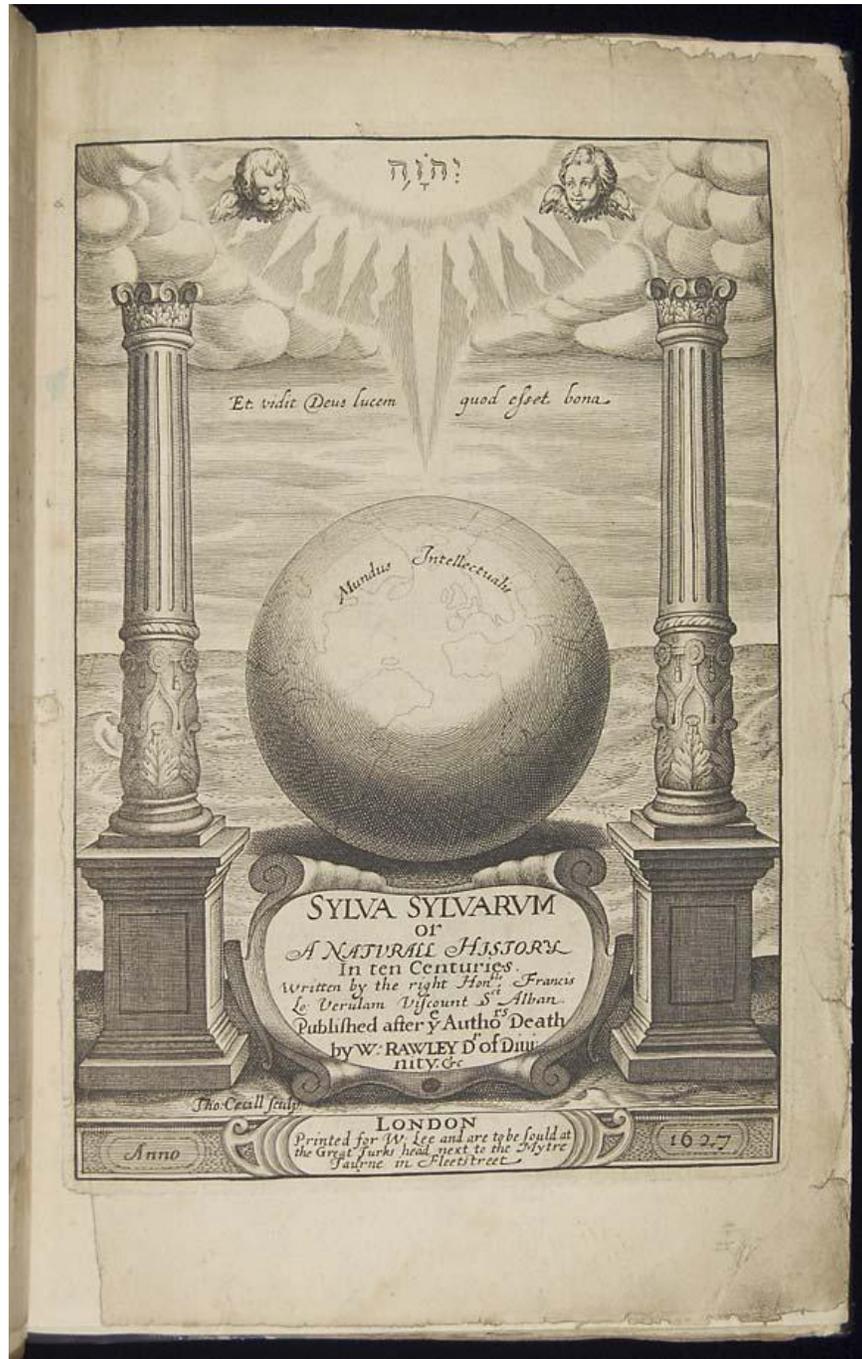
poverty, and further proof of their society's superiority over the ancients. To these leaders of the early English Enlightenment, American plantations were far from being anti-modern spaces; they were harbingers of modernity's arrival.

Fig. 1: Condensed portrayal of a Brazilian ingenio complex, showing all of the stages of a sugar-making operation. Grinding mills are left and center, and are powered by water and animal power. Meanwhile the boiling, striking, and curing aspects are portrayed on the right. Another pair of mills are seen in the distant background. Image from Simon De Vries, *Curieuse aenmerckingen der bysonderste Oost en West-Indische verwonderens-waerdige dingen...*(Utrecht, 1682).²¹⁰



²¹⁰ Images courtesy of the James Ford Bell Library, University of Minnesota; and *Collection Highlight: Bacon, Sylva Sylvarum...*, Department of Rare Books, River Campus Libraries, University of Rochester, <<http://www.lib.rochester.edu/index.cfm?page=3613>>. Accessed July 24, 1012.

Fig. 2: Metaphoric image linking global exploration, increasing knowledge, and Christian piety. Introductory illustration from Francis Bacon, *Sylva Sylvarum: or A Naturall Historie. In Ten Centuries* (1627).



Chapter Two: Projects

In the previous chapter we saw how Sir Dalby Thomas—a Caribbean factor, slave trade administrator, and chief agent for the West Indian planters lobby—could couch his pro-slavery arguments to Parliament and the wider public within a rhetoric that combined seventeenth-century notions of natural science, mercantile theory, and progressive social improvement. Moreover, Thomas' actions were not a disingenuous appropriation of such ideas, but fit squarely into the reformist discourses of the early English Enlightenment. Yet Thomas' proposals and endeavors during the 1690s were far from an untarnished success, and the rest of his life story bears an important counterpoint to this period's messages of material and moral progress. Like most large-scale proposals of this time, his plan for a pan-Atlantic bank was never established, as Parliament believed the idea too grandiose and expensive to be practicable. Furthermore, Thomas was later discredited in front of that same government body when he was publicly interrogated on the Commons floor in 1699 over accusations of embezzlement and bribing political officials. The episode cost him the majority of his courtly credit and his lucrative post as collector of the national glass duty. In 1701, faced with few employment options, he sailed to the Gold Coast as the new agent-general of the Royal African Company, where he died in 1711.²¹¹

Both experimental philosophy and England's broader improving ethos had become deeply enmeshed within all aspects of English gentlemen culture during the seventeenth century, including the nation's development of colonial plantation complexes. Yet it would be wrong to assume that England's landed class viewed this

²¹¹ The position carried a high salary and a fair amount of prestige for a lower gentleman of Thomas' standing. Nevertheless few nobles pursued these company posts due to the associated high mortality rates of these positions along the African coast.

particular nexus of ideas as a unilateral force for social good. While most eulogized this virulent combination of increasing knowledge, economic expansion, and social reform, beneath such praise was a latent unease about the harm these new paradigms could accomplish if appropriated by a few selfish or foolish persons with enough power or influence. It was these fears and resentments which first cost Thomas his pan-Atlantic bank and later his courtly prestige. In the contemporary parlance of this period, such plans were called projects, and their undertakers were labeled projectors. While today the word “project” connotes a wide variety of undertakings, the word’s meaning was more specific in the seventeenth-century, and was typically a pejorative term associated with ambition, folly, or greed. To improvers and experimental philosophers a project was, at best, a risky attempt to better oneself and the community through radical and unsound inventions, trade laws, or economic designs. At other times projects referred to schemes that were so grandiose in scope that they were not only unachievable, but brought financial ruin and social disrepute onto those naive enough to attempt them. Even worse, a project could refer to purely fraudulent schemes, undertaken by dissembling “projectors” who disguised their selfish initiatives as being for the greater public good. In this final example, such plans could range from attempts to secure a trade monopoly via courtly influence, to rigging votes, to defrauding investors of money put towards improving designs or inventions.

As a concept, projects are an important historical marker insofar as they embody many of the ideological contests and inconsistencies inherent within the increasingly changing society of the early English Enlightenment, and serve as an important counterbalance to the improving ethos of experimental philosophy. First, the very reason

people became concerned with the appropriation of change by selfish, negative ends was that change *was* happening at an accelerating rate during this time. It is debatable to what extent ideas on experimental philosophy were directly responsible for these changes, but the discourses covered in chapter one clearly encouraged, applauded, and publically took credit for many of these developments. Second, projecting was a central category through which people in the seventeenth century could conceptualize change, as it embodied the very modern and Baconian belief that humans could improve society through conscious and rational innovation and reform. This idea was contrasted however by an understanding that most projects ended in disaster, supporting an older belief that it was both haughty and foolish to attempt serious change through pre-conceived plans. A third reason projects loomed large in the minds of reformers was that projects embodied a contradiction between the social belief that improvement plans should benefit society writ large, and the realization that the majority of projects were fraudulent scams which enriched a projector at the public's expense. Finally, projecting illuminated the social tensions between the role of innovative individuals and the influence of powerful institutions within social change. On the one hand, early Enlightenment discourses nourished the idea that individuals could create private solutions for personal and public betterment—such as inventing a steam pump—which demonstrates the growing importance of individuals within progressive narratives. This was then contested by the reality that many projects were in fact collaborative efforts hinging on complex quasi-governmental stratagems—such as securing a trade monopoly—revealing the crucial importance of larger networks of mercantile and political influence during this time.

Despite England's social obsession with projecting in the seventeenth century, few secondary historical works have given the category substantial treatment.²¹² Moreover, as with experimental philosophy, there exists almost no literature which connects projects to the broader Atlantic developments of slavery, empire, or the West Indies during this same period. This chapter is an attempt to rectify this. First, it examines the nature of projecting as laid out by English authors during this time, delineating which enterprises qualified as projects and which did not. Next it examines the establishment of the English colony on Jamaica and the rapid formation of that island's export-based economy between 1655 and 1670. It compares the notions of project and projector to the contexts surrounding Jamaica's development, and to the motives and actions of those officials chiefly responsible for that development. By looking at plantations within a projecting context, this chapter hopes to further elucidate the ways in which the development of a Caribbean slave complex was not an anomaly of early modern English culture, but instead embodied beliefs and practices congruent with England's broader development discourses. Caribbean investors and planters were not only in step with society's broader attitudes on progress, knowledge, innovation, but also speculation, folly, failure, and greed. As improvers, Caribbean planters believed their endeavors created objects of social change and utility; as projects, plantations were institutions of base exploitation, designed to enrich a few at the expense of many.

²¹² The notable exception to this is Joan Thirsk, *Economic Policy and Projects: The Developing of a Consumer Society in Early Modern England* (Oxford: Clarendon Press, 1978.) A second work which substantially reviews projects (although is far from devoted exclusively to them) is Joyce Appleby, *Economic Thought and Ideology in Seventeenth-Century England* (Princeton: Princeton University Press, 1978).

I: Defoe

Ironically, the most famous and loquacious commentator on the seventeenth-century's projecting impulse was an employee of Sir Dalby Thomas, a young man named Daniel Defoe. In 1697 Defoe published his first major work *An Essay upon Projects*.²¹³ The work was a meditation on the proliferation of ideas, plans, and schemes for commercial profit and social engineering abounding within the English public sphere during the latter seventeenth century, and was an appeal for society to come to terms with this explosion of novel ideas. Defoe dedicated this work to Sir Dalby Thomas, and in the *Essay's* opening epistle Defoe calls his friend Thomas "the most proper Judge of [projects], and more Capable than the greatest part of Mankind to Distinguish and Understand them." Note however that this comment was written before Thomas' fraud accusations and fall from favor, and Defoe was primarily referring to Thomas' enthusiasm for large-scale economic and social engineering proposals, of which his pan-Atlantic bank was a part. Defoe acknowledges this fact by writing in the same introduction that Thomas' "capacity to judge of these things no way brings [him] under the despicable title of a projector, any more than knowing the practices and subtleties of wicked men makes a man guilty of their crimes."²¹⁴

Such a caveat was necessary within Defoe's work, as by the time of his writing projects and projectors had established a long and pejorative history within English society. At its most basic level projecting was equated with conspiracy, and seventeenth-century English print culture contains frequent warnings against "projecting" political

²¹³ Daniel Defoe, *An Essay On Projects* (1697). Accessed through Early English Books Online archive (EEBO).

²¹⁴ *Ibid.*, i.

subversives who plot against the English government.²¹⁵ Beyond political treason, numerous texts warned of a projector's financial trickery, in particular through attempts to monopolize markets via corrupt legislative acts and patents. Indeed, Thomas was not the only improver brought down via accusations of projecting, and several experimental philosophers spent good parts of their careers defending themselves against such charges. Francis Bacon himself was removed from his position as Lord Chancellor over a projecting scandal, when he was accused of accepting bribes for granting improper patents to moneyed interests. In a speech to an angry Parliament, King James I expressed his deep hatred of "projects and projectors," and dismissed Bacon in an act of public appeasement.²¹⁶ Despite this move, Parliamentary resentment over royal monopoly patents continued to fester during the early Stuart period, and was a major factor in sparking the English Civil War. Not surprisingly, the outbreak of this war prompted several hopeful publications by Puritan authors regarding projects, such as the 1642 tract *The Projectors Down-Fall, or, Times Changeling, Wherin the Monopolists and Patentees are Unmasked to the View of the World*.²¹⁷

After the war, while resentments over monopolies subsided, projecting continued to be a rallying cry against various social evils. The experimental philosopher Walter Blith, who will be detailed in the next chapter, harangues projectors in several passages

²¹⁵See for example Arthur Browne's confession published in *Arthur Browne, a Seminary Priest, his Confession After he was Condemned to be Hanged at the Assizes Holden at Dorchester...* (1642), or Sir Peter Pett, *The Happy Future of the State of England, or, A Discourse by way of a Letter to the Late Earl of Anglesey Vindicating him from the Reflections of an Affidavit Published by the House of Commons...* (1688), or Anon. *The Absolute Necessity of Standing by the Present Government or, A view of what both Church-Men and Dissenters Must Expect if by their Unhappy Divisions Popery and Tyranny Should Return Again* (1689). Accessed through EEBO.

²¹⁶Markku Peltonen, 'Bacon, Francis, Viscount St Alban (1561–1626)', *Oxford Dictionary of National Biography*, Oxford University Press, 2004; online edn, Oct 2007 [<http://www.oxforddnb.com.floyd.lib.umn.edu/view/article/990>, accessed 27 Dec 2010]

²¹⁷Thomas Paine, *The Projectors Down-Fall, or, Times Changeling, Wherin the Monopolists and Patentees are Unmasked to the View of the World* (1642). Accessed through EEBO.

of his agricultural text *The English Improver* (1649), warning readers to be wary of speculative and ill-conceived agricultural improvement stratagems. Similarly, Blith spends time defending his own ideas against the charge, claiming that, while useful, his own agricultural innovations are but “plain and simple, and my Projections nothing but Country Experiments.”²¹⁸ The larger the design, the more likely it was that one would be charged with projecting, and thus experimental philosophers such as Samuel Hartlib were particularly susceptible to the label due to their grandiose plans for schools, knowledge exchange committees, government trade regulations, and other ideas based upon Bacon’s House of Salomon. The merchant Hartlib was perhaps unfairly judged in this regard, as he died poor and seemed to have been sincere in his agenda for improving England’s moral and material standing. His ideas may have been overly ambitious, but they were not specious. However many of his colleagues were not so scrupulous. John Evelyn grew wealthy from a family saltpetre monopoly. Benjamin Worsley’s interregnum plans for abolishing the Virginia Company were partly fueled by his desire to erect his own Virginia government, of which he was to be the head. While planning this takeover, Worsley partnered with the wealthy merchant Maurice Thompson, one of the period’s chief projectors who is dealt with below. Also, as mentioned in chapter one, when Worsley later developed his Barbadian senna plantation, one of his first actions was to procure a patent and monopoly for his new “invention.”

By the 1690s, experimental philosophy had penetrated English society to the point where improvement schemes—both legitimate and fraudulent—were ubiquitous, ranging from public fire engines, to diving machines for obtaining sunken treasure, to street lamps for preventing crime, to joint-stock enterprises, to large-scale enclosure and

²¹⁸ Walter Blith, *The English Improver Improved ...* (1652), 40. Accessed through EEBO.

drainage schemes, and even social security plans for the lame and elderly. It was this explosion of projects which prompted Defoe to draft his *Essay*. Although Defoe maintains significant skepticism against projectors he also takes pains to explain that some projects do indeed promote the public weal, and encourages the reader to discern between good projectors and bad. “A meer Projector, then, is a Contemptible thing,” claims Defoe.²¹⁹ “They are people who “turn their Thoughts to Private Methods of Trick and Cheat, a Modern way of Thieving every jot as Criminal, and in some degree worse than the other, by which honest men are gull’d with fair pretences to part from their Money.” This disdain for the “mere” projector is contrasted with Defoe’s description of the “Honest” projector, people who contrive ideas yet nevertheless “turn their thoughts to Honest Invention, founded upon the Platform of Ingenuity and Integrity.”²²⁰ Indeed, Defoe’s work is largely an attempt to vindicate this second sort of projector, whom he views as unfairly judged in English society. “[A]s there was always *more Geese than Swans*, the number of [good projectors] are very inconsiderable in comparison of the [bad]; and as the greater number denominates the less, the just Contempt we have of the former sort, bespatters the other, who like Cuckolds, bear the reproach of other People’s Crimes.”²²¹ While Defoe was not the first author to discern the subtle difference between these two groups, his work is the first to put such a stark emphasis on this division.

However it is important to note here that even in Defoe’s mind, the good projector remains an individual who chiefly strives for personal profit. To him, good projects were those “as are built on the honest Basis of Ingenuity and Improvement; in which, tho’ I’ll allow the Author to aim primarily at his own Advantage, yet with the circumstances of

²¹⁹ Defoe, *Projects*, 32.

²²⁰ *Ibid*, 33.

²²¹ *Ibid*, 33.

Publick Benefit added.”²²² In other words, he claims there is no reason “why the Author of any such fair Contrivances should not reap the harvest of his own Ingenuity,” so long as this gain was not produced via direct malice or guile against others.²²³ Again, this concept was not new to Defoe’s period, and experimental philosophers and other improvers had long believed that those who design significant social improvements should be adequately compensated for their energy and vision. The projector’s compensation may even be a greater share than what the rest of society stands to benefit from the improvement, so long as the invention does not simply benefit the projector at the community’s expense.²²⁴ Even Defoe was not immune to this attitude of just profits. After making this introductory delineation between good and bad projectors, the remainder of his *Essay* consists of a collection of projects of his own design, ideas which he considers to be “good” projects and beneficial to the public weal. Defoe’s profiteering spirit is further evinced from the fact that Defoe wrote his *Essay* in debtors prison. He was sent there because of a series of bad merchant investments, and his list of projects was an attempt to make money so that he could secure his release.²²⁵

Related to this idea of beneficial projects, a second feature of Defoe’s work is his contention that the recent proliferation of projects is in some way responsible for the deep

²²² *Ibid.*, 11.

²²³ *Ibid.*, 14. Here, Defoe’s stance is itself representative of a new attitude towards profit and speculating for the purposes of personal gain during the seventeenth century, insofar as he admits that that desires for individual profit can serve a social good. See for example Neil McKendrick, John Brewer and J.H. Plumb, *The Birth of a Consumer Society: The Commercialization of Eighteenth-Century England* (Indiana University Press, 1982); Colin Jones “The Great Chain of Buying” *American Historical Review* 101 (1996), 13-40; and Roy Porter, *The Creation of the Modern World: The Untold Story of the British Enlightenment* (Norton, 2001). See also Maximilian Novak, ed., *The Age of Projects* (University of California Press, 2008).

²²⁴ Of course, to what extent an improver was allowed to profit from his inventions, before crossing the boundary and becoming a base projector, was a topic of fierce controversy.

²²⁵ Defoe’s bad investments here could be seen as projects in their own right. In 1692 Defoe borrowed and spent £850 to purchase a farm of civet cats, which he intended to harvest for a perfume venture. Merchants defrauded him of the proper title to these cats, and he was in turn sued by his creditors. See Richard West, *The Life and Strange Surprising Adventures of Daniel Defoe* (New York: Harper Collins, 1997), 52.

structural changes occurring within English society, a reflection influenced by the ancient versus moderns debates mentioned in chapter one. More specifically, Defoe sees a link between the incessant attempts of projectors to contrive new ways of making profit and the proliferation of novel social advancements being extolled by groups such as the Royal Society. While Defoe expressed reservations over whether this influx of projects writ large was ultimately beneficial, he was nevertheless quick to admit that “considerable Discovery has been made in these latter Ages,” and that society had “received improvements” from these projectors “which the World was ever without before, either in whole or in part.”²²⁶ Related to this, Defoe’s insistence on the coexistence of private and public benefit allows him to place merchants within the centre of his progressive social vision, and to claim merchant activities as the main spur to social advancement. When reviewing the recent history of projects in his *Essay*, Defoe gives extensive credit to society’s engineers and natural philosophers for producing useful innovations, yet reserves his best praise for the merchant:

“Every new Voyage the Merchant contrives, is a Project; and Ships are sent from Port to Port, as Markets and Merchandizes differ, by the help of strange and Universal Intelligence; wherein some are so exquisite, so swift, and so exact, that a Merchant sitting at home in his Counting-house, at once converses with all Parts of the known World. This, and Travel, makes a True-bred Merchant the most Intelligent Man in the World, and consequently the most capable, when urg'd by Necessity, to Contrive New Ways to live.”²²⁷

A third important aspect of Defoe’s *Essay* should be mentioned here: the use of manual labor within projects. As much as his work strains to extol merchants as the vanguard of England’s improving spirit, Defoe is equally cavalier towards those manual workers who enact many of the projector’s designs. More to the point is that Defoe’s

²²⁶ Defoe, *Projects*, 22.

²²⁷ *Ibid.*, 8.

comments on workers, when they occur at all, do not focus upon the welfare or encouragement of workers *per se*, but rather upon legal schemes for coercing them into doing the improver and/or projector's bidding. This type of attitude was common within improving narratives from this period despite—or perhaps because of—the crucial importance of workers within accomplishing a projector's goals. Indeed, while many seventeenth-century projects involved the legal re-arrangement of capital such as in new taxation or investment schemes, an equal number involved the material construction of objects like buildings, roads, enclosures, and newly-cleared farmland. All of these improvement plans required people for the heavy lifting and digging, and projectors rarely had qualms about using coercive devices to summon the necessary labor force. More to the point, it is important to see that these labor-conscripting schemes were themselves examples of the projecting spirit, insofar as they involved the willful directing and manipulation of one's environment for personal and public benefits. Labor recruitment plans could take a variety of forms within projecting narratives, and while some advocated incentive-based arrangements such as wage labor or tenant farming, authors were equally willing to resort to coercive acts like impressments, forced servitude, and finally outright slavery. Usually, the type of labor arrangements advocated took little account of a workers' welfare and were ultimately concerned with procuring a force to accomplish the project at a minimum expense.

In the colonies, concerns over labor procurement were paramount and plans for attracting and maintaining workers stayed at the forefront of every settlement project. However even the authors of domestic projects dwelt on such matters, including Defoe. In the chapter of his *Essay* entitled "On Highways" he provides plans for establishing a

series of turnpikes within England, which he believes would be a spur to commerce. Much of the chapter contains ideas for funding the highways' construction and maintenance, and forced labor is a central component of his plans. He recommends that Parliament establish a special commission with the power to "press Wagons, Carts, and Horses, Oxen, and Men, and detain them to work a certain Limited Time, ... and at a certain Rate of Payment."²²⁸ Defoe believes that these people and items could be paid for through a system of tax credits, substituting a labor levy for a financial one, as "a Stock of Men is a Stock of Money."²²⁹ He also sees an opportunity to lessen these expenses by incorporating this levy into the penal code. "In which case all Corporal Punishments – as of *Whippings, Stocks, Pillories, Houses of Correction, &c.* might be easily transmitted to a certain Number of Days Works on the High-Ways."²³⁰ Temporary maintenance duty for minor offences could even be translated into year-long highway details for major offenders, creating a permanent labor convict labor force "which would, by a moderate computation, provide us generally a supply of 200 Workmen, and coming in as fast as they go off; and let the Overseers alone to make them Work."²³¹ Finally, if this work gang of "Highwaymen and such Malefactors" should prove insufficient, Defoe recommends turning to the Royal African Company, who could contract with the government "to furnish 200 *Negroes*, who are generally Persons that do a great deal of Work; and all these are subsisted very reasonably out of a Publick Store-house."²³²

Such were some of the central components of Defoe's treatise on projects: their role in improving society if conducted properly and honestly, the preeminence of

²²⁸ *Ibid*, 78.

²²⁹ *Ibid*, 81.

²³⁰ *Ibid*, 81-2.

²³¹ *Ibid*, 103.

²³² *Ibid*, 91, 104.

merchants and commercial endeavors within the projecting sphere, and an unflinching willingness to resort to imprisonment or slavery schemes for accomplishing a project's main designs. Yet it is curious that while all of these themes were central to the seventeenth-century's many colonizing enterprises, Defoe nevertheless excludes colonies as examples of the projecting spirit. His only reference to them is a single passage which mentions individuals "engag'd in the Planting of Foreign Collonies ... *Pensilvania, Carolina, East and West Jersey*, and the like places; which I do not call Projects, because 'twas only prosecuting what had been formerly begun."²³³ This dismissal stems from an earlier distinction in his work between those who create entirely new projects, and those that merely improve on a previous person's existing designs. The division was not unique to Defoe's work, as arguments over the differences between new and improving projects formed the basis of numerous patent lawsuits during this period.²³⁴ In Defoe's work, he disqualifies the colonies mentioned above as projects because the concept of a colonial venture had already been envisioned and enacted during previous generations. But if the English colonies in the second half of the seventeenth century were thus disqualified as a true project in Defoe's mind, the merchants and officials behind their development certainly fostered attitudes on progress, wealth, and labor concurrent with the age's projecting spirit. While colonial projecting efforts took a variety of forms during the latter seventeenth-century, a particularly striking case exists within Oliver

²³³ *Ibid.*, 28-9.

²³⁴ The issue was not unique to seventeenth-century England, but was endemic to the early modern Anglo-Atlantic. Almost a century later, Thomas Jefferson would have cause to complain over a similar distinction, whereby he had to pay Oliver Evans patent fees for the right to use Evans' flour mill even though Jefferson considered it only an improvement on a previous machine. See Joyce Chaplin, *An Anxious Pursuit: Agricultural Innovation and Modernity in the Lower South, 1730-1815* (University of North Carolina Press, 1993), 309. See also her discussion of the legal battles surrounding Eli Whitney's cotton gin patent, 307-319.

Cromwell's famous "Western Design" and the subsequent rapid development of the Jamaican planter oligarchy between 1655 and 1670.

Jamaica's initial years have rarely been judged favorably by historians.

Traditional works emphasize military disaster, civil war, plague, starvation, and even pirates within narratives on the colony's opening period. One famous historian went so far as to label the colony's early history "a bad joke."²³⁵ While disasters, chaos, and cruelties of all kinds did indeed dominate early Jamaica, behind these events lay a surprisingly consistent set of ideas amongst those in charge of both the Western Design and Jamaica's subsequent settlement. These ideas were grounded in seventeenth-century notions of improvement, Puritanism, and profit, and meshed well with other projecting enterprises of the period. Those in charge of Jamaica's inception also worked within the framework of a rapidly solidifying imperial vision. Earlier colonial projects were typically private joint-stock monopoly ventures, built with little regard for how the colony would affect England's larger transatlantic development. In contrast, Jamaica and the Design resulted from an acute execution of a congealing mid-century imperial ethos. Influenced by the earlier Macarian tradition, this ethos was formally expounded by Benjamin Worsley and other improving mercantilists during the English Civil War, and assumed a material incarnation within Cromwell's 1651 Navigation Acts. Both the Design and the Jamaica project were continuations of this new imperial ethos, and comprised of coordinated efforts between government and private resources to establish settlements that would work within the rigid confines of England's new mercantile system. Furthermore, by 1650 English colonial organizers had a number of pre-existing

²³⁵ Richard Dunn, *Sugar and Slaves: The Rise of the Planter Class in the English West Indies, 1624-1713* (Chapel Hill: University of North Carolina Press, 1972), 149.

colonies to draw upon as templates when planning imperial ventures, and thus these two projects contained stratagems for wealth and improvement that were hitherto unmatched in their specificity and detail. Finally despite these coordinated ambitions, Jamaica and the Design, like many projects from this period, ruined most of those who participated—both willingly and unwillingly—within these grandiose ventures. The Western Design was an outright failure, while by the eighteenth century the Jamaican colony possessed an ambiguous legacy in regards to whether it had lived up to its potential as a marker of transatlantic improvement, or whether, as a project, it was merely a logistical disaster which enriched a few at the expense of many.

II: The Western Design

English colonial enterprises in the early seventeenth century developed slowly at best, most being outright failures. However by the 1650s the nascent British Empire could boast of at least one successful export-based colony on the island of Barbados, the settlement which established the socio-economic prototype for all subsequent Anglo-Caribbean slave societies. Like its early counterparts, Barbados was not a society forged through a cohesive colonial policy or vision, but through a generation of discursive social evolution. In its first few decades Barbados stumbled through several forms of government and experimented with a variety of crop routines and land ownership patterns. This changed during the “sugar revolution” of the mid-seventeenth century, when the island settled upon a potent socio-economic combination of large landholdings, sugar monoculture, and slave labor.²³⁶ Thereafter Barbados rapidly became England’s

²³⁶ On the so-called “Sugar Revolution,” and the limitations of this paradigm, see Russell Menard, *Sweet Negotiations Sugar, Slavery, and Plantation Agriculture in Early Barbados* (Charlottesville: University of Virginia Press, 2006). See also Barry Higman, “The Sugar Revolution,” *The Economic History Review, New Series*, 53, 2 (May, 2000).

richest and most densely populated colony. By the mid-seventeenth century the tiny island was exporting around ten million pounds of sugar per annum, almost ten times the Chesapeake's entire tobacco output.²³⁷ Sugar also sold for around 50% more per pound than tobacco, translating the island's produce into enormous wealth for Barbadian planters.²³⁸ Lastly, the sugar boom impacted Barbados' population, which in 1650 was twice that of New England and triple that of the Chesapeake.²³⁹

Is it probably not a coincidence that shortly after the maturation of the Barbadian sugar-slave complex, subsequent English settlements developed more rapidly and frequently.²⁴⁰ By 1650 English merchants and projectors in London, familiar with the Barbadian success story, used the island's unique socio-economic structure as a platform from which to design their own colonial projects. Unlike Barbados, these colonies would not begin with a generation of small farmers or diverse crop routines. Rather these settlements were engineered from the beginning to rely on large landholdings, export-orientated agriculture, and forced labor. With this template in mind, London merchants then began a series of machinations towards enlisting the government's support for their colonial projects. Such efforts took the form of proposals, petitions, and collaborations with the ruling government, be it the Crown, Parliament, or the Protectorate. These merchants wrapped their rhetoric in a language of national and commercial development, arguing how their colonial designs would benefit both the

²³⁷ For Barbadian and Chesapeake production statistics, see John McCusker and Russell Menard *The Economy of British America* (Chapel Hill: UNC Press, 1991), 121, 158, and Menard, *Sweet Negotiations*, 68.

²³⁸ Important prices for Tobacco and Sugar from McCusker and Menard, *Economy of British America*, 121 and 158 respectively.

²³⁹ For population statistics see McCusker and Menard, *Economy of British America*, 153, 103, and 136.

²⁴⁰ On the sudden and striking proliferation of English colonies and imperial ventures after 1650, see Charles Andrews, *The Colonial Period of American History*, (New Haven: Yale University Press, 1937), Vol. III, p ix – xiii.

English state and public weal. Equally important, in the same way Defoe allows a good projector to “reap the harvest of his own ingenuity,” these merchants and officials paid special attention to place themselves within the most lucrative colonial positions as they engineered new communities across the Atlantic, guaranteeing themselves the most profitable spaces within the new societies they endeavored to create.

In 1655 these merchant and governmental machinations culminated in the Western Design, a widely ambitious conquest project with both religious and commercial goals.²⁴¹ In the summer of 1654 the Lord Protector Oliver Cromwell assembled a force of over 2500 soldiers from English regiments then campaigning in Ireland, placing them under the command of general Robert Venables. Their instructions, secret until they had left England, were to proceed to Barbados to recruit more soldiers and next to “gain an Interest in that part of the West Indies in the possession of the Spaniard.”²⁴² The initial scope of this plan was truly fantastic: Cromwell and his council imagined a pan-American invasion force large enough to capture most if not all of the lands held by Spain in the New World. How to accomplish such a design was left up to the discretion of the officers once they reached the Indies, however the instructions did offer some ideas. One strategy was to initially land in Hispaniola or Puerto Rico, after which England could reinforce these newly conquered islands with transplanted settlers from other English colonies, making these islands “Magazins of men and provisions for

²⁴¹ Much has been written about the motives and outcomes of Cromwell’s Western Design. The most comprehensive treatment is S.A.G. Taylor, *The Western Design* (Kingston, Jamaica: Institute of Jamaica, 1965). Because of the extensive treatment given there, only the basic outline will be given here.

²⁴² “Instructions unto Generall Robert Venables Given by His Highness by Advice of his Council upon his Expedition to the West Indies,” found in *The Narrative of General Venables* (London: Longman, Green, & Co., 1900), 112. They also had commands to pick up recruits from the other English leeward colonies. Interestingly enough, the admiral of the fleet which transported these troops was commanded by William Penn Sr., father of the William Penn who would one day be founder and proprietor of Pennsylvania. On the secret nature of the assignment, see Frank Strong, “The Cause’s of Cromwell’s West Indian Expedition” *American Historical Review* 4,2 (Jan., 1899), 232.

carrying on the Designe of the Mayne Land.”²⁴³ With this foothold established the army was to then conquer Cuba, “the back doore of the West Indies,” thus allowing English ships to easily harass Spanish silver convoys in the Straits of Florida. A second strategy offered by Cromwell was to proceed from Barbados to the Oronoco River basin in present-day Venezuela. Once there they were to contact the region’s Indian population, which Cromwell perhaps naively believed “wil submit to you, there being but few Spaniards there as is informed.”²⁴⁴ This mixed English and Native American force would then proceed along the coast westward and take the city of Cartagena, which they could then make the “seate” from which they could launch further attacks, and from whence they could also “be master of the Spaniards Treasure which comes from Peru.”²⁴⁵

In the *Essay upon Projects*, Defoe claims that “The building of Babel was a right project; for indeed the true definition of a project is, as said before, a vast undertaking, too big to be managed, and therefore likely enough to come to nothing.”²⁴⁶ Similar things could be said about both the scale and subsequent results of Cromwell’s Design. Several motives and advisory sources informed the decisions of Cromwell and his Council to undertake this seemingly implausible plan. One was of course religious, as England’s long-standing animosity towards the “black legend” of Catholic Spain fed into many of England’s international episodes of the seventeenth century. Yet religious rivalry was not the primary reason behind the attack, as most of Cromwell’s other foreign

²⁴³ Venables, 112.

²⁴⁴ Venables, 113. The project of colonizing the Oronoco basin was initially made famous by the expeditions of Sir Walter Raleigh. Raleigh’s explorations and ideas were published in his *Discovery of Guiana* (1595). The idea of helpful Native Americans was also a popular trope within exploration literature of this period, and not an uncommon presumption on the part of English imperialists. Raleigh himself talks extensively of this plan in his *Discovery*.

²⁴⁵ Venables, 113. The instructions also contained a third option which was to take Hispaniola and Puerto Rico first, then moving directly to Cartagena. The rationales behind this third plan remained the same as the first two options.

²⁴⁶ Defoe, *Projects*, 20.

policy decisions were not guided by religious affairs.²⁴⁷ A more acute cause of the Design was revenge for Spain's sacking of the Providence Island colony in 1641.²⁴⁸ Lying near the Mosquito Coast, Providence Island was initially colonized in 1629 via a joint-stalk consisting of the Earl of Warwick and other Puritan leaders. By the late 1630s it possessed a burgeoning tobacco monoculture, however its propensity to be a haven for pirates attracted the attention of mainland Spaniards, who invaded and destroyed the colony in 1641.²⁴⁹ Many of the principal merchants behind this failed venture went on to become leaders in the English Civil War, and under the Protectorate many of these same merchants were top advisors to Cromwell on colonial affairs.²⁵⁰

Beyond these specific grievances there were more general motives for the Design, all of which revolved around constructing a Godly and commercially prosperous Puritan empire in the New World. Like with the improving designs of chapter one, this religious vision easily incorporated both economic and imperial concepts. It was imagined that new colonies taken and established through the Design would be quickly populated with pious English settlers and would quickly produce wealth for the Protectorate. While

²⁴⁷ During this time Cromwell also provoked a war with the Protestant Dutch states by installing trade embargos against them in English colonies, while simultaneously keeping an alliance with Catholic France, communicating and at times receiving support from chief French minister Cardinal Mazarin for his Western Design. See Strong, "Causes," 238. See also V.T. Harlow, Introduction to "The Narrative of Captain William Jackson" in *Camden Miscellany Vol. XIII* (London, 1923), xxiii.

²⁴⁸ This antipathy was part of a broader resentment towards Spain's policy of keeping it monopoly on New World territory through actively destroying foreign colonies, even during times of peace in Europe. See Harlow, "Voyages" p xxiii-xxv for a good summary of this dynamic in English foreign policy under the Protectorate.

²⁴⁹ For a thorough treatment of this colony see Karen Kupperman, *Providence Island 1630 - 1641: The Other Puritan Colony* (Cambridge: Cambridge University Press, 1995). Many of the members of the Providence Island Company would later hold influential positions in the commonwealth government, especially Maurice Thompson.

²⁵⁰ The sacking of Providence was accompanied by the Spanish sacking two other English settlements during this time: a Puritan colony on Tortuga in 1635 (also established by the Providence Island Company) and an English settlement on St. Croix in 1651. The St. Croix attack may have come in 1654. See Andrews, *Colonial Period*, III, 8. For a description of how these events specifically affected Cromwell's foreign policy, see Harlow, "Narrative," xxiii-xxv.

historians frequently portray Cromwell as an austere Christian soldier, such accounts underestimate the ways in which religion and economics were easily blended into general improvement paradigms during this time. Cromwell was no stranger to concepts of mercantilism or political economy, and had been a member of England's Commission of Trade and Plantations from 1643 until his assuming the role of Lord Protector.²⁵¹ Aside from contributing wealth to the Protectorate, these new settlements were to be Puritan societies where, like Providence Island and New England, Puritans might advance their religion in foreign places. Connections between the Design and former Puritan colonial projects were numerous. Second-in-command of the Design was Edward Winslow, who initially came to America aboard the *Mayflower* and twice served as governor of the Plymouth colony. Prior to the Design's departure he wrote to Cromwell about the necessity of having several ministers within the expedition, urging the Protector "to remember, that the settlement of the protestant religion is one of the grounds he goeth upon."²⁵² These cries were echoed by subsequent commanders of the Design. This idea of multiplying Puritans in the New World meshed with their broader motive of propagating the Gospel amongst foreigners, and as with Winslow's previous interactions with the New England Wampanoags, the Design included plans for converting the

²⁵¹ Charles Andrews for example quips that Cromwell was "more familiar with the battlefield than the counting house." See Andrews, *Colonial Period*, III, 3. On his council position see Strong, "Causes," 231. During his reign he also maintained close personal ties with political economist Ralph Maddison, the author of the mercantilist economic treatise *Great Britain's Remembrancer* (1654) which was dedicated to Cromwell. See *Ibid*. The economic component of this project was especially pertinent given England's specie shortage, and also because Cromwell needed a way to raise revenue without calling another Parliament. See David Shields, "Sons of the Dragon: or, the English Hero Revived" in Ralph Bauer and José Antonio Mazzotti, *Creole Subjects in the Colonial Americas: Empires, Texts, Identities* (University of North Carolina Press, 2008), 105. It was also envisioned that the expedition would repay its immediate cost through the seizure of silver from captured Spanish ships and settlements.

²⁵² Thurloe, *State Papers*, III, 252. Similar petitions for more ministers were frequent in the communications between England and the Design over the next several years. See also *Ibid*, III, 681.

region's many Native Americans.²⁵³ As religious motives were meant to have a synergy with the Design's economic goals, moral and material progress were to be simultaneously advanced under the same paradigm of improvement. Thus these plans meshed with Richard White's earlier mantra of "knowledge causing piety, piety breeding industry, industry procuring plenty."²⁵⁴ Another example of this early Enlightenment blend of interests is seen in a letter from one Colonel Fortescue, a Puritan officer in the Design, to an English minister friend. After landing in Jamaica, Fortescue was optimistic about the island's ability to support both a devout and prosperous Puritan colony:

"It's a very fruitful and pleasant land, a fit receptacle for honest men, which is our greatest want here. ... I hope God will incline and dispose the heart of such as fear God, to come and sitt downe amongst us. We have waded through many hardships and difficulties; but all's nothing soe as we may be instrumental to propagate the gospel. ... What a desirable thing would it be, to see many godly men flock and flow hither, where [there] is accomodation worke for them? Here they may serve God, their country, and themselves."²⁵⁵

Beyond Cromwell and his Council several other individuals played important roles in imagining and drafting the project of the Western Design. Like good projectors, the motives behind their efforts ranged from improving the commonwealth, to expanding the protestant religion, to erecting avenues for personal gain. These interests often overlapped and, as stated by Fortescue, through the Design they hoped to promote God, their country, and themselves all at once. One such individual was Thomas Gage, an Englishman who was raised as a Jesuit Missionary. After twelve years in Spanish America he returned to England, renounced his Catholic religion and published *The*

²⁵³ In Plymouth, Winslow was initially made chief ambassador to the colony's Native American neighbors, securing the now-legendary alliance we now associate with Thanksgiving.

²⁵⁴ See chapter 1, FN 61.

²⁵⁵ Thurloe, *State Papers*, III, 650-1.

English-American (1648), a travelogue of his tenure in New Spain.²⁵⁶ More than a descriptive work it was also a call to arms, insisting that Spanish colonies were underpopulated and undefended, and it implored Charles I to undertake a Spanish conquest.”²⁵⁷ After the Civil War, Cromwell became impressed with Gage’s work and he solicited Gage for advice while preparing the Design. Gage replied with a letter containing a litany of truly bullish advice on how best to subdue the Spanish Caribbean.²⁵⁸ First he imagines that Hispaniola and Cuba could be quickly conquered as they are thinly populated. Next he advocates a “speedy landing upon the mayne” and crafting an alliance with the Natives there. After this he believes the English could easily take Guatemala City, even restocking it with English settlers from Barbados and Virginia before Spaniards in Mexico could muster a reprisal. Finally after accomplishing all this within a few months, the soldiers would rest through the rainy season until the next year, when their “thoughts may rise higher (when neighbors and friends are come to joyne with us,) and carry to Mexico northward, or to Peru southward, where are the cheifest mines.”²⁵⁹ Cromwell thought highly of these extravagant plans and large parts of Gage’s letter were explicitly reiterated in the instructions given to the Design’s commanders. Finally Gage himself, now a protestant chaplain, found work as a Spanish translator

²⁵⁶ Thomas Gage, *The English-American, his travail by sea and land, or, A new survey of the West-India's containing a journall of three thousand and three hundred miles within the main land of America* (1648). For a biography of Gage, see Allen D. Boyer, “Gage, Thomas (1603?–1656),” *ODNB*, [http://www.oxforddnb.com/view/article/10274, accessed 7 Sept 2010], and also Strong, “Causes,” 234.

²⁵⁷ Gage, *English American*, ii.

²⁵⁸ Thurloe, *State Papers*, II, 59-61. Gage was not the only Puritan minister to assist Cromwell in planning the Design. William Cooper, a Puritan minister of high standing under the Commonwealth, was married to a Dutch woman and spent some time working in Amsterdam, possibly as an English spy. In April of 1664 he presented Cromwell’s government with a book of sea charts detailing Caribbean and South American currents. The book, compiled by Dutch sea captains, had no equivalent in England and thus Cooper thought it may contribute to the design. See *Ibid*, II, 250. Also see Stephen Wright, “Cooper, William (fl. 1640–1681),” *ODNB*, [http://www.oxforddnb.com/view/article/6235, accessed 7 Sept 2010].

²⁵⁹ Thurloe, *State Papers*, II, 60-61.

within the expedition. It is unknown if Gage had any personal goals he hoped to accomplish on the voyage; he died of fever in Jamaica in 1655.

A second person whose ideas influenced the Design was Colonel Thomas Modyford, a shrewd Barbadian merchant and planter who would eventually become one of the chief drivers and beneficiaries of the Jamaican project. Born in England, Modyford was the son of an Exeter mayor and was a cousin to George Monck, the First Duke of Albermarle.²⁶⁰ In 1647 he led a group of Royalist merchants to Barbados as political exiles, establishing a plantation partnership with the successful Barbadian William Hilliard. He retained potent business connections in London, particularly through his brother-in-law Thomas Kendall, a wealthy merchant with interests in the Caribbean, North America, and the East India Company.²⁶¹ With these connections Modyford quickly ascended the economic and political ladder of the Barbados plantocracy. In 1651 Cromwell suspected Barbados to be a haven for Royalists and, partially upon the advice of experimental philosopher Benjamin Worsley, sent a fleet there to “reduce the island to obedience.”²⁶² This resulted in a two-month standoff between the blockading squadron and the Barbadian planters who refused to accede to Cromwell’s demands.²⁶³ The deadlock was finally broken when Modyford, sensing the futility of the Royalist position, abruptly switched sides for Cromwell, bringing his

²⁶⁰ Dunn, *Sugar and Slaves*, 81.

²⁶¹ On Kendall’s North American partnerships see *Calendar of State Papers, Colonial Series (CSP)*, Vol II, p. 428. For the East Indian Company, see Thurloe, *State Papers*, III, 515.

²⁶² *CSP*, I, 349. This expedition was a part of Cromwell’s larger plan to subdue the English colonies still loyal to the crown, including Virginia. In the Virginia case, both Worsley and the merchant Maurice Thompson attempted to design a new Virginia company once the old had been dissolved due to its treason.

²⁶³ Part of the problem was that for decades the Barbados planters had been supplied by Dutch ships and merchants which, though illegal, had been tacitly condoned under the Stuarts. Cromwell’s plans were to enforce the monopoly on English shipping, which would have meant steeper rates for the Barbadian planters.

militia regiment of two thousand with him.²⁶⁴ Without his support the remaining planters were forced to surrender and the island was placed under the governorship of the Puritan Daniel Searle. For his treason, Modyford was rewarded with a spot on the new governor's council.

Thereafter Modyford continued to climb the island's political ranks despite earning the animosity of many Barbadian planters. Many of his political maneuverings at this point consisted of attempts to ingratiate himself to the new Protectorate. In his first correspondence with Whitehall after defecting, he attempted to convince Cromwell that his alliance to the King was weaker than his allegiance to his nation, and that the Cromwell's government has now "sweetly captivated my mind, and clearly fixed it in a true affection to your service." Now given a place in the new government, he insisted he would do his utmost to "offer advice on how to preserve what has been gained, and to enlarge the English dominions in the West Indies."²⁶⁵

Modyford's 1654 letter to Cromwell on the Western Design is one such example of this advice. His ideas comprised the secondary plan offered within Cromwell's official instructions to general Venables, and while less grandiose than Gage's sweeping Protestant vision it still contains a fair amount of verve. Clearly inspired by the imperial dream initially concocted in Walter Raleigh's *Voyage to Guiana*, Modyford suggests landing at the Orinoco River in South America, befriending the Native Americans there, and proceeding to Cartagena along the coast. "All this coast is full of horses and cattle, the climate healthful, and land fruitful;" he argues, "... whither

²⁶⁴ CSP, I, 371, 373, 375.

²⁶⁵ CSP, I, 373.

in a short time all of the families of the Leeward islands will come, and many thousands from other places without your care or charge.”²⁶⁶

Unlike Gage, Modyford’s letter also illustrates the mind of a veteran Caribbean merchant and planter at work, as most of his ideas deal not with military strategies, but with how to bring newly-conquered lands into a settled and prosperous condition. Like with Defoe’s highways, Modyford stresses the importance of recruiting and compelling manual labor if the project is to be successful. However unlike Defoe, his plans immediately resort to using non-whites as a semi-permanent, coerced foreign work force. He remarks that because the islands of Cuba and Hispaniola are thinly populated, “you will find little more than land and trees, and your business will be only to clear ground, build houses, and make inclosures; a work of great toil, long time, and excessive charge, of which the old planters are sensible.” Meanwhile he insists that near the Orinoco the expedition will find “good townes, well peopled, with a few Spaniards and many Indians, whom they keep in slavery, and who very probably will be faithful to milder masters.” The assistance and/or slavery of these Indians is crucial to Modyford, who argues that relying solely upon English settlers for their colonies “will exhaust our native country,” while incorporating the Indians “will by politic and rational means be as so many hands gained to the commonwealth.” Modyford is not explicit about what role the Indians are to play in the Design— be it slave, servant, or free worker—nor does he elaborate on how to entice the Indians into participating in the Design. Sometimes he suggests forcing them into a form of servitude while elsewhere he envisions an alliance, where “by their assistance more may be done than ever Cortez did in Mexico by the aid of the Tlaxcallans.” He does mention that the area contains “an infinite number of naked

²⁶⁶ Thurloe, *State Papers*, III, 62-3.

Indians of several nations and languages,” and perhaps he imagined interjecting the expedition into the area’s local geopolitics, aligning with some while enslaving common enemies. Regardless, he concludes that the roles to be played by Indians in his version of the project “are of no mean considerations.”²⁶⁷ Such ideas display the mental machinations of a person who played a leading role in shaping Barbados’ new slave society. Unlike the New Englanders involved in the Design, Modyford imagines settlements that are not primarily filled with god-fearing Puritans, but with an English elite commanding large, non-white military and labor forces.

Defoe argues that merchants made the best projectors, and Modyford was far from the only merchant behind the Design. While preparing the army and fleet Cromwell assembled a London commission for provisioning his expedition, a committee containing several of the city’s most prosperous international merchants.²⁶⁸ True projectors, these individuals each had substantial experience in crafting and managing a host of profitable commercial machinations and brought an array of mercantile experiences and motives to bear on the Design. Moreover, these commissioners each invested large personal sums into the expedition, and thus worked to insure that the Design would return quick and substantial profit both to the state and themselves. The most famous of these merchants was Maurice Thompson, an individual who exemplified the seventeenth century’s blend of Puritan enthusiasm and mercantile speculation which fueled the Design. Born in 1604 to an “almost fanatical Puritan family,” in his early teens Thompson was sent to Virginia with his siblings during the colony’s initial tobacco boom.²⁶⁹ By the 1620s he had become a leading Virginian planter and merchant, was semi-successful in establishing a

²⁶⁷ Thurloe, *State Papers*, III, 62-3.

²⁶⁸ A list of these committee members can be found in Thurloe, *State Papers*, III, 203.

²⁶⁹ Andrews, *Colonial Period*, III, 12.

tobacco export monopoly, and was accused more than once of trade engrossment and land speculation.²⁷⁰ In 1626 he expanded into the Caribbean by purchasing a 1000 acre tobacco plantation on St. Kitts, and was one of the first English planters to import African slave labor into region.²⁷¹ By the 1630s Thompson, now in London and a commissioner of tobacco duties, was involved with activities as diverse as protestant resettlement initiatives in Ireland, a scheme for transporting Puritan settlers to New England, privateering raids in the Spanish Caribbean, and financing interloping expeditions against the East India, Royal African, and Adventurers of Canada Companies.²⁷² As a puritan he was a regularly elected vestryman and parish leader in his in his local community, often petitioning for more radical preachers.²⁷³ He was also a major factor for Providence Island and financed a second Puritan expedition for finding gold on the mainland of the Mosquito Coast.²⁷⁴ After Parliament's 1651 victory over the monarchy, Thompson worked closely with Benjamin Worsley in developing plans for bringing Barbados and Virginia into the Commonwealth's fold, negotiating frequently with Cromwell and even traveling with the navy to Virginia to oversee the implementation of Cromwell's plans.²⁷⁵ He and Worsley also worked together as architects of the Commonwealth's 1651

²⁷⁰ CSP I, 151; Richard Sheridan, *Sugar and Slavery: An Economic History of the British West Indies, 1623-1775* (University of the West Indies Press, 2000), 89; Kenneth R. Andrews, *Ships, Money, and Politics: Seafaring and Naval Enterprise in the Reign of Charles I* (Cambridge: Cambridge University Press, 1991), 57; G.W. Hill and W.H. Frere, eds. *Memorials of Stepney Parish: That is to say, Vestry Minutes From 1579 to 1662* (London: Guildford, 1890), 189; Valerie Pearl, "Thomson, Maurice (1604–1676)," *ODNB*, [<http://www.oxforddnb.com/view/article/38061>, accessed 7 Sept 2010].

²⁷¹ Sheridan, *Sugar and Slavery*, 89; Pearl, "Maurice Thompson."

²⁷² CSP, I, 155, 275-6; Andrews, *Colonial Period*, I, 50; Pearl, "Maurice Thomson." Thompson was a major investor in the pirate campaign of Captain William Jackson in 1641, who raided several Spanish ports and even temporarily conquered Jamaica for several weeks. Many of Jackson's exploits become a blueprint for those preparing the Western Design. See Harlow, "Captain William Jackson." Also, despite his interloping activities Thompson later became a legitimate member of the RAC and EAC, and was elected governor of the latter in 1657. See CSP, I, 409; Thurloe, *State Papers*, VII, 757.

²⁷³ Pearl, "Maurice Thomson."

²⁷⁴ CSP, I, 294, 309.

²⁷⁵ CSP, I, 343; Pearl, "Maurice Thomson."

Navigation Act, which banned foreign shipping from colonial commerce.²⁷⁶ Finally in 1655 Cromwell entrusted Thompson with a role in his Western Design. While Thompson no doubt shared the improving and protestant zeal of many others in the project, as an experienced colonial merchant he also undoubtedly saw the plan's potential for establishing several new English colonies within the Spanish Caribbean. Not only did Thompson's position on the council allow him to profit as a war contractor by loaning money and provisions to the state, it put him in an ideal position to profit from the colonial commerce these colonies would in theory soon produce.

A second entrepreneur who played an even greater role in Cromwell's Design was Marten Noell. Born in 1614 as a man of "humble origins," his early career is undocumented.²⁷⁷ In the late 1640s he and his brothers had enough money to purchase substantial lands in Barbados, going into the sugar-making business with some of the island's more established planters including James Drax, William Hilliard, and Thomas Modyford.²⁷⁸ For his part Martin Noell stayed in London, serving as factor to his brothers who ran the Barbadian estates.²⁷⁹ By this time Martin had also become a London Alderman, and made himself wealthy through a project whereby he became a co-farmer of England's salt tax while also managing the major salt works in North and South

²⁷⁶ Andrews, *Ships, Money, and Politics*, 58. The Act was widely unpopular within the colonies and had a questionable effect on England's overall economy, however English factors like Thompson calculated to profit highly from it.

²⁷⁷ S.A.G. Taylor "Edward D'Oyley's Journal, Part II," *Jamaican Historical Review* 11 (1978), 62.

²⁷⁸ There are several partnership contracts between the Noells and other Barbadian planters in the Barbados National Archive. See for example contract between Noell Brothers and Thomas Peed, Recopied Deed Books, RB 3/2, 151-6, Barbados National Archives, Lazaretto, St. Michael (BNA); and also contract between Richard Hilliard and the Noells, RB3/2, 201-2, BNA. See also Russell Menard, *Sweet Negotiations: Sugar, Slavery, and Plantation Agriculture in Early Barbados* (University of Virginia Press, 2006), 52-54.

²⁷⁹ Thurloe, *State Papers*, IV, 651; CSP, I, 408; II, 33. In particular Thomas Noell who quickly ascended the plantocracy ranks and was councilman and chief secretary to the governor by 1653. Like Modyford, Thomas was on the Commonwealth side of the island's political squabbles and earned the distrust of many Royalist planters.

Shields.²⁸⁰ The move angered several officials, prompting one to complain to that “Mr. Nowell’s creatures make most sad work here about the salt, resolving to make a mere monopoly of it. Be assured Sir, that farmers of this nature will bee the ruine of all trades but their owne.”²⁸¹ Despite such complaints Noell remained in “extraordinary favor” with Cromwell, receiving several exemptions from the Protector’s embargo upon Barbados during its political holdout in 1652-3. Thus Noell was allowed to sell goods to this island when many of his competitors could not.²⁸² Like his colleague Thompson, Noell was a devout protestant and eventually became a founding member of Robert Boyle’s Society for the Propagation of the Gospel.²⁸³ Also like Thompson, prior to the Design Noell had been a chief financier of Cromwell’s military campaigns and was involved in schemes for transporting Scottish and Irish war prisoners to the colonies, particularly Barbados, where they were sold to his colleagues as servants.²⁸⁴

Behind these two a host of lesser, although not insignificant merchants worked to benefit from Cromwell’s massive military project. Another of the Design’s commissioners was Sir William Rider, a leading member of the East India Company, a marine insurance professional, and one of the nation’s chief private contractors of naval provisions. He was also a merchant in colonial produce and even possessed one of London’s first sugar refineries.²⁸⁵ Rider was accompanied on the Design’s provisioning committee by Sir Andrew Riccard, another leader of the EAC and also governor of the

²⁸⁰ Thurloe, *State Papers*, III; G. E. Aylmer, “Noell, Sir Martin (bap. 1614, d. 1665),” *ODNB*, [<http://www.oxforddnb.com/view/article/37814>, accessed 7 Sept 2010].

²⁸¹ Thurloe, *State Papers*, VII, 554. Reprinted in C.H. Firth, *The Last Years of the Protectorate* (Longmans, 1909), II, 119.

²⁸² *CSP*, I, 348, 362, 421, 424, 404, 452, 462; Aylmer, “Noell,” *ODNB*.

²⁸³ *CSP*, II, 71-2.

²⁸⁴ *CSP*, I, 421, 423, 441.

²⁸⁵ Thurloe, *State Papers*, II, 20.

Levant Trading Company.²⁸⁶ A third profiteer in the Design was Thomas Povey. Son of a Barbadian trade commissioner and a close friend of Martin Noell, Povey benefited from Noell's patronage and was given several supply contracts from the Design.²⁸⁷ Povey's two brothers also traveled with the expedition, taking up offices in Barbados and Jamaica respectively. Thomas Povey meanwhile became a member of the new Committee of Trade and Plantations, a committee possibly conceived of by himself, and later became a founding member of the Royal Society. In sum, the project of the Design was engineered and financed by a host of individuals with backgrounds in trade, plantations, and imperial development. They were lured by the prospects of being in chief positions to claim new lands and markets, ideally using their political leverage to gain proprietary or other commercial privileges within these new regions. Each thus worked to further their own interests under the Design's umbrella, promoting the God, the State, and themselves in single strokes.

As mentioned before, Defoe called the Tower of Babel "a right project" as it was a plan far too extravagant to ever be properly put into action. Another seventeenth-century author echoed Defoe's claims by stating "I know it is no unusual thing with Projectors, to list up Expectation so high, that she not seldom over-thinks the birth." So it was with the Western Design, which failed heartily in fulfilling its colossal expectations. Things began to unravel when the expedition arrived in Barbados in January, 1655. The army already consisted of over three thousand soldiers at this point—a large force by

²⁸⁶ Timothy Venning, "Riccard, Sir Andrew (1603/4–1672)," *ODNB*, [http://www.oxforddnb.com/view/article/58151, accessed 7 Sept 2010]. Riccard would later become deputy governor of the EAC in 1657, second in command to Maurice Thompson.

²⁸⁷ *CSP*, I, 254; Barbara C. Murison, "Povey, Thomas (b. 1613/14, d. in or before 1705)," *ODNB*, [http://www.oxforddnb.com/view/article/22640, accessed 7 Sept 2010]; Robert M. Bliss, *Revolution and Empire: English Politics and the American Colonies in the Seventeenth Century* (Manchester University Press, 1993), 67.

West Indian standards—yet the scope of the Design and Cromwell’s instructions required the conscription of an equal number of Barbadians. The situation upset the Barbarian plantocracy for a variety of reasons. First, the army’s sudden arrival and its accompanying orders for Barbadians to billet troops for several weeks strained the island’s provisions. Second, it had been only three years since a previous Cromwellian fleet had invited itself into Barbados, that time waging a quasi-war against the island’s Royalist leaders and forcing Barbadians to submit to the Commonwealth and its new Navigation Acts. Barbadians were still resentful of the event, and it did not help that this time when the fleet arrived they promptly seized fourteen interloping Dutch ships in Carlisle Bay.²⁸⁸ However the greatest cause of resentment was that most elite Barbadian planters perceived the ends of the Design to be contrary to their own interests. They specifically feared opening new Caribbean lands to sugar production, which they believed would lower prices in England. Barbados was also beginning to suffer from deforestation and soil exhaustion by this time, and imagining their estates in competition with fresh settlements added to the planters’ anxiety.²⁸⁹ The monopolistic ideas of the large merchants behind the Design fueled these Barbadian sentiments, and it is telling that the only big planters who endorsed Cromwell’s project were those few who were well connected with Whitehall and stood to personally receive a share of the soon-to-be-acquired lands and commercial patents.²⁹⁰

²⁸⁸ Thurloe, *State Papers*, III, 249; IV, 28. During this time Commander Winslow also complained about the court system being corrupt in Barbados, which was ejecting all lawsuits from English merchants and ruling in favor of the debtor planter class. He even complained that Governor Searle, who was appointed by Cromwell only two years prior, had become corrupted by the plantocracy and was actively playing both State and local interests against each other.

²⁸⁹ See Modyford’s analysis of this in Thurloe, *State Papers*, III, 566.

²⁹⁰ This division also played into previous Royalist/Roundhead divisions, and many of the older planters scorned those few with high governmental favor, in particular Modyford and Noell, who were seen as selling out planter’s interests to that of the larger empire. See for example Thurloe, *State Papers*, III, 157.

A second area where local and imperial interests diverged was in the matter of population. England's most densely settled colony, Barbados was filled with a class of poor freeholders, ex-servants with little opportunity for land ownership or upward mobility. While London imperialists favored moving these peoples to fresh lands that could be further developed and exploited, Barbadian planters saw the move as diluting their own pool of cheap wage-earners. The situation demonstrates the key role of labor within colonial schemes, as here we see competing elites wrangle for the power to coerce workers into doing their bidding. Furthermore elite planters saw freeholders as a bulwark against insurrections from the island's servant class and thus crucial to their security. This sentiment was heightened by the fact that Barbados was rapidly transforming into a black slave society during this time, and maintaining a minimum number of white freeholders was becoming central to the colony's security policies.

“Some of the planters being of malignant spirits (as indeed most of them are) signifie their folleys in venting their calumnious words against not only the designe, but the powers by which they come.”²⁹¹ For a variety of reasons, then, the planters did much to obstruct the military effort. General Venables initially asked the Barbados Assembly to help raise the necessary Design forces, however they refused to comply and the army was eventually forced to conscript 4,000 freemen on their own.²⁹² The Assembly also embezzled and hid a shipment of 1,500 muskets sent by Martin Noell to Barbados for the Design's use, and the army was then forced to construct half-pikes out of the island's few remaining tree stands.²⁹³ Colonel Modyford, then speaker of the Assembly, convinced the island to muster a regiment of sixty horsemen, however most of the horses came from

²⁹¹ J. Birkenhead to Secretary Thurloe. Thurloe, *State Papers*, III, 157.

²⁹² Commander Winslow to Thurloe. Thurloe, *State Papers*, III, 251.

²⁹³ *Ibid*, 251..; Venables, *Narrative*, 8-9.

the Noells' lands.²⁹⁴ According to Commander Winslow the act also caused many in the Assembly to "slew out against col. Muddiford, as the cause of all this, and stick not to call him traitor to the island." Winslow added that "the very truth of it is, no man hath more closely adheared to us, and so much furthered our designe, as he; nor is any able, he beinge master of more reason than half the island, if not all."²⁹⁵

Despite these delays the army eventually accomplished its recruiting and a force of over 8,000 left Barbados in April, 1655. At this point the commanders decided to follow Gage's plan and sailed for Hispaniola instead of Guiana. The details of the Hispaniola invasion have been recounted in many works, so only the minimum outline is needed here.²⁹⁶ In short, after their arrival there was an argument between General Venables and Admiral Penn on where to land the troops, and the army was eventually dispatched almost 40 miles down the coast from the main Spanish settlement. After two days of marching through tropical ravines without food or water they reached the island's small Spanish garrison. However, they were so weakened from the march that many were literally collapsing from exhaustion and dehydration at the start of the battle. A small Spanish force then surprised the demoralized English army, "whereby 300 men drove 9000 to retreat, which took so deep an impression in them, that no exhortation could make them approach the place again."²⁹⁷ Over a thousand English perished in the brief skirmish, after which the commanders decided to retreat to Jamaica.

²⁹⁴ *CSP*, I, 428.

²⁹⁵ Commander Winslow to Thurloe. Thurloe, *State Papers*, III, 250. After the fleet's departure Modyford was removed from his position of Speaker.

²⁹⁶ The best primary accounts are Venables, *Narrative*; and Thurloe, *State Papers*, III, 504-11; while Taylor, *Western Design* gives the most comprehensive secondary account.

²⁹⁷ Letter from Col. Modyford, June 20, 1655. Thurloe, *State Papers*, III, 565.

Jamaica had been a Spanish dominion for over a hundred years prior to this point, yet the Spanish had done little during that time to settle or promote the island. The least populated of the Greater Antilles' chain, a 1644 Spanish account listed its population at only 400 Spaniards and 2000 slaves.²⁹⁸ While there were a few substantial plantations of sugar, cocoa, or tobacco, the colonists' primary livelihood was in hides from the island's flocks of semi-domesticated cattle.²⁹⁹ With Jamaica's low population and poor colonial output the island had not been a frequent topic of English colonial speculations, and was not included as a target in Cromwell's instructions. However its undeveloped state also meant it was relatively defenseless, and thus the English commanders decided to remove their battered forces there in an attempt to regain their strength.³⁰⁰ On May 10th, 1655 General Venables arrived in his flagship—named the *Martin*—and the army entered the capital town of St. Jago de la Vega the following day.³⁰¹ The outnumbered Spanish fled into the mountains rather than face the invading force. The next day a Spanish ambassador parleyed with the English, but when the English delivered their severe surrender terms the Spanish refused to submit and remained in the mountains, wherefrom they launched partisan raids for the next five years. The English commanders now found themselves at a crossroads: after gathering their strength, should they leave Jamaica and attempt to conquer new Spanish lands, or stay on the island to enact the settlement stages of the Design? Cromwell's instructions,

²⁹⁸ J.L. Pieterz, "Spanish Documents Relating to Jamaica," *JHR* 2,2 (1952), 107. The English Commanders in Jamaica assumed there to be between one and two thousand Spaniards on the island in fall, 1655, including slaves.

²⁹⁹ General Venables counted seven sugar works on the island, while another English account mentioned some small plantations that were not geared for international export. See Venables, *Narrative*, 138, 168.

³⁰⁰ In addition to the demoralizing loss, the army was also poorly trained, being mostly Caribbean freemen. Furthermore they were severely low on food and weapons, and a plague had begun to circulate through the force. Again, the best narratives of Jamaica's conquering are found in *Narrative*; and Thurloe, *State Papers*, III, 504-11.

³⁰¹ On the ship the *Martin* see Taylor, D,Oyley's Journal, II, 75, 112.

high on aspirations and low on details, were vague what to do in such a situation. After resting two weeks the officers held a conference on the issue, decided that after Hispaniola the army was “fit for nothing,” and thus to avoid any new attacks.³⁰²

Thus ended the larger project that was the Western Design. In subsequent years Cromwell, Noell, and others at Whitehall would repeatedly exhort the Jamaican commanders to gather their men and continue their plan against the Spanish.³⁰³ However repeated setbacks on Jamaica including food shortages, low morale, and plague meant the army was often barely up to the task of garrisoning its own island, much less traveling abroad to conquer new territories. Moreover despite Puritan visions of reinforcing Jamaica with immigrating pilgrims, it was almost three years before Jamaica began to net a positive population growth via new settlers.³⁰⁴ The Design might have continued at this point were it not for Cromwell’s sudden death in 1658 which threw the entire English empire into two years of political paralysis. Finally after the Restoration, Charles II made peace with Spain, disbanded the Jamaican garrison and officially cancelled any further invasions. While this meant the end of a dream for a Puritan empire, most of the Design’s remaining goals and strategies continued to operate in Jamaica, which was large enough on its own to entertain a host of projecting initiatives.

III: Jamaica

Upon arrival, the army immediately began its plans for settling the island. Before going further, it is helpful to give a basic description of Jamaica’s geographic features. While Jamaica is a large island relative to Barbados or St. Kitts, much of it is

³⁰² Admiral Penn to Thurloe. Thurloe, *State Papers*, IV, 29.

³⁰³ See for example Venables to Noell in *Venables*, Narrative, 49; Cromwell to Commanders in America. Thurloe, *State Papers*, V, 129; Sedgewicke to Thurloe. Thurloe, *State Papers*, IV, 454.

³⁰⁴ Growth including immigration. Jamaica would not have a self-sustaining population until the nineteenth century.

mountainous and unfit for most kinds of planting.³⁰⁵ Thus, during this period most of Jamaica's agricultural settlements were confined to a few select flat areas on the island's south side (see fig. 3). The first of these is an area of dry savanna between the Blue Mountains and Jamaica's southern harbor, called Ligunea by the Spanish and renamed St. Andrew's parish by the English.³⁰⁶ The second was a fertile area west of Ligunea in the Rio Cobre river valley, where the Spanish built their capital city of St. Jago de la Vega. The town was renamed Spanishtown by the English and the area became St. Catherine's parish. The third and fourth areas were a series of savannas and river valleys west and north of Spanishtown, which would become the St. George and Clarendon parishes, respectively. A final area was a small bay on the southeast of the island called Morant by both the Spanish and English. It's important to note that these areas only comprise about 10% of Jamaica's total land size, the rest of the island being rugged and difficult to navigate.³⁰⁷

The geographic situation being thus, the English army divided the available southern flat land into large "regimental plots." Each regimental commander was given proprietary control over their area, was charged with making his men plant provisions, and thus the pattern of large plantations with forced labor began only two weeks after arrival.³⁰⁸ It should be noted that not every officer was happy with this arrangement and that the army was highly factionalized over the decision to stay and plant rather than to continue fighting. Many arrived with expectations of a quick profit through pillaging

³⁰⁵ Coffee is a plant which grows well on mountain slopes, and planters would later take advantage of Jamaica's terrain to create a successful coffee industry but not until the early nineteenth century.

³⁰⁶ Jamaica's capital city of Kingston, constructed in the early eighteenth century, is currently located upon this plain.

³⁰⁷ There are other valleys and plains further west and especially on Jamaica's northern coast, however these areas were effectively controlled by the Spanish until 1660.

³⁰⁸ Admiral Penn's Account of the West Indies. Thurloe, *State Papers*, IV, 30.

Spanish towns and saw planting as a tedious exercise that was beneath their station as soldiers. This anti-settlement faction was opposed by a smaller though more influential officer group, individuals with London mercantile connections who not only supported planting but pursued the Design's settlement phase with a projecting enthusiasm that mimicked the London merchants. These officers often had backgrounds in planting and colonial development, and used their military positions to claim leadership of these large regimental plantations. Eventually they would transform these military provisioning units into civilian cash-crop estates, forming the nucleus of Jamaica's nascent plantocracy.

One example from this latter group was Henry Archibold. Originally a captain stationed in the Rio Cobre valley, Archibold quickly ascended to Lieutenant-Colonel and established "one of the best plantations in the island" within two years after his arrival.³⁰⁹ Military necessities then forced him to move his regiment to the dryer Ligunea area, where he created the famous Constant Spring plantation and became the Parish's largest landowner by 1670.³¹⁰ Archibold was also secretary of Jamaica's first civilian government in 1661, father-in-law to Lieutenant Governor Henry Morgan, and the first of several generations of influential Jamaican elites.³¹¹ Another such planter-officer was Henry Hilliard, a chief surgeon in the English force.³¹² Connected to the eminent Hilliard family in Barbados, Henry used the system of military grants to become one of the

³⁰⁹ Commander Brayne to Thurloe. Thurloe, *State Papers*, VI, 235.

³¹⁰ Report and Census by Sir Thomas Modyford to the Lord Arlington, September 23, 1670. Reprinted in Noël Livingston, *Sketch Pedigrees of some of the Settlers of Early Jamaica* (Baltimore: Clearfield Company, 1992), 115.

³¹¹ Calendar of State Papers, II, 164; Frank Cundall, *Historic Jamaica* (Kingston, Institute of Jamaica, 1915), 216-7.

³¹² CSP, I, 466; Taylor, "D'Oyley's Journal," II, 110.

leading land owners in Clarendon parish.³¹³ A third leading entrepreneur was Francis Barrington, a Puritan planter in high favor with Cromwell and a friend of New England's Roger Williams.³¹⁴ More important, he was the nephew of a Parliamentarian and cousin to Sir John Barrington, a member of the Protector's Bedchamber.³¹⁵ Like Archibold, Barrington's regiment became one of the most prolific planting units on the island and by 1657 his lands were producing not only provisions but tobacco and sugarcane for export.

However no early officer within the Design embodied its projecting spirit more than Colonel Richard Holdip. Richard was the brother of James Holdip, an elite Barbadian planter who will be dealt with in chapter four. James was initially sent to Barbados in 1629 as a tax farmer for a cadre of London merchants with manorial estates on the island. Through this job he managed to embezzle thousands of acres of Barbados' best farmland from his London employers. He then sold these properties during the Barbadian land boom of the 1640s, acquiring a small colonial fortune. James was also one of the first Barbadians to cultivate sugar, was recognized by 1630 as one of the most able planters on the island, and was involved in several local partnerships whereby he sold sugar-making tools and technology to his neighbors, playing a key role in expanding the sugar-slave complex within early Barbadian history.³¹⁶ Of a Puritan background, Holdip seemed to be in high favor with Cromwell's government, possibly through his friendships with the Noell family. James eventually returned to England and bequeathed

³¹³ 1670 Census. Livingston, *Sketch Pedigrees*, 128.

³¹⁴ Andrews, *Colonial Period*, III, 9.

³¹⁵ G.E. Alymer, *The State's Servants: The Civil Service of the English Republic, 1649-1660* (Boston: Routledge, 1973), 389; Thurloe, *State Papers*, III, 391. The position of member of the Bedchamber was an advisory position to the English sovereign, who appointed these people at will. It was a coveted position as the holders had frequent access to the sovereign, and would often be paid as lobbyists by others outside the court to address the sovereign on their behalf.

³¹⁶ See Chapter 4, Section 3.

his estates to his brother Richard who likewise sought to expand the family holdings through a variety schemes.

In 1652 Richard was given a commission from Cromwell to found a new colony at Surinam and was named governor of this new settlement.³¹⁷ For reasons that are unclear, Richard then “deserted” his Surinam post and returned to England in 1654, whereby he was recruited by Cromwell as a Lieutenant-Colonel in his Western Design.³¹⁸ Once in the expedition Holdip ascended the army’s ranks through maneuvers which quickly earned his colleagues’ ire. While the Design was gathering troops in Barbados, Holdip and two other officers were sent to Nevis and St. Kitts conduct a similar recruiting drive. Colonel Butler, who accompanied Holdip to these islands, later wrote to Cromwell complaining of Holdip’s behavior there. First, Holdip had arrived to these islands before Butler, and recruited almost 1200 men on his own, far more than he was ordered to gather and “more men than we had victuals for, besides the great want of arms.³¹⁹” Holdip recruited so many because he believed that if enough soldiers were added to the force, General Venables would need to form a sixth regiment and Holdip would be promoted and placed at its head. “Such force hath ambition,” claimed Butler, “that noe publique good is valleded, when a man prefers his on interest before the commonwealth.”³²⁰ Holdip also cheated a merchant out of his slave cargo while at St. Kitts. The merchant had been cleared by both Butler and the governor that his cargo was in compliance with

³¹⁷ *CSP*, I, 376, 379, 383.

³¹⁸ Governor Searle of Barbados to Cromwell. Thurloe, *State Papers*, IV, 157. There seemed to be some confusion in Holdip’s appointment, as another settlement was simultaneously being planned and enacted in Surinam by the Puritan planter Anthony Rose, a veteran of Captain Jackson’s expedition and another in favor with Cromwell. A petition was filed to the State Council by Rous’ faction that Holdip be removed from the governor’s post in late 1652. Holdip may have left due to orders from the council regarding this, or he simply may have left in order to pursue more lucrative ventures elsewhere. See *CSP* I, 394.

³¹⁹ Comissioner Butler to Cromwell. Thurloe, *State Papers*, III, 754.

³²⁰ *Ibid*, III, 754.

the island's navigation laws, but while these two men were away, "Holdept, the enemye of all good, in my absence tells the commissioners some story or other, soe that the poore man's estate at present remains sequestered and himself undone."³²¹ Holdip planned to later sell the confiscated cargo for his own profit.

Holdip's machinations were successful and he was put in charge of his own regiment. Despite earning the disdain of the other officers Holdip was continually favored by General Venables and promoted to the general's council in Jamaica. This preference was likely because Holdip had been personally recommended for the expedition by London merchants such as Martin Noell who, as a fellow Barbadian plantocrat, had previous connections with Holdip.³²² It could also have been that once the army committed to planting, Holdip's background made him the most experienced amongst all the officers. In any case, others were upset with the general's preference and decisions regarding Holdip. Francis Barrington complained of Holdip as one "who hath been a very ill member to this army," while Butler wrote that he had never seen "suc basse covitouse Matchavells."³²³

Despite these sentiments, Holdip proved briefly to be an excellent Jamaican planter. His regiment settled in Ligunea, where he took over one of the few Spanish sugar works on the island.³²⁴ This stationing was probably not a coincidence, and it seemed that this former Barbadian had ambitions of establishing a large sugar-making operation as quickly as possible. He became the best officer at managing his area's stocks of wild cattle, and was highly efficient at getting his troops to plant, being called

³²¹ *Ibid.*, 754.

³²² Andrew Richard to Cromwell. Thurloe, *State Papers*, II, 543.

³²³ Thurloe, *State Papers*, III, 647, 755.

³²⁴ Holdip's lands were later taken over by Samuel Barry. On Barry's sugar mill see Hans Sloane, *A Voyage to the Islands of Madeira ...*, (1707), I, lxxiii.

the “best and most forward planter” within a year after the English arrival.³²⁵ All of this early success came at a price however: in spring, 1656 he and some other commanders were accused of forcing their soldiers to work as unpaid servants. The event caused severe unrest amongst the soldiers and to pacify the situation Holdip, the most egregious offender, was stripped of his command and sent back to England. However despite this, he still managed to maintain his favor in London, and Cromwell declared him innocent of charges and ordered his return to Jamaica in 1657. These plans were scuttled when General Brayne, then Jamaica’s commander-in-chief, wrote to the Cromwell stating that Holdip’s return “will breed great disturbances here, he is soe extreemly hated for his crueltie and oppression, which thay say he hath executed in the indies. Mr. Martin Noell can informe you more fully in the businesse, to whom I have written more particularly.”³²⁶ Upon such advice Holdip was instead reassigned to the Levant, ending his service in the West Indies.³²⁷

As a colonial project, Jamaica’s success depended upon the proper managing of its available labor and land. This was keenly understood by these commanding planter-officers and control over these two items was a chief part of their settlement strategies. In regards to labor they took repeated steps to procure a steady supply of workers who could be forced to work at a minimum expense. In the Design’s earliest stages this meant submitting enlisted soldiers to coercive work routines. The several established regimental plots were large provision-growing farms, placed near water sources and

³²⁵ On cattle see Venables, *Narrative*, 40. See also William Claypool, "Land Settlement and Agricultural Development in the Ligunea Plain," Unpublished MA Thesis. (Mona, Jamaica: University of the West Indies, 1970); on Holdip’s standing as a good planter, see Admiral Goodson to Thurloe. Thurloe, *State Papers*, V, 152. See also the preface by C.H. Firth in Venables, *Narrative*, xxix.

³²⁶ Commander Brayne to Thurloe. Thurloe, *State Papers*, VI, 391.

³²⁷ Thurloe, *State Papers*, VII, 83, 439. He later returned to England where he died in 1664. At his death he still owned several Barbadian sugar estates. See Will of Richard Holdip, RB 6/15, 31. BNA. The estate was valued at 20,000 pounds in 1667, see *CSP*, II, 442.

dispersed throughout the island's southern lowlands to defend against Spanish guerrilla attacks. Soldiers were required to work four hours per day on their respective plots.³²⁸ This type of conscription, alone enough to deflate soldier morale, was made worse when officers such as Holdip attempted to illegally transform them into unpaid servants. By January of 1656 the non-planting faction was actively petitioning to be sent home, and by spring their resentment simmered near mutiny.³²⁹ During this time an officer of this anti-planting faction was executed for sedition, and the charges against Holdip and others were likely tied to this event.³³⁰ The soldiers accused both Holdip and Henry Archibold of forced labor, although the latter was acquitted. John Barrington was suspected of similar behavior however public charges were never levied.³³¹ It is telling that the three officers associated with enforcing servitude upon the soldiers were also the three praised with initially developing the best plantations, and that at least two of these men had previous planting experience. Furthermore, these three men were commended earlier by their superiors for their industriousness in planting, and thus it is likely that Holdip's discharge was not entirely a condemnation of his actions, but rather had more to do with his being universally disliked amongst the other officers.

The early machinations of these officers to secure large groups of forced labor were paralleled by a series of maneuvers by them for claiming personal ownership of large blocks of Jamaica's best available farmland. While the above-described regimental plots were initially used to feed the army, these officers also immediately speculated on

³²⁸ Taylor, *Western Design*, 127.

³²⁹ Taylor, *Western Design*, 120-2.; Taylor "Edward D'Oyley's Journal, I," 41.

³³⁰ William Stayno to Admiral Goodson. Thurloe, *State Papers*, IV, 127-8.; General D'Oyley to Thurloe. *Ibid.*, IV, 139; Taylor, *Western Design*, 120-1.

³³¹ Barrington may have been spared because of his close connections to the Protector. See Taylor, *Western Design*, 120.

their financial potential and attempted to assert personal ownership over them. Three weeks after their arrival a portion of the fleet returned to England, accompanied by a few officers including Venables and Butler. Before leaving, the departing officers had regimental plots assigned in their name to be worked in their absence, and the war council passed a resolution stating that any officer who did not return within twelve months would become ineligible “of receiving benefit by any plantation, being his proportion as a member of the army.”³³² In a sense, such a document effectively made Venables and Butler Jamaica’s first English absentee landlords, as they expected to derive a share of any potential profit their regimental lands might produce in their absence. One month later in July, the remaining Jamaican officers sent a petition to Cromwell, requesting amongst other things that he ratify the regimental patent claims which they had drafted.³³³ The claims sparked a debate amongst these officers over whether this process gave title to the regiment collectively or solely to its commander, with the pro-planter officers urging the latter position and initially dominating the discussion.³³⁴ These actions were compounded in October, 1655, when Cromwell issued a proclamation allotting 20 free acres to any person willing to migrate to Jamaica. The

³³² Thurloe, *State Papers*, III, 523. Such a resolution would not have been necessary if these officers envisioned these plots as purely provision grounds for collective domestic use. For an example of how these people retained title to their regimental plots for up to a year after their death or departure, see Taylor “D’Oyley’s Journal, I,” 36-39.

³³³ Officer’s Petition to Cromwell. Thurloe, *State Papers*, III, 661.

³³⁴ The July petition requested that the Protector ratify the “the allotment and distribution of land to the respective regiments of the army already approved of by his highnesse commissioners.” This ratification process for land patents was a common colonial procedure during this time. These same officers did not formally declare that enlisted soldiers were eligible for land ownership until almost a year later, so presumably this petition spoke to ownership of the military plots by regimental leaders. See also Goodson’s comment below and W.A. Claypool, “The Settlement of the Liguena Plain Between 1655 and 1673 by W.A. Claypool, *Jamaican Historical Review* 10 (1973), 9.

Design's officers responded to this by declaring that enlisted soldiers were ineligible to receive their own plots, thereby confiscating their claims.³³⁵

In spring, 1656 an English Admiral visited Jamaica and wrote home about the island's mutiny troubles, arguing they arose because the officers would not consent to any document which would grant "property in lands to the private souldiers; but in short resolved, that if they must plant, they had plant only as servants." Shortly after the attacks against Holdip, Jamaica's commander-in-chief died of fever, further destabilizing the political situation.³³⁶ With only a tenuous hold on command the new general Edward D'Oyley acquiesced to the mutinous faction, acknowledging that they are to be treated as paid freemen and are eligible for their own 20-acre plots. This was agreed to on the condition that they continue with the mandatory four-hour labor shifts on the regimental estates.³³⁷ Even then D'Oyley's decision was contested by other men on his war council.³³⁸ Thereafter the regimental plots were divided into private sections based upon rank, however the vast majority of land was nevertheless allocated to the commanders. Jamaica's earliest census of 1670 lists many of these early regimental commanders as now being the island's largest landowners, and presumably these early grants are what formed the core of these extensive holdings.³³⁹

Beyond coercing the soldiers into servitude, the Jamaican planter-officers attempted to meet their labor needs through legally-acquired servants from Britain. In the same July petition where these officers asked Cromwell to ratify their land claims, they

³³⁵ Claypool, "Land Settlement," 35. Commander Sedgewicke and Admiral Goodkin commanded the field officers to return this land to the soldiers in January, 1655, however the commands were not obeyed. See Sedgewicke and Goodson to the Officers in Jamaica. Thurloe, *State Papers*, IV, 390.

³³⁶ See D'Oyley to Cromwell and Thurloe for the political crisis' particulars. Thurloe, *State Papers*, V, 138-9.

³³⁷ Claypool, "Settlement of Liguena," 9.

³³⁸ Taylor "D'Oyley's Journal, I," 84, 94.

³³⁹ Claypool "Land Settlement," 35.

also requested “That servants from Scotland or elsewhere may be sent to assist us in planting.”³⁴⁰ They recommended these servants be sent for officers’ personal use, and a servant’s value could be deducted from an officer’s arrears. News of the Design’s landing in Jamaica reached London in August, 1655, and the State Council quickly formed a “Committee for the business of Jamaica,” which began deliberating on how best to facilitate the island’s development.³⁴¹ The merchants on this committee, many of whom were initially on the Design’s provision committee, gladly obliged this request and within a week recommended that one thousand Irish “girls and youths” be transported to the island as servants.³⁴² This batch was only the beginning of many such shipments. Indeed, transporting prisoners from the Scottish and Irish campaigns was an established practice amongst the English government by this time, and large colonial merchants such as Martin Noell had by already accrued considerable experience in profiting through the transportation and sale of captives to other English colonies.³⁴³ This type of forced labor also extended to English vagrants and convicts, as can be seen in a 1656 minute which referred the Committee of Jamaica to an order “concerning the apprehending of lewd and dangerous persons, rogues, vagrants, and other idle persons, who have no way of livelihood, and refuse to work.” The order recommended “treating with merchants and others for transporting them to the English plantations in America.”³⁴⁴ One official in England went so far as to recommend that the best way to gather up “sturdy idle persons”

³⁴⁰ Officer’s Petition to Cromwell. Thurloe, *State Papers*, III, 661.

³⁴¹ *CSP* I, 428.

³⁴² *CSP* I, 430-1. This plan was also endorsed by Cromwell’s son Henry, now commander of English forces in Ireland. Henry even suggested doubling this amount “we can well spare them, they would be of use to you; and who knows, but that it may be a means to make them English-men, I meane rather, Christians.” Henry Cromwell to the Protector. Thurloe, *State Papers*, IV, 40. See also *Ibid*, IV, 87-8.

³⁴³ On Noell selling prisoners, see Thurloe, *State Papers*, III, 453; *CSP*, I, 421, 423, 427. For other examples of indenturing prisoners see Thurloe, *State Papers*, III, 488, 555; IV, 39; *CSP* I, 360, 363, 419, 432-3, 441-5.447-8

³⁴⁴ *CSP*, I, 447.

for planting in Jamaica would be “to have a general search all over this county in one night, to have some certaine place appointed, to which they may be sent next day; and that some persons may be there ready from the state to receive them.” He added that the best place for this would be a sea town, so that the conscripts could be shipped away as quickly as possible, and also advocated bribing the local judges so that they could avoid any legal complications.³⁴⁵

The officers in Jamaica also altered the island’s penal code to reflect this insatiable demand for servants. After spring, 1656, when they were no longer able to force their soldiers into mass servitude, they erected a variety of criminal codes for promoting servant labor. An early law made in February, 1656 allocated the death penalty for anyone caught killing or eating any of the island’s stock of semi-domesticated horses. In October, one week after commander D’Oyley formerly recognized the soldiers’ rights to their own land, the punishment for horse-killing was changed to three years servitude.³⁴⁶ Servitude sentences were also given out for more minor offences, such as when a member of D’Oyley’s regiment was caught stealing five shillings and a pair of shoes from a fellow soldier. He was indentured for two months upon D’Oyley’s private estate.³⁴⁷

Finally the planners of the Design looked to migrating settlers as the solution to Jamaica’s labor shortage. After hearing of Jamaica’s capture Cromwell issued a proclamation that same month, encouraging Englishmen to settle and plant on the island. This initial proclamation clearly favored large merchants and planters over small families, as it was addressed to “divers persons, merchants, and others, heretofore

³⁴⁵ Colonel Morley to Thurloe. Thurloe, *State Papers*, IV, 549.

³⁴⁶ Taylor “D’Oyley’s Journal, I,” 47, 100.

³⁴⁷ Taylor “D’Oyley’s Journal, II,” 112.

conversant in plantations and trade of the like nature, [who] are desirous to undertake and proceed upon plantations and settlements upon that island.”³⁴⁸ Furthermore the only significant settlement incentive given in this initial proclamation was that any goods produced in Jamaica by new planters could be shipped duty-free for a period of seven years, something that would only benefit those importing or exporting to Jamaica in large quantities. Two months later he issued a second proclamation, this one allotting 20 acres for each person who comes to Jamaica to plant. This provision also favored large planters and merchants, as servants counted as people under the provision and thus a man who imported 10 servants could claim 200 acres of Jamaican land.³⁴⁹ This servant clause is probably a reason why the Jamaican officers, who were actively perusing servants at this time and stood to enlarge their own holdings by importing workers, attempted to prevent soldiers from claiming any of Jamaica’s best land under the 20 acre-per-head rule.³⁵⁰

While the Jamaican officers understood that settlers were crucial to the future success of the colony, the primary impetus behind encouraging immigrants came from the government and merchants in London. Unlike the military, these merchants stood to profit directly from importing new settlers, first through transportation charges and later through a burgeoning colonial population from whom they could buy colonial produce and to whom they could sell tools and textiles. Most important, Cromwell and the other Puritans on his council maintained a belief that an important facet of their project was to spread the Puritan religion, and to that end Puritans were especially targeted in their colonial migration initiatives. In fall, 1655 the Protector sent Admiral Gookin to New

³⁴⁸ Reprinted in Edward Long, *History of Jamaica (1774)*, I, 213.

³⁴⁹ This was a practice already established in Virginia in the 1620s. See chapter 3, 44.

³⁵⁰ Claypool, “Land Settlement,” 143.

England with a proclamation offering free transportation to those who wished to migrate to Jamaica. Cromwell was especially interested in New Englanders because he believed that Puritans “who know the Lord, and walk in his fear,” would “Enlighten” Jamaica with their presence, “a chief end of undertaking the design.”³⁵¹ While immigration promised personal benefits to London’s mercantile contingent of the Jamaican project, it was often contrary to the goals of those planter-officers in charge in Jamaica. Specifically, the army had by this point claimed large tracts of prime but uncultivated farmland, was reluctant to concede their claims to incoming settlers, and obstructed the implementation of Cromwell’s proclamation. Cromwell received complaints over the issue, prompting him to release a third proclamation the following March, specifically forcing the army to accede the uncultivated lands.³⁵² Even after this third proclamation the army found ways around to obstruct the decree in some cases.³⁵³

Uncooperative English soldiers were only one of several obstacles initially encountered by the projectors attempting to settle Jamaica. A more critical problem was lack of food. Prior to their landing in Jamaica officers like Holdip had been eager to recruit as large a force as possible, and provisioning a force of almost seven thousand men on an uncultivated island now proved a serious challenge. The army was thus highly dependent on provisions from outside Jamaica. After landing general Venables immediately dispatched ships to New England to purchase provisions, starting Jamaica’s long dependence upon the northern colonies for food during the colonial period.³⁵⁴ Like

³⁵¹ Proclamation from Cromwell to be read by Daniel Gookn to the People of New England. MS 1749, National Library of Jamaica (NLJ), Kingston, Jamaica. See also *CSP I*, 429.

³⁵² On the complaints see Commissioner Sedwicke to Cromwell. Thurloe, *State Papers*, IV, 154. For the second proclamation see Long, *History*, I, 215.

³⁵³ See for example their response to Cromwell’s Decree in Taylor “D’Oyley’s Journal, I,” 98.

³⁵⁴ Thurloe, *State Papers*, IV, 29; Venables, *Narrative*, 138; DJ1, 57; S.A.G. Taylor “Edward D’Oyley’s Journal, Part I,” *Jamaican Historical Review* 12 (1980), 57.

with servants, English merchants were happy to profit from selling food and supplies. Martin Noell sent several shiploads of varying provisions to Jamaica during this time, including food, brandy, clothing, shoes, tools, weapons, and in one case 2,000 bibles for the use of the soldiers.³⁵⁵ Within Jamaica, the only immediate and abundant source of food was the island's herds of semi-wild cattle, and control over them became a critical matter. Factional fighting within the regiments prevented a cohesive policy for this, and cows were often killed indiscriminately. The problem was exacerbated by the Spanish partisans who rustled several herds away to the island's northwest side. Within a year, commander Sedgwick wrote to Cromwell that over 20,000 cattle had been slaughtered, almost all of their stock.³⁵⁶ The mismanagement of the herds was symptomatic of a larger problem whereby dissatisfied soldiers actively worked to sabotage Jamaica's development. Even after the commanders allowed them their own land grants, the anti-planting faction refused to work and remained "very adverse to plantation, nay though they are convinced of an absolute necessity."³⁵⁷ This resistance to planting magnified the food shortage and the same individuals made matters worse by destroying and embezzling provisions whenever possible, in the hope that by exhausting the food stocks they could force the entire army to return to England.

By far, the worst impediment to the Jamaican project was plague. Soldiers began rapidly dying after the Hispaniola affair, and sickness was likely one of the reasons the army disembarked at nearby Jamaica. Three weeks after arrival, General Venables estimated that two thousand were sick.³⁵⁸ Within five months over half the force was

³⁵⁵ General Venables to Martin Noell. Venables, *Narrative*, 50; CSP1, 432, 443, 462-3. MS 1003, NLJ. .

³⁵⁶ Sedgwick to Cromwell, Thurloe, *State Papers*, IV, 153.

³⁵⁷ See for example D'Oyley to Thurloe. Thurloe, *State Papers*, IV, 602-3.

³⁵⁸ Venables to Thurloe. Thurloe, *State Papers*, III, 545.

dead. “Soldiers die daily; I believe 140 every week. . . . It is strange to see young lusty men, in appearance well, and in three or four days in the grave, snatch’d away in a moment with fevers agues, fluxes and dropsies, a confluence of many diseases.”³⁵⁹ The plague inhibited planting initiatives by debilitating most of the soldiers, and certainly strengthened the anti-planting faction’s resolve to sabotage planting efforts so as to escape the island as soon as possible. It also severely hampered the immigration plans of Cromwell and his councils, especially as news of the calamity began to circulate in other English colonies. Admiral Gookin, charged specifically by Cromwell to escort New Englanders to Jamaica, stayed in Massachusetts several months attempting to encourage immigration without success. During his stay in New England many letters arrived there from the Indies, “signifieing the sore afflicting hand of God in the mortalitie of the English upon the Island.” These letters discouraged even “the most and best persons, who otherwise would have ingaged to move.”³⁶⁰ Finally, even those few that did travel to Jamaica quickly fled the island’s desperate situation. Sedgewicke concisely explained the problem:

“As for planters we have not above one family settled . . . neither do I expect any from our English colonies till God give us health amongst us. Here hath come down to us from many of the windward islands divers people, with intentions of sitting down with us, but at their coming hither, either fall sick and die, or are so affrighted and dismayed, as that although to their much impoverishing, yet will not be persuaded to stay with us. Many women, that come down to their husbands, finding them to be dead, have sold themselves for servants to be gone upon other plantations rather than abide with us, though we have offered them many encouragements to remain here.”³⁶¹

The only significant immigration during this time was a group of about 1600 colonists from Nevis. The move was organized by the Committee for Jamaica in

³⁵⁹ Sedgewick to Cromwell. Thurloe, *State Papers*, IV, 153.

³⁶⁰ Admiral Goodkin to Thurloe. Thurloe, *State Papers*, V, 7.

³⁶¹ Sedgewick to Thurloe. Thurloe, *State Papers*, IV, 454.

London, and deliberations in that body began only a few weeks after news of Jamaica's capture.³⁶² Luke Stokes, Governor of Nevis, enthusiastically agreed to the plan and was in frequent correspondence with the Jamaican commanders by spring, 1656. By this time Cromwell's council had increased the size of free Jamaican land grants from 20 to 30 acres per person, in an attempt to further entice immigration. More important, in a May meeting between the Jamaican commanders and three representatives of the Nevis' plantocracy, they agreed that African Slaves would count as immigrants when determining individual land patents. It was a decision that would have major implications for Jamaica's development in the coming decades.³⁶³ The Nevis settlers were given the eastern region of Morant for settlement, partially because the soldiers had not yet claimed it and partially because the area lay furthest from the Spanish partisans living in the northwest.³⁶⁴ The colonists left Nevis that fall and arrived in December, followed by a shipment of 1000 colonists and servants sent from England by Martin Noell. Severe rains followed their arrival, and within a month a fifth had perished.³⁶⁵ Stokes himself was dead by April and in September general D'Oyley reported that sickness had killed almost three fourths of the colonists."³⁶⁶ The fate of the settlement did nothing to encourage further immigrants to the island. That June, Gookin wrote again from New England to London, stating that he was quitting his post and coming home as

³⁶² CSP I, 430.

³⁶³ Propositions made by the gentlemen of Nevis to the commissioners ... in America at Jamaica. Thurloe, *State Papers*, V, 77. See also Governor Stokes to Sedgewicke. Thurloe, *State Papers*, V, 44.

³⁶⁴ A third reason was because the English wished to fortify the coast to the windward of their main settlements, thus preventing rival nations from creating a foothold and staging raids from the area.

³⁶⁵ Thurloe, *State Papers*, V, 771.

³⁶⁶ Taylor "D'Oyley's Journal, II" 66.

there was nothing more to be done. Hearing of the Nevis planters, “such a damp is put to the most active engagers, that all are silent to remove at present.”³⁶⁷

Such were the impediments against the plans for swiftly transforming Jamaica into a prosperous colony. Despite these setbacks Jamaica’s projectors remained confident in their design. In London, Cromwell and his councils were disturbed, seeing God’s displeasure within the Hispaniola loss and the subsequent plague. Nevertheless the Protector issued another proclamation the following year, stating that “after many searchings of hearts” he and his commissioners had resolved to continue both Jamaica and the Design, “in His name and fear.”³⁶⁸ In Jamaica, commander Sedgewicke witnessed the worst of the Jamaican plague and frequently despaired over the project, even suggesting at times that Cromwell cancel the entire Design. Yet he too maintained the island could eventually prosper “if the people that come be industrious,” and upon hearing of the Nevis immigrants he was “not a little pleased, that there is yet some hopes of planting this island.” In New England, despite his setbacks Admiral Gookin believed that migrants would eventually come to Jamaica, “and that those concerned shall find returns of his bread cast upon the waters in its best season.”³⁶⁹ General D’Oyley, a hardened veteran, simply shrugged off Jamaica’s casualties as “noe wonder, for that all islands at the first settlement have run the same fate.”³⁷⁰

Their persistence eventually began to pay dividends. Cromwell’s resolve meant that in late 1656 a new commander was sent to Jamaica with 1200 reinforcements—

³⁶⁷ Gookin to Thurloe. Thurloe, *State Papers*, VI, 390.

³⁶⁸ *CSP I*, 442

³⁶⁹ Thurloe, *State Papers*, V, 148.

³⁷⁰ Taylor, “D’Oyley’s Journal, II, 68.

soldiers from Ireland shipped on the account of Martin Noell.³⁷¹ The new commander general Brayne reformed the army by sending home the most vocal of the anti-planting officers, “of which I finde the benefit already, for now the soldiers goe cheerfully to worke.”³⁷² This was combined with the dismissal of many of the enlisted men, who he argued were “lazy and unsettled,” and “expecting always to be maintained at the publique charge.”³⁷³ Now civilians, these people were expected to raise food from their own plots. Finally he urged the state to provide servants to these people as a form of arrears payment, arguing now that these men who now have a personal stake in Jamaica’s development “will be more careful of them, and worke them moderately, by which many more lives may be saved, and plantations more forwarded.”³⁷⁴ Characterizations of lazy, ignorant, and disobedient soldiers were frequent from Jamaica’s commanders, and given the state of armies during the early modern period there is likely some truth to these complaints, however it is also telling that these same “lazy” soldiers were the ones initially being worked without land or pay, often by officers with backgrounds in plantation agriculture. Conversely, Brayne was a newcomer and thus no had immediate ties to the land and labor schemes made by the earliest officers. Now that it had been codified that soldiers could not be made servants, Brayne attempted to further the Jamaican project by transforming these soldiers into planters themselves, paying the men in land and servants for their years in the service.

Brayne could attempt this maneuver because by mid 1657 there was enough food that the large regimental plots were no longer needed. The island continued to

³⁷¹ Thurloe, *State Papers*, V, 150,343,452

³⁷² Thurloe, *State Papers*, V, 770.

³⁷³ Thurloe, *State Papers*, V, 453

³⁷⁴ Thurloe, *State Papers*, V, 391

import food from elsewhere, but only to augment a substantial base of provisions on the island. During this year several officials commented on Jamaica's abundance of provisions, and D'Oyley even reported that more land was now under cultivation than had ever been under the Spanish.³⁷⁵ The plague also subsided and those fortunate enough to survive were now seasoned and formed the nucleus of Jamaica's permanent English settlers. "Wee are now generally healthful, except those that came last, of which we must expect to lose a considerable number."³⁷⁶ Trading activities had begin to increase, with merchants stopping at the island more frequently. Since the invasion the English commanders had based their capital camp at the end of a long, narrow peninsula which extends south from Ligunea. They called the camp the Cageway and by 1657 Brayne reported that the location showed "a fair beginning of a towne." This settlement would eventually become Jamaica's Port Royal.³⁷⁷

But the most important evidence of Jamaica's two-year turnaround was that the island's projectors were by this time producing cash crops. Among the most successful was Francis Barrington, a Jamaican officer and one of the army's biggest advocates for planting. Barrington was in charge of a large regimental plot, and boasted in a letter to his London cousin that "I dayly endeavour ... to make those under my charge plant." By 1657 his land was not only growing food but also produced 2,000 pounds of tobacco. "Although it bee but a small matter in the eye of a merchant, yet much in mine, considering the little time I have been at itt, and my provisions besides planted, and the difficultie of getting men here to work." Barrington had just received word from his cousin, a member of Cromwell's bedchamber, that this cousin had used his influence

³⁷⁵ Claypool, "Land Settlement," 91.

³⁷⁶ Thurloe, *State Papers*, V, 391.

³⁷⁷ Thurloe, *State Papers*, V, 391.

with the Protector to have a large shipment of servants sent to Barrington. Excited about this news, the projecting Barrington told his cousin that:

“These men you now send, if it shall please God they stand by mee, I question not but in a year or two to give you a very good account of their Labour, and in the spring to send a comfortable cargo; and if I find my self able in pursse and servants, I intend as fast as I can to plant more canes, and erect a sugar-work, which is the most profitable commoditie the Indies affordeth. I have canes already growing, and before christmas I hope will be fit to transplant.”

Barrington was not alone. The same year general D’Oyley wrote to the London merchants on the Jamaica Committee, urging them to “advance the credit of tobacco on this island.” D’Oyley complained that there was little demand for Jamaican tobacco in England and that merchants paid little for it, “though it is said to be exceedingly good.”³⁷⁸ In early 1658 a Richard Lee exported three hundred pounds of tobacco. Cornelius Burroughs, officer and steward-general of the military storehouse, sold four hundred.³⁷⁹ They were producing other tropical commodities as well. Colonel Barry, the man who had led the conspiracy charges against Holdip the previous year, was now in charge of Holdip’s lands and produced 1100 pounds of cocoa for export. Colonel Archibold produced almost double that amount.³⁸⁰ By early 1658 many of the soldiers were also beginning to be paid in tropical produce. In January about 10,000 pounds of sugar were distributed amongst the island’s eight regiments.³⁸¹

By far, the individual who benefitted the most from the Jamaican settlement project was Martin Noell, who profited from land, labor, credit, and supply contracts all

³⁷⁸ D’Oyley to the Committee of Officers and Merchants. Taylor, “D’Oyley’s Journal, II, 69.

³⁷⁹ Taylor, “D’Oyley’s Journal, II, 93, 95. Richard Lee may have been a member of the large Anglo-Dutch family the Lees, who had relatives working in London, Amsterdam, Virginia, and Barbados. For Burroughs see also Thurloe, State Papers, VI, 90.

³⁸⁰ Taylor, “D’Oyley’s Journal, II, 113, 115.

³⁸¹ Taylor, “D’Oyley’s Journal, II, 83. This is a relatively small amount, equaling about six hogsheads and was probably intended only for their personal use. Nevertheless it shows that by this time even the Caribbean’s most complex and profitable commodity was being produced for the domestic market.

at once. It is difficult to estimate exactly how much Noell was paid by the Commonwealth for all of his services, but there is a record of one payment in 1655 for over 5,600 pounds, and this when the Design was less than a year old.³⁸² Noell also took payment in the form of Jamaican land. In early 1656 Cromwell issued a statement to the Jamaican commanders that he had granted Noell a patent for 20,000 acres in Jamaica, and that the soldiers were not to give Noell or his assigns any trouble regarding the grant.³⁸³ The original patent is no longer extant, but presumably Noell chose an area near Morant and his shipment of over 1000 settlers and servants to Morant later that year was to work a part of this enormous land grant. As mentioned above, more than half of these people quickly died of the plague, but those that survived operated a burgeoning plantation in the Morant area by 1657. Richard Povey, brother of Thomas Povey, was serving on the Jamaican governor's council during this time and was acting attorney for Noell's Jamaican lands. Povey received a customs certificate in 1657 for 760 pounds of tobacco produced on these lands, which was shipped home aboard the *Martin*.³⁸⁴ Moreover, Noell marshaled his leverage within the military for outfitting this large plantation. Povey had permission to supply Noell's estate out of goods from the military store-house, presumably as Noell paid for most of the island's military supplies.³⁸⁵ Things got to a point during this time where Povey was accused of embezzlement when working as both military supply commissioner and chief attorney for Noell's plantation.³⁸⁶ It is unclear whether this accusation was because Povey was truly fraudulent, or if the line between military stores and goods for Noell's plantation had

³⁸² CSP I, 433.

³⁸³ Long, *History of Jamaica*, 215.

³⁸⁴ Taylor, "D'Oyley's Journal, II, 75, 93.

³⁸⁵ For examples see Taylor, "D'Oyley's Journal, II, 78, 88, 103, 104.

³⁸⁶ Taylor "D'Oyley's Journal, I," 109. On general embezzlement *Ibid*, 74.

become exceedingly thin. Indeed, Noell's clout amongst the army had become so great that naval ships were being commissioned to sail goods from the Ligunea storehouses out to his Morant plantation, often during official military maneuvers. D'Oyley would dispatch ships from the Cageway to patrol Jamaica's north coast, commanding them to stop at Noell's place along the way.³⁸⁷

IV: Conclusion

In his *Essay upon Projects*, Defoe muses cynically on the projector's persistence. He claims that the failure brought about by attempting fantastic designs actually prompts the projector to even loftier speculations. Ironically through this persistence, a piling of disaster upon disaster, wealth and progress are made. As unadvisable as projects are, Defoe claims that "it is certainly true of them all, even as the projectors propose: that, according to the old tale, if so many eggs are hatched, there will be so many chickens, and those chickens may lay so many eggs more, and those eggs will produce so many chickens more, and so on."³⁸⁸ This idea of success through failure was not unique to Defoe. One hundred years earlier, Francis Bacon made similar musings in his "Essay on Plantations," where he argued that "*Planting of Countries is like Planting of Woods; for you must make account to lose almost Twenty years Profit, and expect your Recompence in the end.*"³⁸⁹

Six decades later, the words of Bacon had become almost a truism amongst colonial entrepreneurs, who looked at early losses as a necessary step towards securing

³⁸⁷ Taylor "D'Oyley's Journal, I," 94, 100.

³⁸⁸ Defoe, *Projects*, 21.

³⁸⁹ Francis Bacon, *The essays, or councils, civil and moral, of Sir Francis Bacon* (1696), 92. Originally published in 1597. Accessed through EEBO.

the fruits of a developed colonial settlement.³⁹⁰ In summer, 1657 General D'Oyley wrote to Martin Noell. One of Noell's ships had recently arrived to supply his Morant plantation, which at this time was losing people daily to plague. Despite the losses, D'Oyley was cheerful. He was happy that Noell was "so well opinionated of this island as to be an Adventurer with us," and wished Noell success in his endeavors. Moreover he reminded the merchant that, "former adventures and undertakings of this nature have made you know that you must meete with some discouragement, as all now settled places meet withal, and therefore I hope if anything adverse should fall out, you will not be disheartened in your proceedings. For my part I am not."³⁹¹

The Western Design initially attempted to conquer most if not all of the Spanish Caribbean, and replace the lazy, depopulated Spanish empire with a dense series of English settlements. These new spaces were to be paragons of English improvement, populated with prosperous, industrious, and pious colonists. In 1660, five years after initially conceiving the Design, the English had captured one Caribbean island. On that island lived 3,470 people who had planted 2,588 acres.³⁹² As a project, the Western Design was a failure. The London Puritans had clearly "overthought the birth" of their imagined pan-Caribbean empire, overlooking details such as Caribbean diseases, factional squabbling amongst employees, and indifferent responses from other English colonists. The same cannot be said of Jamaica. Despite its slow start, the colony grew rapidly after the Restoration and began to handsomely "Recompence" those projectors and planters such as Archibald and Barrington who lived long enough to see the

³⁹⁰ On other colonists quoting Bacon to justify their colony's slow start, see the comments of Thomas Woodward, chief surveyor of the Carolina colony in 1665. *CSP II*, 1005.

³⁹¹ Taylor "D'Oyley's Journal, II," 66.

³⁹² Dunn, *Sugar and Slaves*, 155.

turnaround.³⁹³ In 1670 Thomas Modyford—now Governor of Jamaica—submitted a survey which tallied over fifteen thousand settlers and fifty-seven major sugar works on the island.³⁹⁴ Within one decade Jamaica went from being an abject imperial failure to having half as many people as Virginia. The rate of growth during this decade was not matched by any other colony in the latter seventeenth century. South Carolina would take almost fifty years to reach this figure; New York would take thirty five.³⁹⁵

The key to this growth was slaves. While Jamaica's overall growth was striking during this decade, its rapid commitment to Barbados' slave society model was even more so. Of those fifteen thousand settlers, almost two thirds were forced migrants from Africa. By 1660 England's wars in Scotland and Ireland were largely over and the available prisoner-servants from these areas substantially decreased. This vacuum was filled by the Royal African Company. Re-chartered and reorganized shortly after the Restoration, the Company figured prominently into the deliberations of Charles II's new Council for Trade and Plantations, which theorized at length how slaves could be best procured and how they might be best distributed amongst England's Caribbean dominions. As early as 1660 that council—which now included both Noell and Povey—submitted proposals “to persuade the Royal Company to make Jamaica the staple for the sale of blacks.”³⁹⁶ That decade Jamaica imported over ten thousand slaves. These imports were combined with planters' loose interpretation of Cromwell's settling laws, meaning each slave purchase meant eligibility for another parcel of free land, paving the

³⁹³ Ironically, one person who did not see such a return on his efforts was Martin Noell, who died in the London plague of 1666.

³⁹⁴ *Ibid.*, 155; Claypool, “Land Settlement,” 35.

³⁹⁵ McCusker and Menard, *Economy of British America*, 136, 172, 203.

³⁹⁶ *CSP I*, 491.

way for a both a speculation rush and a host of enormous work complexes.³⁹⁷ By the eighteenth century Jamaica was England's richest colony, contained its largest plantations, and had a black-to-white ratio of over 10:1. While this transformation from servants to slaves permanently changed the American colonies through the establishment of legal and cultural race codes, the chief impetus behind the demand for either servants *or* slaves was the same: those in charge of the colony's development saw the control of a coerced labor force as essential to their projecting goals, and machinations for securing such a force were thus a central component of their designs.

Jamaica's early development is often told from the narrative of failure, but such stories disguise the fact that during this time individuals of power managed to establish—to project—the socio-economic foundation which would eventually make Jamaica Britain's richest and most exploitative colony.³⁹⁸ Many of those projectors who took a leading role in Jamaica's early settlement already possessed productive plantations by 1660, and would go on to become leading members of Jamaica's plantocracy.³⁹⁹ Two points can be drawn from the Jamaica project. First, unlike earlier settlements, Jamaica's society of cash crops, large landholdings, and forced labor did not evolve over time, but was planned from the start. It was not an unthinking decision, but rather the conscious product of England's seventeenth-century projecting spirit. From the beginning, Jamaica's development contained a mixture of powerful private and state interests, and

³⁹⁷ Cromwell's settling proclamation was renewed under Charles II, who extended the grant to 30 acres per head.

³⁹⁸ On failure, see for example Dunn, *Sugar and Slaves*, Ch 5. Dunn stresses the laziness and stupidity of planters who took almost 50 years before production surpassed Barbados.

³⁹⁹ Perhaps the best proof of this comes from Richard Dunn's own work on Jamaica's landownership demographics. If one looks at the plantocrats in charge of Barbados at its prime in 1680, about 40% of these families had estates on the island in 1638. In contrast, of Jamaica's wealthiest landlords in 1700, almost three fourths were planters who arrived within the first decade of English occupation. See *Ibid*, 58, 176.

was dominated by merchant elites who utilized a network of governmental contacts to coordinate what was initially a joint merchant-military adventure. As the events in this chapter demonstrate, despite all of Jamaica's initial setbacks, it was clear from the start who would profit from the new settlement, and how those profits would be achieved.

Second, the attitudes and mentalities of Jamaica's projectors were not out of step with broader English ideas regarding wealth and progress. Indeed, the very reason Defoe wrote his *Essay* was because England itself had become saturated with designs similar to Jamaica, whereby individuals and groups embarked on grandiose and often selfish plans in the name of national improvement, economic plenty, and moral progress. As the examples above demonstrate, the earliest Jamaican landlords appropriated the same language of improvement to engross large tracts of vacant land and to coerce servants and soldiers into working them. Equally important, these initiatives in Jamaica were not only condoned but supported in England by the Lord Protector and his cabinet of powerful transatlantic merchants. As projects, plantations were designed to enrich the projector at the expense of the masses around him, and the losers in this story were those soldiers, servants, settlers, and slaves who labored and died within the projector's schemes for personal advancement.

Yet despite all this, it is unclear whether Defoe and other seventeenth-century English intellectuals would have characterized Jamaica's early story as an example of "good" or "bad" projecting. Did they see early Jamaica's commanders as simple tyrants and frauds, or did they understand their actions as necessary evils in the service of honest profiteering and national improvement? Certainly those in charge of the Western Design and Jamaica's initial settlement would have seen their actions as just. Commander

Fortescue was likely sincere when he saw Jamaica as a place where settlers could “serve God, their country, and themselves.”⁴⁰⁰ D’Oyley also saw his actions in such a light, siding with Francis Bacon when he interpreted the death around him as merely the cost of progress when settling new lands. Martin Noell, despite his immense profiteering, also likely believed that his actions were fair compensation for his role in spreading the gospel to new parts of the globe. His actions such as shipping thousands of bibles to the Jamaican troops and his helping to found the Society for the Propagation of the Gospel speak to this sincerity.

Finally and most important, despite the severe measures of coercion used to bind soldiers, servants, and slaves to Jamaica’s early development, it is noteworthy that such attitudes and stratagems were not unique to Jamaica, or even the West Indies. As seen in the *Essay Upon Projects*, while Defoe may have held a special disdain for charlatans who use metaphors of improvement to trick honest people out of their earnings, forcing social marginals into innovative labor schemes was another matter altogether. Indeed, the tactics employed in early Jamaica bear a striking resemblance to Defoe’s own ideas for using convicts and slaves within his English turnpike scheme. As will be seen in the next chapter, coercing people into organized labor tasks was common on both sides of the English Atlantic.

⁴⁰⁰ Thurloe, *State Papers*, III, 650-1.

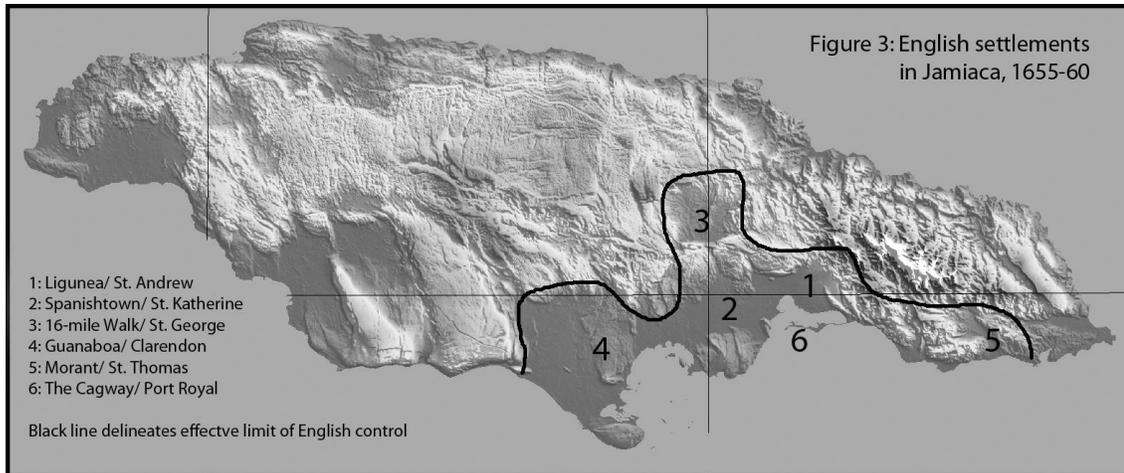


Fig. 4: Jamaican Commanders, 1654-1660 ⁴⁰¹

Name	Start Date	End Date
Robert Venables	September, 1654 Initial commander	July, 1655 Returned to England due to sickness
Edward Winslow	September, 1654 Second-in-command	April, 1655 Died at sea of plague
Richard Fortescue	July, 1655 Part of initial force Succeeded Venables	October, 1655 Replaced by Sedgwicke, Died of fever three weeks later
Robert Sedgwicke	September, 1655 Sent from England	May, 1656 Died of Fever
Edward D'Oyley	May, 1656 Part of initial force Succeeded Sedgwicke	December, 1656 Replaced by Brayne
William Brayne	Dec, 1656 Sent from England	September, 1657 Died of fever
Edward D'Oyley	Sept, 1657 Succeeded Brayne	June, 1660 Military government disbanded D'Oyley is first civilian governor until 1662

⁴⁰¹ Image courtesy of Wikimedia Commons, *Simple Topographic Map of Jamaica*.
<http://commons.wikimedia.org/wiki/File:Simple_topographic_map_of_Jamaica.png>. Altered by Eric Otremba. Accessed July 24, 2012.

Chapter Three: Coercion

Conrad Heresbach was a sixteenth-century German Calvinist educator and reformer. Heresbach wrote several texts in his lifetime including the 1570 agricultural treatise *Four Books on Husbandry*, a work which garnered considerable acclaim amongst English elites.⁴⁰² Translated into English in 1577, it went through several editions before 1700 and served as a template for a host of seventeenth-century English agricultural manuals. The beginning of Heresbach's *Four Books* consists of an imaginary dialogue between Heresbach, posing as a prosperous country gentleman, and a visitor from the city. After using several examples from antiquity to convince the visitor that the noble country life is superior to the intrigues of city and court, the visitor inquires as to how Heresbach spends his country days. The question sets up the rest of the book which explains the activities of the virtuous country landlord. Notably, Heresbach immediately contends that his days are *not* spent toiling in the fields, but rather in academic study and in overseeing the work of his subordinates. It is surveillance and control, not manual toil, which constitutes the virtuous life. Heresbach initially answers his visitor's question by citing verse from Cicero, contending that his days are: "First served on knees the Majestie divine, My Servants next and ground I overlooke. To every man his taske I doo assigne, When this is done I get me to my booke."⁴⁰³ He continues this description of lordly duties by explaining that the country gentleman's most important task is to ensure that all the estate's components are running with the best possible efficiency, and that all of its workers act with a corresponding diligence. Most important, as the lord is the

⁴⁰² Conrad Hersebach, *Foure Booke in Husbandry*... (1570, translated into English 1577). Accessed through EEBO.

⁴⁰³ *Ibid*, 2.

person ultimately responsible for the farm's production, Heresbach asserts that the assiduous master punishes lazy or negligent workers, thus ensuring a well-ordered estate. To drive this final point home, Heresbach writes a passage that would later become a common maxim within seventeenth-century England: "Though I have a Bailiffe as skilful as may be, yet remembering the olde saying, *that the best dung for the felde is the master's foote*, and the best provender for the horse the master's eye, I play the overseer me selfe."⁴⁰⁴

Less than one hundred years later, Samuel Pepys was not an agriculturalist. As mentioned in chapter one, Pepys was a reformer, merchant, colonial adventurer, Chief Secretary of the Navy, founder of a London school for mathematics and navigation, and once president of the Royal Society. In many ways Pepys and Heresbach lived worlds apart. While Heresbach spoke to early modern squires on reforming manorial farm practices, Pepys navigated a world of urban commerce, global navigation, and foreign empires. However the two were alike insofar as they both emphasized utilitarian improvement schemes characteristic of the early English Enlightenment. They also had a second commonality: they both lived in a hierarchical world of social orders, where those in power had both the authority and responsibility to force subordinates into obedience, often through force. Like Heresbach, Pepys also wrote on the importance of maintaining household order through violence. In Pepys' diary he records a story whereby Pepys' wife accused one of their domestic servants of stealing a candlestick. In response, Pepys "called him up and with my whip did whip him till I was not able to stir." After a brief rest, he "took him in task again, pulled off his frock to his shirt, and whipped him until he

⁴⁰⁴ *Ibid*, 3. My italics, as the phrase became a very popular and much repeated maxim amongst the seventeenth-century English gentry.

did confess.” Thereafter Pepys went “to bed, with my arm very weary.”⁴⁰⁵ Despite the vast divides between the worlds of Pepys and Heresbach, in both places the best dung remained the master’s foot.

In chapter one we looked at how experimental philosophers integrated foreign trade and especially West Indian plantations into their broad program of rational experiment and social improvement, seeing how England’s imperial expansion was an essential component to the Baconian vision of expanding knowledge. In chapter two we saw how the social ethos of projecting factored into this combination of experiment and empire, complicating and casting a shadow over improving designs by adding elements of speculation, engrossment, fraud, and even coercion in the form of forced labor practices. Yet as the above examples of Heresbach and Pepys demonstrate, one need not be a projector to easily synthesize forced labor and corporal punishment within improving designs. Indeed, the point of this chapter is to demonstrate that seventeenth-century coercion—and by this word I mean the physical corralling of people and forcing them into organized labor tasks—was common far beyond the period’s stigmatized projecting enterprises. Rather, it was central to improvement itself. This chapter will demonstrate this through four points. First, it will show how seventeenth-century English society was founded upon a hardened concept of social orders, where lower members of society were expected to acquiesce to elite commands. Second, while this tradition was not new to the seventeenth century, neither was it challenged by the period’s experimental philosophers. Instead, Baconian advocates and other social reformers placed a heretofore unseen emphasis on coercion and social order, through both their

⁴⁰⁵ Henry B. Wheatley ed. *The Diary of Samuel Pepys* (New York: Crosup and Sterling, 1893), 247. Pepys beat the same servant eight times within the space of two years. See Anthony Fletcher and John Stevenson, eds. *Order and Disorder in Early Modern England* (Cambridge: Cambridge University Press, 1985), 33-4.

novel Puritan work ethic and their insistence on leaving no component of society untouched by their rational reform program. This new emphasis will be demonstrated by an examination of this period's many reform proposals regarding the lower orders, particularly workhouse proposals for England's poor, many of which were drafted by the same experimental philosophers who advocated imperial expansion. Third, this appetite for increased control over the poor was not only the result of a new rationalizing thoroughness wedded to older concepts of social order. It also came from novel political economy and biopolitical conceptions of this time, which transformed the poor from a simple social threat to a potential economic resource. Royal Society members and other Baconian enthusiasts of this period advocated the strict bodily control of social marginals because they saw it as key to their goal of increased domestic production and national wealth. Like the Indies, coercion was a central ingredient in their recipe for national plenty. Finally, this connection between science, colonies, and work-camps can be most clearly seen in experimental philosophers' writings on American slaves and indentured servants. As these reformers incorporated both foreign commodities and forced labor into their improving visions, it is little wonder that when they looked abroad at the Caribbean's expanding servant-slave complex, they most often approved of what they saw.

I: An Ordered Society

Prior to its imperial expansion in the early seventeenth century, England was already a society well-versed in both hierarchical social orders and the assumption that the upper ranks can and should force the lower strata into socially-productive tasks. Institutions such as the family, the school, artisan apprenticeship, and rural servant

arrangements all operated with this as their chief principle, and it was expected that in each of these cases the patriarch or master would have absolute control over their inferiors. Furthermore, reformers often gave divine and philosophical justifications for these relationships within their writings, as proper deference of subordinates towards superiors was seen as essential to a well-regulated society.⁴⁰⁶ Within the school, workplace, and family, these attitudes engendered hundreds of tracts during the sixteenth and seventeenth centuries on proper relations between patriarch and family, schoolmaster and students, and artisan and apprentice.

Similar ideas were expressed in regard to the poor, yet their position was more ambiguous and threatening to elites as they could not easily be corralled into households, workshops, or schools. Indeed, this fear lay at the foundation of many laws and publications on the poor from this period. This is not to say that those who wrote on the poor were unconcerned with their welfare, and many proposals regarding the poor contained sincere desires for their well-being. However for our purposes, what is important is how this benevolence was combined with an anxiety about keeping the poor in their proper place at the bottom of the social order, and how this combination of interests was frequently expressed through advocating stern rules which placed the poor under the strict control of elites and/or the state. Such a system, they argued, was the best way to serve the interests of all groups. Experimental philosopher Samuel Hartlib put the matter succinctly at the front of one of his early tracts on poor reform, when he expressed his desire for “a godly and politick government; that the godly and laborious poore may

⁴⁰⁶ *Ibid*, 31.

be countenanced and cherished, and the idle, and wicked poore suppress.”⁴⁰⁷ Moreover, while tracts from this time do mention the ancient concept of shared obligations between ruler and ruled, it is clear that these axioms were not meant to advocate for any kind of equality in the modern sense. Dissenting minister Isaac Watts succinctly stated this distinction when he invoked divine sanction for social hierarchies, arguing that “Great God has wisely ordained in the course of his providence in all ages that among mankind there be some rich and some poor[,] and the same providence hath allotted to the poor the meaner services.”⁴⁰⁸ Similar sentiments are betrayed in an essay on hospitals by the Quaker reformer John Bellars, who states that “Wherefore it’s as much the Duty of the *Poor* to Labour when they are able, as it is for the *Rich* to help them when they are sick.”⁴⁰⁹ Bellars was urging England to invest in a series of public sick-houses for the poor in this tract, and spent the vast majority of his text advocating the latter of these two points. Notably, he did not need to spend any time convincing his readers of the poor’s “duty” to the rich. A final example of this attitude can be seen in the memoirs of Parliamentary Civil War hero Denzil Holles. Despite his leading role in securing increased liberties for the nobility at the expense of the king, Holles was nevertheless frightened when commoner movements such as the Levellers and Diggers began to incipiently argue for similar rights during these years of conflict. Later, when writing his history of the revolution, Holles frowned upon this side effect of his war efforts and justified his traditional beliefs in social order by drawing upon a popular and traditional

⁴⁰⁷ Samuel Hartlib, *The Parliament’s Reformation or A worke for presbyters, elders, and deacons to engage themselves, for the education of all poore children, and employment of all sorts of poore* (1646), 1.

⁴⁰⁸ *Ibid.*, 14.

⁴⁰⁹ John Bellars, *An Essay towards the Improvement of Physick in Twelve Proposals* (1714), 6. Accessed through EEBO.

English maxim, that “the wisest of Men saw it to be a great Evil, that Servants should ride on Horses, and Princes walk as the Servants of the Earth.”⁴¹⁰

Importantly, this society of strict social stations was also one where elites were overwhelmingly large landowners, and when thinking about social order they drew heavily upon the ancient agrarian republican imaginings of Cicero and Virgil. Because of this, the metaphor of domesticating wild animals came frequently to mind when discussing the poor and its problems.⁴¹¹ This partly stemmed from the idea that, like animals, the poor—along with women, children, lunatics, and others marginals within English society—were seen as unable to exercise the reason necessary to curb their passions, and were thus a social hazard if not properly controlled. The famous experimental philosopher Sir Thomas Pope Blunt said as much in a letter to a contemporary, observing that “the numerous rabble that seem to have the signatures of man in their faces are but brutes in their understanding.” Pope, who in the same year of this letter published his famous experimental philosophy work *Natural History* (1693), continues by arguing that “tis by the favour of a metaphor we call them men, for at best they are but Descarte's automata, moving frames and figures of men, and have nothing but their outsides to justify their titles to rationality.”⁴¹² This stigma of brute-like ignorance was especially placed upon those poor living in the wilderness frontiers of the English empire, such as America, Ireland, and the outland parts of north and west England. In his famous work *Britannia*, historian and geographer William Camden wrote about the poor fenland people of the English East Midlands in this fashion, stating that

⁴¹⁰ Allen Michie and Eric Buckley, eds., *Essays on Renaissance and Restoration Literature and Culture* (Cranbury, NJ Rosemont, 2005), 144.

⁴¹¹ Fletcher and John Stevenson, *Order and Disorder*, 13.

⁴¹² Quoted in Fletcher and John Stevenson, *Order and Disorder*, 14.

these communities live “according to the nature of the place where they dwell[:] rude, uncivil, and envious to all others whom they call Uplandmen”⁴¹³ Another writer claimed that the same fenland communities were “a people of so abject and sordid a temper that they seem almost to have undergone poor Nebuchadnezzar’s fate, and by conversing continually with beasts to have learned their manners.”⁴¹⁴ Some of the most colorful language of this sort comes from Timothy Nourse’s agricultural improvement manual *Campania Foelix* (1700), which argues:

“But as for our Common people, many of them must be confess’d to be very rough and savage in their Dispositions, being of leveling Principles, and refractory to Government, insolent and tumultuous; What Gentleman soever then shall have the Misfortune to fall into the Neighbourhood of such Boors, let him never think to win them by Civilities; it will be much more easie from him to teach a Hog to play upon the Bagpipes, than to soften such *Brutes* by *Courtesie*.”⁴¹⁵

Of course this kind of comparison between men and beasts was not limited to those in the English wilderness, and frequent allusions were made between the English poor and Native Americans. English surveyor and cartographer John Norden drew upon this metaphor in the early seventeenth century, claiming that people of England’s uncultivated regions were “given to little or no kind of labour, living very hardly with oaten bread, sour whey, and goats’ milk, dwelling far from any church or chapel, and are as ignorant of God or of any civil course of life as the very savages amongst the infidels.”⁴¹⁶ Speaking more broadly, Robert Grey in 1609 surmised that “the greater part” of the earth was “possessed and wrongfully usurped by wild beasts or by brutish

⁴¹³ William Camden, *Britannia* (1637 ed.), quoted in Keith Lindley, *Fenland Riots and the English Revolution* (London: Heinemann, 1982), 2.

⁴¹⁴ James Browne, *Travels over England, Scotland, and Wales* (1700). Quoted in Keith Thomas, *Man and the Natural World: Changing Attitudes in England, 1500-1800* (London: Allen Lane, 1983), 44.

⁴¹⁵ Timothy Nourse, *Campania Foelix. Or, Discourse of the Benefits and Improvements of Husbandry* (1700), 15. Accessed through EEBO.

⁴¹⁶ Joan Thirsk, *An Agricultural History of England and Wales, Vol. IV* (Cambridge: Cambridge University Press, 1967), 411.

savages, which by reason of their Godless ignorance, and blasphemous idolatry, are worse than those beasts.”⁴¹⁷ Such assertions were still repeated decades later.

Experimental philosopher Thomas Snow, who will be further discussed in chapter four, had a similar appraisal of Native Americans in his *Apopiroscopy* (1700), referring to the “Rudeness, Wants, and Ignorance of the Ancient-Savage *Americans*,” who lack the novel advancements of Europe, despite having “Natural Endowments and Privisions equal those of the most Polite Nations.”⁴¹⁸ Comparisons of the English to idle savages were likewise still in fashion at the beginning of the eighteenth century, and the prolific Quaker reformer John Bellars argued that England’s forests and common land are but “Nurseries of Idleness and Insolence” as they allow the poor to live “too much like the *Indians*.”⁴¹⁹

The Irish were particularly susceptible to this kind of treatment, especially in the aftermath of the military conflicts between Ireland and England in the late-sixteenth and mid-seventeenth centuries. In the wake of the Nine Years War in Ulster in 1603, English courtiers of the new Stuart monarch competed for patents which allowed them speculate on Ireland’s newly-conquered regions and newly-engrossed manors, and a wave of projecting settlement schemes were proposed to the Crown. These proposals engendered a vigorous debate over the ability of the Irish to peacefully live alongside their new English neighbors, and not surprisingly, many proposals included a derogatory assessment of Irish civility, rationality, and humanness. This supposed Irish savagery

⁴¹⁷ Thomas, *Man and the Natural World*, 42.

⁴¹⁸ Neve, Richard. *Apopiroscopy: or, a compleat and faithful history of experiments and observations: not only chymical and curious, but mechanical; and in several Arts, Sciences and Professions. Being Pleasant, Useful and Profitable. Extracted from the most Authentick Writers, Manuscripts, and the Author's Experience. By T. Snow.* London, 1702, p5. Accessed through EEBO. Thomas Snow was a pseudonym for Richard Neve.

⁴¹⁹ Bellars, *Improvement of Physick*, 40.

was then used a pretext for the transference of their lands to English immigrants. One English writer from this time remarked how the Irish ate raw flesh and drank fresh blood, like wolves.⁴²⁰ Another created a settlement plan that included a series of garrisoned English immigrant towns, placed at strategic intervals amongst the Irish countryside. Doing so would keep the barbarous Irish “in awe” and provide each region with local examples of English civility.⁴²¹ Questions of Irish humanness reverberated throughout the rest of the century. In the aftermath of a Munster battle in 1641, over forty English soldiers testified that many of the dead Irish had animal tails, nearly a foot long.⁴²² Later still, in his influential *Political Anatomy of Ireland* (1691), prolific Royal Society member William Petty argued that seventy-five percent of the Irish reside in “wretched nasty Cabbins, without Chimney, Window or Door shut, and worse than those of the Savage Americans, and wholly unfit for the making Merchantable Butter, Cheese, or the Manufactures of Woollen, Linnen or Leather”⁴²³

As Petty’s above comment demonstrates, experimental philosophers and other English thinkers of the seventeenth century surmised that one of the primary consequences of the poor’s incivility was a poor work ethic which was not conducive to either national welfare or to mercantilist theories of economic growth. As mentioned in chapter one, a primary impetus for the improving designs of seventeenth-century natural scientists was to increase national wealth and therefore the standard of living for England’s residents. The behaviors of the poor were often seen as primary impediments

⁴²⁰ Thomas, *Man and the Natural World*, 42.

⁴²¹ Cecil T. Car, ed. *Select Charters of the Trading Companies, 1530-1707*, (London: Sheldon Society, 1918), lxxx. Many of these projects were put by forward by individuals who worked on similar settlement schemes for America.

⁴²² Thomas, *Man and the Natural World*, 43.

⁴²³ William Petty, *The Political Anatomy of Ireland...* (1691), 116-7.

to these plans, and experimental philosophers countered this tendency with a series of proposals for forcibly integrating the poor into improving projects. This attitude partially stemmed from an assumption that the poor were too ignorant to understand or adapt new experimental ideas on agricultural or economic improvement. Thus they surmised that the poor's resistance to new ideas on natural philosophy must be overcome, though force if necessary. In his famous horticultural work *Sylva*, Royal Society member John Evelyn begins with a general introduction on promoting experimental philosophy, in which he urges his elite readers not to "easily commit themselves to the Dictates of their ignorant Hinds and Servants," as "[we] are to extract Labour, not Conduct and Reason, from the greatest part of them."⁴²⁴ To Evelyn, the best improvers learn from books written by fellow elites and not through traditional common practices. Another writer made similar comments in a letter to the wealthy landowner Stamp Brooksbank later in the century, complaining that poor tenant farmers will not be convinced to adapt new agricultural practices because "like old cart horses, one can't thrust 'em out of their beaten tracks; they'll not be persuaded to try new experiments."⁴²⁵

Beyond ignorance, experimental philosophers also accused the lower orders of a base laziness and a refusal to better their own condition through hard work. As shall be seen below, this discourse of laziness underwrote much of the century's elite-sponsored laws for compelling the poor into forced labor projects. Moreover as mentioned in chapter one, many of the experimental philosophers from this period were Puritans, a fact which often gave their ideas an added religious facet. Their emphasis on the novel Puritan work ethic was particularly influential in this regard. In the case of the lazy poor,

⁴²⁴ John Evelyn, *Sylva, or, a Discourse on Forest-Trees...*(1670), 5. Accessed through EEBO.

⁴²⁵ English land steward to owner Stamp Brooksbank, 1729. Quoted in Thirsk, *Agricultural History*, V, 239.

such authors often justified their laws and work programs by citing the Genesis passage in which mankind is expelled from the Garden of Eden. Among the hardships Adam and Eve were to endure for their punishment, was God's commandment that the earth shall now bear thorns and thistles, and that "in the sweat of thy face shalt thou eat bread, till thou return unto the ground."⁴²⁶ This proverb and various derivatives of it were repeated within countless seventeenth-century reform works, connecting the continuous toil of the masses to the essential lapsarian human condition.⁴²⁷

These attitudes of distrust and disdain towards the poor, even within tracts supposedly written for their benefit, could sometimes reach startling levels. In a 1650 workhouse proposal, interestingly entitled *The Poor Man's Friend*, author Rice Bush warned his readers of potential malingerers among those poor who seek assistance, "a thing too frequently used by those idle kinde of persons."⁴²⁸ He continues with an anecdotal story to prove his point, that of a "counterfeit cripple" who kept his legs in the fetal position, "pretending his heels grew from his buttocks." According to the story, a minister happened by the beggar one day and saw a group of milkmaids "whipping the supposed cripple with nettles," as they believed he was an imposter. The beggar bore the beating until the maids were "wearied out," but would not move his legs. Next, a coachman came along and, hearing of the beggar's supposed trickery, "lashes him with his whip several times over the shoulders, in so much that the tender-hearted spectators were much displeased." The beggar still would not stand up, so the coachman then picked up the beggar and threw him into a nearby ditch in an attempt to get the man to

⁴²⁶ Genesis 3: 18-19. King James Version.

⁴²⁷ See in particular Charles Webster, *The Great Instauration: Science, Medicine and Reform, 1626-1660* (London: Duckworth, 1975), 324-6.

⁴²⁸ Rice Bush, *The poor mans friend, or A narrative of what progresse many worthy citi of London have made in that godly work of providing for the poor* (1650), 10. Accessed through EEBO.

move from the fetal position, but was again unsuccessful. Finally at this point the passing minister attempted an “experiment” on the beggar, whereby he caused the beggar “to be laid upon his back, and kneeled upon his brest, with one of his knees, causing one of his legs to be drawn forth (if possible) which was accordingly done, and so the other.” Having thus exposed the beggar, the minister immediately called for a constable to have the vagrant arrested. The plan was unsuccessful however, for once the beggar stretched his legs, he immediately jumped up and “hastily runs away, leaping over a gate and escaping them all.” Amazingly, the point of this story was neither to object to the severe beating of a maligning beggar, nor to protest acts of vengeance predicated upon suspicion alone. Rather, Bush’s story was to prove to his readership the great lengths of subterfuge the poor will endure to gain a living without work, and that they must be distrusted accordingly.

In sum, during this time experimental philosophers and other elites harbored a substantial distrust for the poor and others of marginal status in English society, as they were seen as ignorant, lazy, deceitful, and even beastlike. These attitudes were not new to the seventeenth-century, but had become exacerbated through a series of demographic and economic crises during the preceding Tudor era. Throughout the sixteenth century, England experienced an unprecedented population growth that strained its traditional society. As family sizes increased, the traditional practice of dividing lands evenly amongst all sons left young farmers with smaller and smaller plots. Furthermore this population increase meant an enormous rise in prices, and basic commodities such as grain and hides rose over 200% during the course of the century.⁴²⁹ This squeeze on small farmers was made worse by the rapid pace of the enclosure movement during this

⁴²⁹ Thirsk, *Agricultural History* IV, 635.

same period. During this same time, while demand for goods rose at home, English products, in particular wool, were fetching heretofore unimagined prices on the continent.⁴³⁰ Wealthy projecting landlords, eager to capitalize on this economic boom accelerated the process of enclosing England's common forests and pastures, transforming them into private tracts for personal wool production. Poorer landowners and cottagers had traditionally relied on both products and employment from these common areas to augment their meager crop yields, and this rush to convert traditional farmland into pasture for wool export further worsened the price increase on grain and bread. This combination of factors caused a both an unemployment explosion and a massive depopulation of the sixteenth-century countryside. Across England cottages were abandoned and torn down by engrossing landlords, and in a few cases entire villages became derelict.⁴³¹ The problem was noted by many contemporaries, the most famous of which was Sir Thomas More, whose *Utopia* caustically comments on this novel English development. "[S]heep that were wont to be so meek and tame, and so small eaters, now, as I hear say, become so great devourers and so wild, that they eat up, and swallow down the very men themselves. They consume, destroy, and devour whole fields, houses, and cities."⁴³²

By the seventeenth century it is estimated that the number of English living below the poverty line fluctuated between 25 and 50 percent of the population, depending upon seasonal labor cycles and annual crop yields.⁴³³ As workers left their traditional

⁴³⁰ *Ibid.*, IV, 210.

⁴³¹ John Broad, "The Verneys as Enclosing Landlords" in John Chartres and David Hey, eds., *English Rural Society, 1500-1800: Essays in Honor of Joan Thirsk* (Cambridge: Cambridge University Press, 1990.)

⁴³² Sir Thomas More, *Utopia*, Book II. Accessed via classicaauthors.net, 11-15-2011.

⁴³³ D.C. Coleman, "Labour in the English Economy of the Seventeenth Century," *The Economic History Review*, New Series 8, 3 (1956), 283-7.

livelihoods and began to travel in search of employment, their increased migrations exacerbated the concerns of English elites. Again, the problem of vagabonds and wandering beggars was not new to the seventeenth century, but the events of previous decades had magnified the social problem to crisis proportions. One of the major initial responses to this was the Elizabethan poor law of 1603, which was typical of this period insofar as it was a more stringent solution based upon late-medieval precedents. Much of the provisions in the Elizabethan law drew upon the earlier Statute of Artificers of 1548, which established an array of regulations on relationships between subordinate and superior within a variety of agricultural and artisan occupations. This sixteenth-century act set minimum contract limits and maximum wages for servant laborers, and stipulated that landless migrants must apply for permission to move to another parish at least three months prior to departure.⁴³⁴ The poor law of 1603 then extended many of these ideas beyond servants, apprentices, and wage earners, to include social marginals outside of these traditional forms of control. On the one hand, it cared for these lesser members of society by providing bread and other relief in times of bad harvests, which was funded via landed tax levies and distributed on a parish level. On the other hand, the new act gave local magistrates the authority to compel the able poor to work on group labor projects if necessary. This combination of provisional relief and forced labor thus formed the ideological basis of most projects regarding poor relief for the rest of the century. Decades later the reformer Richard Dunning summarized the 1603 statute with the simple

⁴³⁴ Appleby, *Economic Thought*, 29.

maxim of “Work for those that WILL Labour, Punishment for those who WILL NOT, and Bread for those who cannot.”⁴³⁵

And yet, while many of the responses to the poor problem drew upon traditional social solutions, there was much that was new about reform approaches in the seventeenth century. Part of this was simply because the unprecedented economic and demographic changes of this period meant that traditional relief programs were no longer adequate. More important, however, was that thinkers of this period often approached these problems from the new paradigm of experimental philosophy. Indeed, as many poor reformers were either vocal advocates of Francis Bacon and/or members of the Royal Society, they saw the problem as the perfect laboratory to employ new methods based upon empiric principles, and to enact experimental philosophy’s commitment towards large, rational, and often state-sponsored programs. This infusion of natural science into poverty reform could take several shapes. As mentioned in chapter one, agricultural innovation was a core area of experimental philosophy research, and this fascination with improved yields and horticultural diversity was highly influenced by the previous century’s increasing food prices. Thus, employing new Baconian methods in improving farming practices constituted a prime example of increasing both knowledge and social weal at once. A second manifestation of experimental philosophy principles within poor reform programs can be found in their insistence for new formal institutions, which were to discover and apply rational solutions to poverty. Such institutions, based largely on Bacon’s House of Salomon and other idealistic experimental learning centers, would improve the society through mandatory work and education programs, inoculating

⁴³⁵ Richard Dunning, *A plain and easie method shewing how the office of overseer of the poor may be managed ...* (1685). Accessed through EEBO. Also cited in Appleby, *Economic Thought*, 131.

novel labor attitudes into the poor while simultaneously increasing the nations' material output. Such proposals most commonly focused upon the workhouse, a model institutional space whereby the individual energies of English vagrants could be bent towards collective economic tasks.

There is a certain irony to this kind of response by English elites to the seventeenth-century poor crisis. While much of their discourse on improvement and reform was informed by a genuine and often religious altruism, the period's improving ideas were also equally influenced by new mercantile theories, England's strict sense of social hierarchy, and even the period's projecting impulse. The new economic ideas of mercantilism shared Baconian philosophy's goal of increased national plenty, yet mercantilism placed a special stress on domestic production and increased exports as the primary key to reaching this goal. While this mercantile impulse provided an extra impetus to projects like English workhouses, it was also responsible for many of the period's enclosing and engrossing efforts that were major contributors to seventeenth-century English poverty. Furthermore, as Baconian programs often stressed the shortcomings of traditional peasant practices, these experimental reforms frequently worked to remove many poor from their traditional livelihood channels. Thus many Baconian ideas on agricultural reform actually accelerated poverty-induced migrations. These factors were compounded by England's hierarchical discourses on order and asymmetrical power. As shown above, such ideas dictated that while improvements should help all members of society, it was natural for elites to enjoy the majority of these benefits. This attitude then allowed many proposals to fall into a projecting mode of operation, and when natural scientists advocated reforms in agriculture, workhouses, or

colonial policies there was often a fine line between plans with benefits for all, and projects that enriched a few at the expense of the many. Taken together, all of these factors within experimental philosophy and England's improving ethos heavily contributed to the period's crisis of vagabonds and masterless men. In other words, those attempting to solve England's poor crisis were those who had—usually unwittingly—taken a hand in creating poverty-induced migrations in the first place. Not surprisingly, when confronted with this new crisis, they attempted to solve it by applying the same improving principles which helped create the initial problem.

An excellent example of how agricultural innovation, social hierarchy, and poor reform could be blended into a holistic natural science program is seen in the writings of English reformer Walter Blith. Born to a Yeomen family in 1603, Blith quickly gained a reputation for being one of England's foremost improving farmers. He also served in the Parliamentary army during the Civil war, and afterwards was placed in charge of surveying confiscated Royalist properties, a position which allowed him to investigate dozens of country estates firsthand. He was a respected member of the mid-century's experimental philosophy circles, and Samuel Hartlib considered him a "very loving and experienced friend."⁴³⁶ In the aftermath of the war and at the height of the Hartlib Circle's political influence, Blith published two books that were arguably the seventeenth-century's most famous agricultural reform works: *The English Improver, or, A New Survey of Husbandry* (1649), and the second, expanded version *English Improver*

⁴³⁶ Joan Thirsk, 'Blith, Walter (*bap.* 1605, *d.* 1654)', *Oxford Dictionary of National Biography*, Oxford University Press, 2004; online edn, Jan 2008 [http://www.oxforddnb.com.floyd.lib.umn.edu/view/article/2655, accessed 22 Jan 2011] See also Joan Thirsk, "Plough and Pen: Agricultural Writers in the Seventeenth Century," in T.S. Ashton, et. al, eds. *Social Relation and Ideas: Essays in Honor of R.H. Hilton* (Cambridge: Cambridge University Press, 1983), 307-11.

Improved (1652). Like other experimental philosophy publications, the primary object of these books was to disseminate new empiric ideas on husbandry to the public. “Good husbandry is as the sinnews and marrow that holds together the joynts of common good,” argues Blith in his intro to the reader. “Study Improvements, which though they may not be said to be either Father or Mother to Plenty, yet it is the Midwife that facilitates the birth.”⁴³⁷ The work contains innovations on a variety of topics including forest planting, orchid growing, fen draining, new plow prototypes, enclosure, and the production of new cash crops such as woad and madder. The work begins by listing previous experimental philosophy authors including Francis Bacon, Gabriel Plattes, Grevasse Markham (discussed below), and Samuel Hartlib (particularly Hartlib’s works on discoveries from foreign places). In doing so, Blith places his work into a larger canon of seventeenth-century natural science.⁴³⁸

Despite being a book designed for knowledge dissemination, Blith’s intended audience was not poor cottagers or vagabonds. Substantial sections of his book are filled with either diatribes about the poor’s role in impeding agricultural reform, or passages which advocate laws for closer oversight over the poor. To Blith, chief amongst the current hindrances to good husbandry are “Idleness, Improvidence, and a slavish Custome of some old form,” all of which are “contrary to the mind and will of God in making us, and the end wherefore we were made.”⁴³⁹ The introduction of the *Improver* lists and condemns four great abuses within current husbandry practices, the final of which “is a calumniating and depraving [of] every new Invention” amongst the poorer

⁴³⁷ Walter Blith, *The English improver improved, or, The survey of husbandry surveyed discovering the improveableness of all lands...* (1652), 9. Accessed through EEBO.

⁴³⁸ *Ibid.*, 8. Accessed through EEBO.

⁴³⁹ *Ibid.*, 7.

sorts, particularly amongst the “mouldy old leavened husbandmen” who only practice traditional husbandry forms handed down to them by their forefathers. “This proud unteachable spirit an ingenious man abhorrs, which banes and poysons the very plenty of our Nation.”⁴⁴⁰ Beyond stubborn ignorance, Blith was also perturbed with a culture of laziness which he saw at the root of England’s agricultural problems. “The Commonwealth is low” he warns his readers, “and misery and penury will follow if we do not rouze the sluggard, and post after Industry, pursue all advantages of Improvement whatsoever. . . . O Sloth! Stand by, & let Ingenuity try a trick or two more, and wonder at thy own Ignorance and Weakness.”⁴⁴¹ His combination of experimental improvement, moral remonstrance, and support for legal poor reform can be best seen in his work’s introductory epistle to Oliver Cromwell. Here again, he lists a number of chief “prejudices” towards improving English agriculture and society. While most of these impediments deal with legal predicaments which obstruct proper land reform (for example land rights and canal digging), Blith saves his most important prejudice for the end:

“And the last though not the least [of impediments to good husbandry] is the raigin of many abominable Lusts, as Sloth and Idleness, with their Daughters, Drunkenness, Gaming, Licentious Liberty. Were not the greatest and best, and all men made to be usefull to the body? . . . How comes City and Country to be filled with Drones and Rogues, our highwaies with hackers, and all places with sloth and wickedness? I say no more but pray some quickning Act to the execution of our Lawes against these worse than heathenish Abominations.”⁴⁴²

The last part of this passage is important as it gives the most common example of how Blith and other reformers attempted to deal with the problem of beggars, vagabonds, or any other marginals who stood in the way of elite improvement projects. To these

⁴⁴⁰ *Ibid.*, “To the Husbandman, Farmer, or Tennant,” preface.

⁴⁴¹ *Ibid.*, 9. 64.

⁴⁴² *Ibid.*, “To the Right Honorable the Lord Generall Cromwell,” Preface.

reformers, the most effective solution to bad habits amongst the commoners was to simply force them to adapt new experimental ideas, often through compulsory education programs or direct laws which either prohibited or enforced particular husbandry and labor practices. For Blith, something that was equally pernicious to idleness was the “want of severe punishment of Idleness.” He particularly lamented the lack of parish programs for “compelling and constraining youth, and idle people,” into apprenticeship and servant programs. Suggestions for these laws take a variety of forms in Blith’s book, from rules which compel the poor to spin hemp and flax into cloth for export, to rules compelling cottagers and yeomen farmers to kill moles on sight, they being a “great mischief” to English husbandry.⁴⁴³ Such laws, according to Blith, would make the poor industrious, further entice English invention, and most importantly, “these horrid sinnes of Idleness, Lust, and Laciviousness would be checked, and those Drones, and Caterpillars, the bane of a Christian State, and shame of a Christian Nation, would not so swarm amongst us.”⁴⁴⁴

II: Workhouses

The best example of this desire to force the poor into improving habits comes from the seventeenth-century’s deluge of workhouse proposals. Like imperial expansion, workhouse projects were central to experimental philosophy’s ethos of material and moral progress. Indeed, it is no surprise that when the Puritan reformer and colonial entrepreneur John White expressed his experimental philosophy mantra of “knowledge causing piety, piety breeding industry, industry procuring plenty.” he was referring to

⁴⁴³ *Ibid*, 142, 118-9.

⁴⁴⁴ *Ibid*, 7-8.

workhouses.⁴⁴⁵ The primary rationale for workhouses was that the poor, as individuals, wasted their daily energies through acts of ignorance, disorganization, and sloth. Thus, throughout the century, experimental philosophers of all political stripes came forward to both Parliament and the public with a series of proposals for gathering up England's dispersed poor and collecting them into central repositories. Once inside, the poor's decentralized labor energies could be made productive by bending it towards collective economic tasks. Workhouses also meshed with this period's mercantile theories by attempting to harness the nation's "idle" labor pool for increasing national wealth via producing more goods for export. On another level workhouses, like colonies, were also imagined as social laboratories wherein social relations could be redrawn and regulated according to new, rational principles. These principles, justified in turn by experimental philosophy's commitment to moral and material improvement, meant reformers expected these spaces to incubate values of sobriety, honesty, and industry amongst its tenants. Like with the proposed Puritan settlements of Cromwell's Western Design, workhouse organizers imagined their projects might become, in time, tiny Godly communities. These spaces also dovetailed with imperial initiatives by arguing that the idle poor were a solution to both the empire's increasing need for provisional supplies, and to the endemic labor shortage within England's American colonies. This final facet can be seen through examples of workhouse proposals which advocated the forced production of goods such as naval sailcloth, or more directly, through the period's myriad proposals to send vagrants and beggars to the West Indies as indentured servants. Taken together, all of these facets of workhouse ideology blended science, labor, commodity production, and an expanding imperial economy into a single holistic program. Reformer and Royal

⁴⁴⁵ Webster, *The Great Instauration*, 34.

Society Member John Bellars perfectly encapsulated this constellation of sentiment when he argued in a single breath that workhouses “will add much more Value to the Kingdom, than if we had a full Possession of all the Mines in the *Indies*; or a Discovery of the admired Art of Transmutation.”⁴⁴⁶

Throughout the seventeenth century, workhouse proposals and treatises went through three major waves of proliferation. The first appeared in the late 1640s and were prompted by the dislocations of the English Civil War, which left many without homes or livelihood and produced a noticeable increase in the wandering vagabonds that vexed social elites. These reforms were also a response to the 1603 Elizabethan poor law. Many elites saw that law’s insistence on distributing poor relief via independent parishes as inefficient, and believed that the new Parliament should create stronger, state-wide institutions to deal with the problem on a more consistent and rational level. Most important, this initial wave of tracts fit into the larger zeitgeist of experimental reform which swept through England as the Puritan Parliament took control of the kingdom. Reformers saw the new government as an opportunity to put a host of their ideas into formal practice, ideas which the conservative Stuart court had been unresponsive to. As workhouse enterprises fit into this broad program of experimental reform, it is no surprise that some of the earliest workhouse proposals came from well-known experimental philosophers. Examples from this time include Samuel Hartlib’s *Parliament’s Reformation* (1646), his *Stilling the Orphan’s Cry* (1649), and William Petty’s earliest published work, *The advice of W.P. to Mr. Samuel Hartlib* (1648). As the new Parliamentary government gave way to the Protectorate and then the Restoration, tracts on poor reform waned. They later underwent a resurgence in the 1670s, prompted by the

⁴⁴⁶ Bellars, *Improvement of Physick*, 43.

publication of a pair of essays by mercantile mogul and Jamaican plantation owner Sir Josiah Child.⁴⁴⁷ Although much of the previous period's overt religious zeal had disappeared by this time, many of the core ideas from the 1670s can be traced back to mid-century experimental reformers, in particular the important Hartlib Circle associate, imperial advocate, and colonial projector Benjamin Worsley.⁴⁴⁸ The third florescence of workhouse proposals occurred in the 1690s, after war with France had devastated the English economy and in particular its expanding colonial sector. The resulting economic hardships were felt across the full spectrum of English society (as seen earlier in Defoe's work on projects), but particularly amongst the poor.

The most common theme shared amongst these three waves of reform was their insistence that the poor be compelled, rather than enticed, into various labor tasks. The idea was a focal point of Hartlib's initial poor treatise, *The Parliament's Reformation* (1646). In this work Hartlib—who was a sincere advocate of helping the poor through a sense of Christian duty—appeals to Parliament for both stronger vagrancy rules and a state-sponsored penal institution for organizing mandatory work routines. His reasoning for this kind of legal intervention was put bluntly: “because the major part of people doe never move to any good work willingly before they are commanded; and the command must be upon a penalty too, else they will doe little.”⁴⁴⁹ His attitude is later expanded in

⁴⁴⁷ These essays were his *Brief Observations Concerning Trade and Interest* (1668), which contained a lengthy essay by Sir Thomas Culpepper on poor reform, and Child's subsequent *Sir Josiah Child's Proposals for the Relief and Employment of the Poor* (1670). Child's 1670 essay was reprinted in his enormously successful 1693 economic treatise *A New Discourse on Trade*, which covered a variety of topics from agricultural reform, to mercantile theories, to poor relief, to advocating colonial projects. On Child's Jamaican plantations, see Index, Jamaican Land Patents, 1669, Jamaican National Archive, Spanishtown, Jamaica. See also Richard Grassby, 'Child, Sir Josiah, first baronet (*hap.* 1631, *d.* 1699)', *Oxford Dictionary of National Biography*, Oxford University Press, 2004; online edn, Jan 2008 [<http://www.oxforddnb.com.ezp1.lib.umn.edu/view/article/5290>, accessed 8 Aug 2011]

⁴⁴⁸ Grassby, "Child, Sir Josiah," *Oxford Dictionary of National Biography*.

⁴⁴⁹ Hartlib, *Parliament's Reformation*, 1.

his *London's Charity Inlarged, Stilling the Orphan's Cry* (1650), which contains multiple provisions for both aiding the “honest helpless Poor,” while incarcerating and reforming the “obstinate ungodly Poor.” Regarding the latter, Hartlib advocates for a cessation of all welfare provisions for those able to work, unless they agree to retire to a workhouse and labor therein. Invoking the biblical rule that man should toil for his daily bread, Hartlib argues that hunger “would be a sore scourge, and smart whip for idle persons... for hunger will tame the Wildest Colt, and constrain him to come to hand for hey and straw.”⁴⁵⁰ *London's Charity* is also an extensive proposal to Parliament, asking them (again) to charter an official corporation for dealing with London's vagrants. The corporation would act in concert with the mayor and city constables, who would be offered bounties to roam London's streets and bring “all idle persons to Bridewell and the Workhouses.” Once there, the poor would be “kept hard to worke” and confined for at least a month, unless they can provide proper security to the corporation's wardens “that they will behave themselves civilly and orderly, leaving off the trade of a begging idle life.”⁴⁵¹ Indeed, like Bush's *Poor Man's Helper*, Hartlib's distrust of the idle poor and his advocacy for their incarceration are at times taken to severe levels. In *London's Charity*, Hartlib complains of vagrants who are set free after being acquitted of petty Felonies, “for within a Moneth or lesse they have fallen to their old course of stealing, and brought to Prison againe.” Instead of simply being freed from jail, Hartlib recommends that these minor perpetrators be transported to either the nearest workhouse for an indefinite extended period, or else onto ships involved in the fishing trade, or the

⁴⁵⁰ Hartlib, *London's Charity*, 2-3.

⁴⁵¹ *Ibid.*, 9.

colonies to work as servants, so as “to make them serviceable to the Common-wealth, by reforming their ungodly life.”⁴⁵²

In addition to sharing the idea of commanding the poor to work, these seventeenth-century treatises are also similar insofar as they treat the poor as a resource to be managed, rather than an unfortunate flock to be nurtured or supported in the traditional Christian sense. Obviously these two ideas shared substantial overlapping ground during this time, and what was often deemed best for England’s mercantile standing was also seen by reformers as the best way to improve the entire lot of English society. However as the century progressed the idea of charity as a moral obligation was gradually replaced by a simple commodification of the poor, who were increasingly seen as objects to be marshaled in service of national wealth. This was particularly true after the Restoration, when writers abandoned their Puritan vision of a Godly society in place of what historian Charles Webster called a “leviathan political economy:” a world centered on commercial and other worldly endeavors.⁴⁵³

Yet even by mid century, ideas on commoditizing the poor are found in experimental philosophy tracts. One such example is physician Peter Chamberlen’s *Poor Man’s Advocate* (1649), a proposal for an enormous workhouse project to solve England’s economic woes. By the time of the Civil War, Chamberlen was no stranger to experimental philosophy, projecting, or a fashionable contempt towards traditional knowledge channels. Chamberlen gained initial notoriety in 1634 when he attempted to reform the midwife profession. He contended that traditional midwives were ignorant

⁴⁵² *Ibid.*, 10.

⁴⁵³ Webster, *Great Instauration*, 244-5. See Also Appleby, *Economic Thought*, Ch. 3 and 6; and Charles Wilson, “The Other Face of Mercantilism,” *Transactions of the Royal Historical Society*, Fifth Series, Vol. 9 (1959), 100.

and proposed a formal midwifery college, of which he was to be the head. The proposal drew fierce criticism and midwives issued a formal remonstrance to London's College of Physicians, where Chamberlen was a fellow.⁴⁵⁴ He later migrated to the Netherlands, where he perused a patent for an invention which would allow for wind-powered land travel. Likewise, Chamberlen's *Poor Man's Advocate* sets forth a workhouse plan of truly projecting proportions. It urges Parliament to create an enormous joint-stock for establishing workhouses across the entire kingdom, whereby up to two hundred thousand poor could be employed in producing goods for export. The program was to be paid for via profits from an array of government income areas: confiscated crown and church lands, enclosure profits, empty mines, tithes, parish collections, a public bank, and profits from colonial plantations. The work is filled with references towards the poor's role as a potential economic resource, and the tract mixes religious benevolence with economic prosperity to justify its proposals. By investing all of England's public assets into a single workhouse joint-stock, Chamberlen argues for the poor's potentially central economic role within England's growing economy. "The wealth and strength of all Countries are in the poore; for they do all the great and necessary workes, and they make up the maine body and strength of Armies."⁴⁵⁵ Chamberlen also calculated that through his scheme England would see exponential returns, and assumed that if each poor could "clear but 20£ a head (as that's the least the meanest Hine can do that pays his Rent), the year will bring about 4000,000 £ to the publique treasurie, besides all other profits herein

⁴⁵⁴ Helen King, 'Chamberlen, Peter (1601–1683)', *Oxford Dictionary of National Biography*, Oxford University Press, 2004; online edn, May 2006 [http://www.oxforddnb.com.ezp2.lib.umn.edu/view/article/5067, accessed 5 July 2011].

⁴⁵⁵ Peter Chamberlen, *Poor Man's Advocate* (1649), 1. Accessed through EEBO.

mentioned.”⁴⁵⁶ Such optimistic projections led Chamberlen to christen the poor as England’s “best Elixir, the *Philosopher’s* stone, that is so cheap, yet multiplies the treasure.”⁴⁵⁷

Such assertions were repeated later in the century, often with a greater sophistication and emphasis which suggests England’s increasing preoccupation with demographics and political economy theories during this time. The above-mentioned reformer John Bellars provided a series of examples during the late seventeenth and early eighteenth centuries. Born in 1650, Bellars was a Quaker and cloth merchant who both wrote and participated in several workhouse proposals. He was also familiar with both international commerce and the Quaker transatlantic network, was good friends to William Penn Jr., and involved in a large Pennsylvania project which secured one-hundred thousand acres for a Huguenot refugee settlement.⁴⁵⁸ Later in his life he became a member of the Royal Society and was close friends with its then-president Sir Hans Sloane. Like other authors of the late seventeenth-century, a more sophisticated understanding of political economy allowed Bellars to better theorize the poor’s economic and productive roles, and he concluded that they were the foundation of England’s economic health. His highly influential *Essays about the Poor, Manufactures, Trade, Plantations, & Immorality* (1695), makes this argument forcefully, stating that “There is no increasing of rich men, but as poor Labourers increase with them ... Labouring people must improve our land, raise us plenty of Food, Clothing, and other

⁴⁵⁶ *Ibid.*, preamble.

⁴⁵⁷ *Ibid.*, preamble.

⁴⁵⁸ Tim Hitchcock, ‘Bellars, John (1654–1725)’, *Oxford Dictionary of National Biography*, Oxford University Press, 2004 [<http://www.oxforddnb.com.ezp1.lib.umn.edu/view/article/2050>, accessed 10 July 2011].

Necessities, and by what they raise, increase our Trade at home and abroad; acquire us Riches by raising more then we spend.”⁴⁵⁹

Yet his appraisal also asserted that the poor were an *unrefined* resource. This was a crucial distinction, and like so many other novel crops and products of seventeenth-century society, elites believed that it was up to them to find ways of processing and perfecting the poor’s raw potential. Bellars argues as much in his 1714 hospital treatise, remarking that “The Poor without Employment are like rough Diamonds, their worth is unknown. ... [B]ut the Polishing of these rough Diamonds, that their Lustre and Value may appear, is a Subject highly worth the Consideration and Endeavour of our greatest Statesmen and Senators.”⁴⁶⁰ This emphasis on refining was typically expressed through a desire for increased oversight and management, as only under close supervision could the poor be transformed into something conducive to national growth. “That the Poor want to be better managed than they are,” argued Bellars, “is plain, to every one that hath Sense or Charity.”⁴⁶¹

Central to this idea of managing the poor so as to increase their resource potential was an insistence upon first surveying and enumerating the poor in any given region, and subsequently confining them into central spaces. Proposals in poor management typically begin with a kind of registry, whereby each parish would keep lists of the unemployed in each area, their ages, and the types of tasks they would be physically

⁴⁵⁹ Bellars, *Essays about the Poor, Manufactures, Trade, Plantations, & Immorality* (1695), 7-8. Accessed through EEBO. On Bellars being an inspirational source to Owens and Marx, see Hitchcock, ‘Bellars, John,’ *Oxford Dictionary of National Biography*.

⁴⁶⁰ Bellars, *Essay Towards the Improvement of Physick*, 37.

⁴⁶¹ Bellars, *Essays about the Poor*, 1. It is notable that here Bellars’ work begins with a nod to Sir Josiah Child’s 1670 essays, and thus by doing so he is placing his own work within the context of this famous reform advocate and colonial entrepreneur.

suitied for.⁴⁶² That being accomplished, parish poor wardens would be able to better allocate their region's stock of beggars in the most efficient manner. Next, as seen in Hartlib's above proposals, these reform programs advocated the forced migration of vagrants into central work spaces so as to better control their daily tasks. Bellars argues that "in such Collections of People there may be all Conveniences for the Instruction and Oversight, both in virtue and industry."⁴⁶³ Chamberlen mimics this, stating that his workhouse will succeed where others have failed because the poor "are to be under a more immediate order, instruction, and government, then ever they were under."⁴⁶⁴ Henry Robinson, a mid-century theorist and collaborator on many of Hartlib's projects, wrote at length on the benefits of English workhouses in his famous mercantile treatise *England's safety in Trade's Increase* (1641). Therein he states that workhouses offer the opportunity "to reclaime many ill disposed wretches, and make them, *will they nil they*, in some sort become serviceable to the Common-weale."⁴⁶⁵ Bellars agreed, imagining the poor to be "like the Scraps of Paste the Cooks clip off the Edges of their Mince-Pyes and tarts." Such random pieces, "tho' to sume may appear wast and useless, yet the Artist by working of these Scraps together, will make a good a Pye of them, as of any of the others."⁴⁶⁶

Related to this idea of the poor as an unrefined raw material, this insistence on close management was also expressed through a civilizing discourse. By indoctrinating the poor into enduring regular work discipline, their wicked qualities would diminish.

⁴⁶² See for example Bush, *Poor Man's Friend*, 9-10.

⁴⁶³ Bellars, *Essays about the Poor*, 4.

⁴⁶⁴ Chamberlen, *Poor Man's Advocate*, 11.

⁴⁶⁵ Henry Robinson, *England's Safety in Trade's Increase, most humbly presented to the high court of Parliament* (1641), 43. Accessed through EEBO. My italics.

⁴⁶⁶ Bellars, *Essay Towards the Improvement of Physick*, 40.

This makes not only for a more productive poor population, but also a docile one that is more willing to submit to authorities. This civilizing impetus was partly based in traditional conceptions of order and Christian morality, but was also related to experimental philosophy's insistence that people, like nature, could be improved through the systematic application of rational principles. Peter Chamberlen gives examples of these principles at work when he states with certainty "that employment and competencies do civilize all men, and makes them tractable & obedient to Superior's commands."⁴⁶⁷ Such attitudes were not restricted to domestic thinkers, and those in charge of the colonies shared this appraisal on the positive effects of rigid work routines. In late 1658, Jamaican governor Edward D'Oyley wrote to Whitehall, encouraging them to send even more convicts and prisoners to meet his colony's endemic labor demands. "I know of no place better to tame restless spirits as this," he wrote, speaking of the plantation labor such arrivals would endure. "There would be much benifet accrue; the nation would be rid of such turbulent men, the island here supplied with their chief want." D'Oyley also argues that organized plantation labor would not only benefit the new settlement, but would reform the habits of those transported. It would "in some sort be an advantage to them, who not knowing the price of peace and plenty at home, will by the looking-glass of labor be taught to value it."⁴⁶⁸

This insistence on the civilizing aspect of forced labor meant many workhouse proposals combined long work hours with systems of formal education. This trend was also linked to experimental philosophy's ethos of increasing and disseminating knowledge through formal education systems. In particular many of these proposals

⁴⁶⁷ Chamberlen, *The Poor Man's Advocate*, 9.

⁴⁶⁸ D'Oyley to Thurloe, Thurloe, *State Papers*, VII, 499.

drew heavily from Bacon's House of Salomon and other works which featured utopian centers of experiment and learning. While elites occupied all the major positions within these fictional colleges, these institutions also emphasized creating channels for distributing new ideas to society's common members. Thus they emphasized a flowering of knowledge amongst the entire community while maintaining a hierarchical power structure. Bacon's House of Salomon contained a number of "novices and apprentices," who worked to ensure that the knowledge produced therein could be passed to future generations.⁴⁶⁹ It also contained a council that decided which discoveries should be kept secret and within the college (according to the medieval tradition of artisanal secrets), and which should be published for the benefit of society writ large. Finally it contained a handful of people called *Benefactors*, whose job was to examine the college's more specialized practices "and cast about how to draw out of them *Things of Use*, and *Practices for Man's life*," presumably so that such concepts could be brought to the attention of the vulgar public.⁴⁷⁰

Reformers were particularly interested in combining workhouses and education amongst children, who comprised up to half of the English poor.⁴⁷¹ At its most basic level, these programs were to teach young people to live sober and honest lives, to embrace a diligent work ethic, and to obey their superiors' commands. Indeed, many believed that workhouse reform programs would more easily succeed with children than adults, as children's habits had not been hardened by years of wandering and begging. To reformers like the Puritan philanthropist Thomas Firmin, the most important thing was that young minds and hands were kept busy, so as "to prevent an idle, lazy kind of

⁴⁶⁹ Bacon, *New Atlantis*, 44-45.

⁴⁷⁰ *Ibid*, 44-45.

⁴⁷¹ Coleman, *Seventeenth-Century Labour*, 286.

Life, which of once they get the habit of, they will hardly leave.”⁴⁷² Timothy Nourse agreed, arguing that a primary benefit of poor houses was that children’s “tender fingers are taught to work before they can well use their Tongues.”⁴⁷³ John Bellars even imagined that, once a generation of children had been brought up under this type of industrious instruction, the program could even be expanded to wean elite children from profligate habits. Young elites would be sent to live with these industrious poor, watching them work. In such a scenario, labor “would be as much Diversion to the Children as Play, which would the more Inure them to Business when grown up.”⁴⁷⁴ Some proposals went so far as to place a higher priority on workhouse education than on keeping poor families together, and mandated that poor children be sent away to workhouses. John Bellars argued as much in several proposals, purely on the basis that “the poor have very ill qualities, and are as ill tutors, as well as evil Examples to their Children.”⁴⁷⁵ Granted, this tradition of separating families had a precedent within the Elizabethan poor laws, which stipulated that parishes were required to find servant or apprentice positions for children whose parents could not support them. Yet there remains a key difference insofar as these older rules were primarily designed for the modest goal of providing basic employment and sustenance within a traditional moral economy. Conversely by the 1640s, the newer emphasis on child education within workhouses was very much a product of the period’s new experimental ethos, the Puritan desire for moral discipline, their understanding of the productive capacity of skilled and

⁴⁷² Thomas Firmin, *Some proposals for the employment of the poor* (1681), 2. Quoted in Appleby, *Economic Thought*, 141. See Appleby, *Economic Thought*, 140-3 for several more similar comments upon youth, work, and poverty.

⁴⁷³ Nourse, *Campania Foelix*, 228.

⁴⁷⁴ John Bellars, *Proposals for Raising a Colledge of Industry...* (1695), 11. Accessed through EEBO.

⁴⁷⁵ Bellars, *Essays about the Poor*, 2-3.

disciplined workers, and the ability of central institutions to disseminate ideas of improvement.

Beyond this basic drive for increased discipline, some workhouses stressed the apprentice component of education, envisioning that the poor would not only learn the value of labor but be educated in various crafts to prepare them for the outside economy. Thus while some workhouses mandated that the poor be kept at simple tasks like spinning flax, wool, or hemp, others envisioned a wide variety of apprenticeship programs. Diversity within this kind of training was also important for economic reasons. Most reformers, also keen mercantilists or merchants, understood that training too many poor artisans in any one trade would have ruinous economic consequences for existing workers of that particular industry, and saw the situation as something reformers should prevent.⁴⁷⁶ On another level, educating a diverse range of tradesmen meshed well with the Baconian philosophy of leaving “no stone unturned” in regards to exploring and developing diverse knowledges and industries, and in applying their principles to every corner and facet of English society.

The first Baconian advocate to truly integrate an experimental college into a concrete workhouse proposal was Royal Society member William Petty. In one of his early publications, *The Advice of W.P. to Samuel Hartlib* (1647), Petty produces an elaborate proposal for “*Ergastula Literaria*, Literary work-houses, where Children may be taught as well to doe something towards their living, as to Read and Write.”⁴⁷⁷ This

⁴⁷⁶See for example John Bellars’ 1690 workhouse proposal to Parliament, which was adamant that education programs cover a diversity of trades for this very reason. John Bellars, *To the Lords and Commons in Parliament assembled a supplement to the Proposal for a colledge of industry* (1690), 2. Accessed through EEBO.

⁴⁷⁷ Petty, *The advice of W.P. to Mr. Samuel Hartlib for the advancement of some particular parts of learning* (1647). Accessed through EEBO.

was to be a national honors system combining elements of the workhouse and school, a place which all children over the age of seven could attend regardless of wealth. Manual labor would be required of all participants so as to induce discipline, but poor children would work longer hours to compensate for their free tuition. This was to be a truly comprehensive education program including drawing, mathematics, morality, foreign languages, all the major artisanal trades, and physical fitness (often through manual labor). The college would also contain all the latest inventions and foreign curiosities brought to England, including exotic birds and animals, ancient artifacts, recent mechanical engines, an observatory, art gallery, and library. In fact Petty wanted his school to contain so many diverse learning objects that it might be considered “the Epitome or Abstract of the whole world.”⁴⁷⁸ Petty’s proposal was no doubt a departure from most workhouse projects of this time, which merely strove to keep the poor from idleness and villainy.⁴⁷⁹ However Petty’s program is relevant here as it demonstrates how experimental philosophy could combine several disparate social elements into a single holistic program. As shown in chapter one, experimental philosophers believed that the world’s discoveries and knowledge objects were at their most useful when extracted from their initial diverse geographical locations, gathered into a common repository, and managed under singular guidance. Not surprisingly this attitude was also applied to the poor, and these same philosophers envisioned workhouses, libraries, and schools as entities which all achieved similar effects.

⁴⁷⁸ *Ibid.*, 8.

⁴⁷⁹ See for example, how Petty’s educational system contrasted with the puritan reformer Thomas Firmin, who created workhouses with basic education programs, but was adamant that these programs be restricted to trades. To Firmin, it was an error to teach liberal arts to the poor, as it was beyond their life station. See Philip Dixon, ‘Firmin, Thomas (1632–1697)’, *Oxford Dictionary of National Biography*, Oxford University Press, 2004; online edn, Jan 2011 [<http://www.oxforddnb.com.ezp1.lib.umn.edu/view/article/9482>, accessed 30 Nov 2011].

We can further see how these seemingly disparate categories overlapped by looking at the larger purpose of Petty's *Advice*. The work was an attempt to expand upon a number of ideas previously put forward by his friend and mentor Samuel Hartlib, in particular Hartlib's project The Office of Address. At its most fundamental level, The Office of Address was to be a central repository in London for all types of scientific and economic information.⁴⁸⁰ First, it would be a public library where the latest experimental discoveries would be published and housed so that all English people could incorporate the latest innovations into their farms and trades. It also contained the names of doctors, scholars, merchants, and any other person who wished to advertise their services to the city. By gathering these elements under a single roof, Hartlib imagined his Office to be "as in one Magazin or Market-place, all things Necessary, Profitable, Rare, and Commendable, which are extant in severall places, and scattered here and there, are brought together."⁴⁸¹ Moreover, Hartlib's Office project held a particular interest in London's poor, as he believed they would benefit the most from his proposal. This was because the Office was also to serve as a clearing house for all sorts of London employment opportunities. City beggars would be required to enter their names and skills within the Office registry to qualify for public assistance, and employers would use the Office to post job advertisements. To Hartlib, this would reduce the number of beggars by providing them a central vehicle for finding employment, one that was superior to seeking work via the traditional and disconcerted word-of-mouth method.

⁴⁸⁰ See for example Samuel Hartlib, *A further discoverie of the office of publick adresse for accommodations* (1648). Accessed through EEBO. See also M. Greengrass, 'Hartlib, Samuel (c.1600–1662)', *Oxford Dictionary of National Biography*, Oxford University Press, 2004; online edn, Oct 2007 [<http://www.oxforddnb.com.floyd.lib.umn.edu/view/article/12500>, accessed 29 Nov 2010].

⁴⁸¹ Hartlib, *A further discoverie*, 26.

Like with Petty's honors school, Hartlib envisioned a single institution combining natural science, trade secrets, employment, poor reform, and national growth. Both authors make this connection explicitly in their respective texts. Large sections of Petty's *Advice* are dedicated to ideas for improving Hartlib's Office of Address, a project Petty strongly supports. By bringing both knowledge and workers under the aegis of a common institution, Petty asserts that "the wits and endeavours of the world may no longer be as so many scattered coales or firebrands, which for want of union, are soone quenched, whereas being but layed together they would have yeeled a comfortable light and heat."⁴⁸² Hartlib makes even grander connections, arguing that thorough social improvement requires a system which incorporates all these elements into a single program, managing them as components of a single complex machine:

"He that can look upon the frame of a whole State, and see the constitution of all the parts thereof, and doth know what strength is in every part, or what the weaknesse thereof is, and whence it doth proceed; and can, as in a perfect modell of a Coelestiall Globe, observe all the Motions of the Spheres thereof; or as in a Watch, see how all the wheels turn and worke one upon another for such and such an ends, he only can fundamentally know what may and ought to be designed."⁴⁸³

Beyond The Office of Address, Hartlib's plans for workhouse activities were equally diverse. In the countryside he envisioned the poor engaging in a variety of tasks including "plowing and feeding of Cattle, fishing, fowling, gardening, planting and graffing for fewell, Timber, and fruit." Within the cities, workers would engage in "spinning linnen and woollen, knitting, weaving, sowing, with Shoemakers, Taylors, and such like." Besides providing spaces for the poor to work, he also envisioned a national distribution system for poorhouse products. If any workhouse could not sell its wares due to anemic local demand, it would be sent away to a central storehouse and sold to

⁴⁸² Petty, *The Advice of W.P. to Samuel Hartlib*, 2.

⁴⁸³ Hartlib, *A Further Discoverie*, 26.

merchants elsewhere in the kingdom.⁴⁸⁴ Hartlib's typical blending of religious piety with experimental philosophy also meant his workhouses included mandatory church sessions on the Sabbath, as well as a special fund for the poor, paid via public fines on swearing and drunkenness. He even advocated that children within workhouses be taught warlike exercises, "bringing them up, some for the Drum, and Pipe, some for the Trumpet."⁴⁸⁵ This diversity of tasks for the English poor was echoed by other mid-century natural scientists. Large sections of Walter Blith's *English Improver* was dedicated to disseminating information on new profitable cash crops suitable for the English climate, particularly hemp, flax, madder, and woad. Not surprisingly, this advocacy is coupled with an insistence on poor reform so as to create a labor force ready to process these new crops. When listing the benefits of woad, Blith contends that while it yields many personal benefits such as increased rents and profits, yet the main benefit is "national, in that it sets many poor to work."⁴⁸⁶ For Madder, he complains that England imports much of this dye when it could be made at home. To fix this he urges "the Erection of such a Plantation" in England, so as to adequately supply the dye to the English market. "I am confident [this] is a design of incomparable good," he argues, "especially, it imploying so many hands."⁴⁸⁷ Later when discussing Hemp, Blith admits that the reason the English fall behind the Dutch in Hemp production is not for lack of land or knowledge, but a lack of people to process the crop. "Had we but Law to put in execution to constrain people to labour [hemp]... what should we want?"⁴⁸⁸

⁴⁸⁴ Hartlib, *The Parliament's Reformation*, 2.

⁴⁸⁵ Hartlib, *London's Charity*, 13.

⁴⁸⁶ Blith. *Improver Improved*, 234.

⁴⁸⁷ *Ibid*, 235,

⁴⁸⁸ *Ibid*, 255.

As demonstrated in chapter one, experimental philosophers were not only concerned with domestic improvement, but incorporated many ideas on international trade and foreign plantations into their visions for an improving society. Similarly, many workhouse proposals paid special attention to the colonial sector when itemizing what benefit the poor may be to society. This facet of English workhouse reform was strengthened by the fact that many reformers and experimental philosophers were active participants in imperial and plantation ventures. While Hartlib was advocating registries and workhouses at home, he spent an equal amount of time promoting silk-worm plantations in Virginia as a means to make England less dependent upon foreign imports. These were not separate projects, as unprocessed silk thread could be sent to England for spinning, where “we have plenty of women, children, old folks, lame, decrepit, &c. who are fit to be overseers of this work.”⁴⁸⁹ Later in the century, reformer Richard Haines drafted several proposals for hemp-spinning work-houses, arguing that the cloth produced in these places could be put to use as sails, cables, and nets within the English navy and fishery.⁴⁹⁰ Reformer Thomas Firmin spent a good deal of his life drafting workhouse proposals, and on a few occasions enacted his ideas. In the late 1670s he ran a London workhouse wherein the young boys went to the shipyards to work with oakum, while the girls spun hemp sacks and sails which were sold to both the East India and Royal African companies.⁴⁹¹ Decades later John Bellars made similar connections when

⁴⁸⁹ See Samuel Hartlib, *His legacy of husbandry* (1655), 58.

⁴⁹⁰ See for example Richard Haines, *The prevention of poverty* (1674), and Haines, *Proposals for building, in every county, a working-almshouse or hospital...* (1677). Both Accessed through EEBO. See also Paul Slack, ‘Haines, Richard (bap. 1633, d. 1685)’, rev. *Oxford Dictionary of National Biography*, Oxford University Press, 2004 [<http://www.oxforddnb.com.ezp1.lib.umn.edu/view/article/37501>, accessed 30 Nov 2011] Haines also argues that increased sailcloth production will be beneficial for the East and West India trade. See Haines, *poverty*, 14.

⁴⁹¹ Thomas Firmin, *Some proposals for the employment of the poor...* (1681), 5,45. Accessed through EEBO.

he dedicated his workhouse proposal to the newly-chartered South Sea Company, arguing that his workhouse would create a ready workforce for the Company's fishery operations.⁴⁹² The mercantile theorist Henry Robinson even suggested that the nation's poor be subject to mandatory swimming lessons so as to similarly benefit the seafaring trades.⁴⁹³

Workhouses were connected to imperial pursuits in other ways as well. One of the most striking examples is the use of colonial metaphors when describing a workhouse community. As mentioned above, workhouses and colonies were related insofar as experimental philosophers imagined both as social laboratories wherein they could eschew traditional social influences and redesign society from the ground up upon new rational principles. Workhouses and colonies were alike insofar as they were both imagined as a *closed* space, one where elites could increase their governance over their project's participants by controlling which bodies and ideas were allowed to enter and exit. Bellars made this point explicit on multiple occasions. His *Essays on the Poor* (1699) spoke of workhouses as if the poor were "gathered and formed into little Bodies, and several Classes of needful Employments, as if going to plant a new Country, which would be as gaining several new Provinces to the Kingdom."⁴⁹⁴

A good example of how all these diverse elements fit together is seen in William Goffe's 1649 pamphlet *How to Advance the Trade of the Nation, and employ the Poor*. Goffe was a grocer and staunch Parliamentarian during the Civil War, playing a key role in the regicide of Charles I. He was also involved in colonial ventures, having been granted lands in Ireland and at one point purchasing one sixth of Newfoundland from its

⁴⁹² Bellars, *Essay Towards the Improvement of Physick*, 35-6.

⁴⁹³ Appleby, *Economic Thought*, 78.

⁴⁹⁴ Bellars, *Essays About the Poor*, 4.

proprietor Sir David Kirke.⁴⁹⁵ As a regicide, he was one of the few revolutionaries that was not pardoned at the Restoration and spent his remaining years hiding in Massachusetts. Goffe's pamphlet was yet another attempt to deal with England's poverty crisis, but it was also a proposal that incorporated military improvement concerns into its overall program. Goffe suggested that a parish tax be collected and the money used to purchase vacant land tracts near each of England's major fishing ports. The government would then erect a series of "fishing-factories" on these plots, meaning camps "for sowing Hemp and Flax, and planting of Trees, as are convenient for Building of Ships, Hoys, and Busses."⁴⁹⁶ These factories would include dormitories, and while in the camp workers would be protected from any debtors, provided they went to work every day. In the evening these workers would also patrol the local port and were offered rewards for apprehending smugglers. Each camp would include a series of master craftsmen who would educate the poor in fishing, net-making, and other related trades. Goffe imagined that the products from these factories could either be given to the Royal Navy or sold to the merchant marine. In the latter case the product would be taxable and would thus increase government coffers. This part of the plan was to be combined with mercantile import bans on similar products from foreign countries. Finally the camp would be staffed and managed by the military, and officers would "be appointed to discipline these Men, every Week or Fortnight, and they to be the Governors over these People, at each of these fishing factories."⁴⁹⁷ Each parish would then, by law, send all of its able-bodied

⁴⁹⁵ Christopher Durston, 'Goffe, William (d. 1679?)', *Oxford Dictionary of National Biography*, Oxford University Press, 2004; online edn, Jan 2008 [<http://www.oxforddnb.com/view/article/10903>, accessed 10 July 2011].

⁴⁹⁶ William Goffe, *How to Advance the Trade of the Nation, and employ the Poor. Folio, containing four Pages.* (1649), 3. Accessed through EEBO.

⁴⁹⁷ *Ibid*, 3.

poor to these seaside camps, which “in Time will become famous Fish-markets, and these Men well disciplined, which will be good Outguards for our Kingdom, ready to assist in Time of Necessity, and will breed up a Nursery of Seamen ready to man our Royal Navy on any Occasion.” It was not only a plan for employing beggars, but a broad vision of martial work camps which encompassed poor relief, peacetime military employment, provisioning for the imperial navy, and increased governmental revenues.

I use Goffe’s plan for seaside military work camps as a final example because it provides a detailed example of how workhouses utilized spatial restrictions, involved close control over daily tasks, orchestrated the oversight of bodily movements, and produced goods for empire, all within the context of poor reform and national improvement.⁴⁹⁸ In doing so they mirrored Atlantic plantations, which were similarly developing enclosed spaces where workers were closely overseen for purposes of personal and national growth. As should be clear by now, both workhouses and plantations tapped into experimental philosophy’s broad conception of social improvement. However, linkages between the two institutions went beyond a coincidental application of similar general principles, and many of England’s poorhouse reformers directly advocated both slavery and indentured servitude. Prior to the Barbadian sugar revolution, while slavery was still rare in the English Atlantic, workhouse advocates frequently touted indentured colonial servitude as a key counterpart to their domestic workhouse programs. They were particularly fascinated by the colonies’ seemingly limitless labor demands, and argued such places could serve as reserve labor markets should workhouses be unable to absorb all of England’s masterless

⁴⁹⁸ This connection between workhouses and military training shows how these spaces were being infiltrated with new types of disciplinary power characteristic of our modern era. See Michel Foucault, *Discipline and Punish*, Ch. 3.

men. After 1650, when England's population stagnated and the domestic economy improved, experimental philosophers continued to advocate the benefits of a large colonial labor force and increasingly began to see African slaves as the key to imperial development. The last sections of this chapter will illustrate these points. However before doing so, it is important to examine England's domestic farm servant tradition in sixteenth and seventeenth-century, and how colonial servitude and slavery were informed by this traditional and hierarchical agrarian institution.

III: Servitude

The English farm servant tradition demonstrates the principles of an ordered society at work. The basic concept was that families who could not financially support their children would contract their older youths out as "servants" to neighboring farmers in need of temporary labor. These contracts were done on an annual basis, often taking place at annual hiring fairs in each parish. The arrangement was ubiquitous in early modern England, with over 60% of English youth between 15 and 24 participating in the tradition.⁴⁹⁹ Servants were then put to work in whatever fashion the master might direct, and in return were granted room, board, and sometimes a small monetary prize at the conclusion of the term. In social and legal terms, the servant was considered a member of the family unit he or she was working for, and a servant's legal standing was very similar to that of a wife under the English coverture system. Within early modern texts servants are most frequently described as family members, although this should not be

⁴⁹⁹ Ann Kussmaul, *Servants in Husbandry in Early Modern England* (Cambridge: Cambridge University Press, 1981), Ch. 2. One should note that this was not always a system of poor farmers sending out their children to wealthier neighbors. Even among families of the same social status, both family sizes and agricultural labor demands would fluctuate widely depending upon the crops produced and the life-cycle stage of the families in question. Younger families with many small children would need the help of older youths, while older families with many adolescents would have too many mouths to feed.

confused with the nuclear family today.⁵⁰⁰ As such, they occupied an economic and social position which has no modern counterpart, and were not “free” in the modern sense to pick and choose jobs at will.

English culture prescribed that a master should provide a certain amount of care for his servants, however in practice there were great variations regarding how well these paternal responsibilities were enacted. Tasks and welfare were left almost exclusively up to discretion of the master, and England’s culture of orders often meant days could be long, from five in the morning until nine at night in many cases.⁵⁰¹ In addition to long hours, servants were left with few legal rights to improve their low position within the social hierarchy. In particular, as dependants of the family they were left with little recourse should their work relationships prove bad. While servants were allowed to testify in court against their master, there were few legal cases where this was effectively used. Court cases typically involved issues of whether or not a servant was adequately provisioned with food and clothing, or whether a master had an obligation to continue caring for a sick or lame servant, and rarely did issues of work exploitation arise.⁵⁰² Furthermore, as seen in the case of Samuel Pepys, corporal punishment in the form of whippings and beatings was commonly employed upon servants who were thought to be lazy or recalcitrant, and the use of such punishments was frequently upheld within court. Finally servants were unable to leave their position once locked into their annual contract,

⁵⁰⁰ See for example Kussmul, *Servants*, 7, for an explanation of how the English language had no word which comprised the idea of “family” or “kin” which did not include the servants housed within the family at that point.

⁵⁰¹ *Ibid*, 35.

⁵⁰² *Ibid*, 33-4.

and a series of anti-vagrancy laws applied to those who attempted to do so before their end of their term.⁵⁰³

Servants rarely worked at the same estate for more than one year at a time. This was mainly due to an English farm's frequently changing labor demands from year to year, and also to the changing abilities of servants as they progressed through adolescence. (A fourteen year-old and a nineteen year-old had greatly differing abilities in regards to farm tasks.) Servants were also encouraged to migrate on an annual basis because if a worker stayed within a parish for more than one year they became eligible for parish poor relief. This high turnaround did help mitigate some of the worst servant abuses, as cruel masters could gain a poor reputation amongst the area's servant labor pool, and may have difficulty finding workers thereafter. Families typically began to lease out their children at age fourteen, after which they worked annual contracts until the age of twenty or until they became married. After graduating from servant-hood, these workers typically became cottagers (small tenant farmers) or day laborers, and would begin contracting their work for daily or weekly periods. While the position of a day-laborer allowed for greater flexibility within the labor market, it also left recently graduated servants more vulnerable to economic recession. Most often it was this post-servant group, too old to be servants and left without lands or permanent employment, who comprised the great masses of wandering poor during this period.

This servant tradition evolved out of late-medieval practices and customs, and like England's sense of social hierarchy, was established long before England's seventeenth-

⁵⁰³ These laws not only applied to servants, but were common amongst all types of English labor arrangements in the seventeenth century. See Robert Steinfield, *The Invention of Free Labor: The Employment Relation in English & American Law and Culture, 1350-1870* (Chapel Hill: University of North Carolina Press, 1991).

century imperial expansion. Moreover, these attitudes towards servants were not deemed excessive or exploitive, but merely a part of the larger equilibrium which placed the young and poor at the foot of their social superiors, and placed the landed gentleman at the center of control via his status as the *paterfamilias*. Indeed, it was this traditional cultural linking of agriculture and order which made Heresbach's maxim, "that the best dung for the field is the master's foot," one of the most frequently re-asserted proverbs of seventeenth-century English agriculture. Yet like with poor reform, increasing control over traditional farm servant practices was a matter of acute interest to the new experimental philosophers of the seventeenth century. As the countryside was frequently thought to be a place of "beasts, loutes, ... and trees," it was up to the experimenting lord to oversee that his estate utilized the latest techniques and functioned with the appropriate efficiency.⁵⁰⁴ English agricultural reformer Gervase Markham—a man who republished Heresbach's *Four Bookes* in the early seventeenth century—attempted to improve the servant tradition by compiling statistics on the labor required to perform various farm tasks, and then calculating how much could be expected from a farm servant without risking their illness and injury.⁵⁰⁵ Markham surmised that the ideal daily schedule for a farm laborer consisted of rising before four in the morning and working at the plow and in the stable until six in the evening, with only half hour breaks for breakfast and lunch. After dinner, the worker was expected to do a variety of tasks around the farm including spinning, stamping apples, grinding malt, or mending the family's shoes, followed by a

⁵⁰⁴ Heresbach, *Four Bookes*, 2.

⁵⁰⁵ Gervase Markham "Markham's Farewell to Husbandry" found in Markam *A Way to get Wealth...*(15th Edition, 1695). First published 1631. Accessed through EEBO.

final round of tending the cattle at eight in the evening, and finally evening prayers before being allowed to retire.⁵⁰⁶ This, according to Markham, was ideal reform.

In America, it was these discourses on English husbandry, social hierarchy, and rural servant arrangements which informed indentured servitude's initial development in the New World. Moreover, the ideas of England's seventeenth-century improvers and reformers followed closely in the wake of England's earliest transatlantic settlements.⁵⁰⁷ In the particular case of Heresbach and Markham, their ideas were literally transferred to Virginia in 1620, when the Virginia Company loaded an outbound provision ship with an English translation of Heresbach's treatise and several of Markham's works "on all kinds of English husbandry and huswifry." On that same voyage the Company also sent a letter with the books, which warned the books' recipient to guard the works carefully, "otherwise you will be defrauded of them."⁵⁰⁸

It was in early Virginia where England's transatlantic custom of indentured servitude initially took shape. The Virginia Company had originally desired each of the Virginian colonists to be an investor in the Company joint-stock, and thus be eligible to

⁵⁰⁶ Markham, "Markham's Farewell to Husbandry," 115-117. See also E.P. Thompson, "Time, Work-Discipline, and Industrial Capitalism," *Past and Present Society* 38 (Dec., 1967), 77.

⁵⁰⁷ Other scholars have pointed to England's apprenticeship tradition as a second source of inspiration for indentured servitude. The apprenticeship tradition was similar to agrarian servitude, with poor families leasing out children as apprentices to artisans. These contracts were different from farm service, as the period of apprenticeship was set at seven years by the 1548 Statute of Artificers, and the master artisan was obliged to provide not only room and board, but artisan training in the given occupation. The seven-year standard within indentured servitude was most likely borrowed from this tradition, however most other aspects of work, housing, and treatment for indentured servitude more closely resembled English farm servitude than formal apprenticeship. See Kenneth Morgan, *Slavery and Servitude in North America, 1607-1800* (Edinburgh: Edinburgh University Press, 2000), 10.

⁵⁰⁸ *Records of the Virginia Company of London*, ed. S.M. Kingsbury, 4 vols. (Washington, 1906-35), iii, 1607-22, p 400. Reprinted in Joan Thirsk, *Plow and Pen: Agricultural Writers in the Seventeenth Century*, in T.H. Aston, et al, eds. *Social Relations and Ideas: Essays in Honour of R.H. Hilton* (Cambridge: Cambridge University Press, 1983), 306.

receive a share of Company profits at the end of five years.⁵⁰⁹ The colonists were to be settled at the Company's expense, while all crops and settler produce were to be surrendered as Company property. This plan rapidly disintegrated during Virginia's disastrous early years, when the company failed to produce any profits and many colonists simply quit working. Martial law was invoked to compel the settlers to work, but with little effect.⁵¹⁰ In 1609 the Company began allowing individuals to plant and profit from personal garden plots, and expanded this allowance to small fields in 1613, thus introducing a measure of private property into the Company plan. By 1618 a number of the more successful farmers were producing their own crops upon Company lands in exchange for annual rents. More importantly, during this time the Company began the practice of "leasing" new immigrant arrivals—who were considered contracted employees of the Company—to these established private farmers. That same year the Company reorganized and began to orchestrate sharecropping agreements, whereby immigrants could work on Company lands by giving half their crop to the Company for the first seven years, after which the Company would grant them a headright of fifty acres.⁵¹¹

By 1620 indentured servitude was fully established within Virginia. The Company's practice of leasing out new arrivals to private farms was quickly abandoned in favor of "selling" the seven-year labor contracts of these immigrants to the farmers outright, minimizing the Company's liability should the servant die in the unhealthy

⁵⁰⁹ David Galenson, *White Servitude in Colonial America: An Economic Analysis* (Cambridge: Cambridge University Press, 1981), 11.

⁵¹⁰ The best account of the early Virginia saga remains Edmund Morgan, *American Slavery, American Freedom: The Ordeal of Colonial Virginia* (New York: Norton, 1975). For a more recent account see Karen Kupperman, *The Jamestown Project* (Cambridge, MA Harvard University Press, 2009).

⁵¹¹ Galenson, *White Servitude*, 11.

colony. They also began to import women to Virginia, selling them as wives to American farmers in return for the price of their transatlantic passage. The Company also encouraged private merchants to import servants by granting headrights of 50 acres per recruit. Notably, this land grant did not go to the immigrant worker, but rather to those who arranged transportation for the worker, and thus the wealthier farmers with merchant connections were able to expand their holdings through this projecting process.⁵¹² The practice soon became common both within and beyond the Company, and by the time of the Company's dissolution in 1624, approximately 40% of Virginia's population consisted of indentured servants.

As mentioned above, it was chiefly men in their early twenties who became indentured servants in the Americas.⁵¹³ Most of these were poor youths who had already spent several years in the English farm servant tradition, and were now too old to continue in that occupation. Thus both servants and masters in American colonies would have had ample experience laboring within a quasi-paternal system of bonded agricultural labor. Furthermore, as migrating from parish to parish was an integral part of the English servant system, further migration to America seemed a natural extension of this process. There were, however, some key differences between the two institutions.

First, due to the endemic labor shortages in the Americas, indentured servants were

⁵¹² Workers were offered freedom dues at the end of their servant tenure, however after 1650 this rarely was in the form of land, as the engrossing headright system meant that most land was already claimed. This process occurred even earlier in Barbados, where most of the tiny Island's land was claimed by projectors and speculators as early as the 1630s. Once the supply of free land was exhausted, workers were paid in cash or kind. See Kenneth Morgan, *Slavery and Servitude in North America*, 9; and Hilary Beckles, "Land Distribution and Class Formation in Barbados: 1630-1700: The Rise of a Wage Proletariat," *BMHS* 36, 2 (1980), 138-9.

⁵¹³ Galenson, *White Servitude*, 26. There is a good deal of debate about the social status of early servants. Traditional accounts from the 1920s stressed that these were unskilled laborers. This paradigm was overturned in the 1960s when an analysis of seventeenth-century Britsol servant ship manifests demonstrated a surprisingly high number of skilled servants among them. This was followed by a debate in the 1980s about how to properly read these rolls, and today David Galenson's work remains the most respected. See the forum debate on this in *The William and Mary Quarterly* 35,3 (Jul. 1979).

immediately locked into multi-year agreements, typically between four and seven years. A more important difference was that, unlike in England, masters of American servants could buy, sell, and trade the labor contracts of their own servant workers, a practice forbidden by custom in England.⁵¹⁴ This was an early and crucial difference, as brokering and speculating in servants quickly became an occupation unto itself, and projectors commodified these migrants in ways that were hitherto unknown in England. In regards to work and treatment, days could be long and hard like their English counterparts, and masters frequently employed corporal punishment upon the lazy and recalcitrant. However these punishments were also strikingly more severe within the colonies than in England. Richard Ligon for example, who would have been familiar with the English farm servant tradition, was shocked when he travelled to Barbados and saw the relative cruelty and depravity hurled upon the island's indentured workers.⁵¹⁵ It is likely that the temptation to work servants harder due to America's labor shortage and export-based economy led to a decreased treatment in servants overall, and scholars have noted that the paternal ties of the English servant tradition rapidly waned within the new American environment.⁵¹⁶ As in England, servants did have the right to testify against exceptionally cruel masters, but in practice this was rarely invoked. Even if a servant did win his or her case, the court's response was usually to reassign the indentured servant to a new master, with no deduction in the duration of their indenture. Finally, like with English servitude, there were a variety of legal measures taken to ensure that workers

⁵¹⁴ I suspect that in England the illegality of trading servants had less to do with a sense of obligation to them, but was rather a way of keeping servants from frequently migrating between parishes, which would have been a consequence of buying and selling servant contracts, and would have severely complicated the enforcement of the English poor laws.

⁵¹⁵ Ligon *A True and Exact History of Barbados...* (1657), 44. Accessed through EEBO.

⁵¹⁶ See for example Susan Dwyer Amussen, *Caribbean Exchanges: Slavery and the Transformation of English Society, 1640-1700* (Chapel Hill: University of North Carolina Press, 2007), Ch. 4.

honor their contract, although such rules were more stringent due to the America's endemic labor demands. An early Barbados law, for example, stipulated that a servant's tenure be extended by one full day for every two *hours* they were truant from their plantation.⁵¹⁷

Yet despite these important differences between the English and American servitude, several similarities remained. In the sixteenth century, the reformer Thomas More had likened the state of English servants as "worse than the miserable and wretched condition of bondsmen," because they worked from early morning to late evening, "like laboring and toiling beasts."⁵¹⁸ Throughout the seventeenth century other English authors frequently assessed American and English servitude as equal institutions, and often conflated the two within their discussions.⁵¹⁹ Master-servant relationships may have been less paternal within the colonies, yet even in England there were masters who railed against traditional paternal obligations, arguing that servants were merely tools to exploit as the master wished.⁵²⁰ A hierarchy amongst servants was also present in both England and America. On large English estates with many servants there was a divide between those allowed to "eat at the table" with the Master and his family, and those that dined amongst themselves.⁵²¹ It was this tradition which provoked Richard Ligon to assert in his *History of Barbados* that the chief overseer of a sugar plantation should be among the few servants allowed this material and symbolic privilege.⁵²² Later in the century, the prominent merchant and reformer Josiah Child wanted to extend the English servant

⁵¹⁷ Hilary Beckles, "Rebels and Reactionaries: The Political Responses of White Labourers to Planter-Class Hegemony in Seventeenth-Century Barbados," *Journal of Caribbean History*, 15 (1981: May/Nov.), 8.

⁵¹⁸ Sir Thomas More, *Utopia*. Translated by Ralph Robinson. (London: Blackie and Son Ltd, 1908), 98-99.

⁵¹⁹ Galenson *White Servitude*, 10.

⁵²⁰ Appleby, *Economic Thought*, 61-2.

⁵²¹ Kussmaul, *Servants*, 40.

⁵²² Ligon, *History*, 114.

system, so as to look more like its American counterpart. In his highly influential *New Discourse of Trade* (1693), Child gives a number of mercantile recommendations for increasing England's trade balance, one of which was to end the restrictions which "hinder any Man from keeping as many Servants as he can." He also proposed to lift maximum servant bans on "Loomes, working-Tooles, &c." hoping that England's workshop production systems might be replaced by more centralized factories, run by servant labor.⁵²³ Both England and the Americas also shared similar attitudes towards runaways and their recapture, as can be evinced from an interregnum law which required masters to report to the local authorities any English servants who had been missing for more than twelve hours, so that the local constables could assist in their apprehension. Finally, sexual abuse and even rape—one of the starkest reminders of the asymmetrical power relations within American servitude and slavery—was likewise common within its English counterpart. In one sample of seventeenth-century Lancashire and Essex court cases, one fourth of the bastard children in the two parishes belonged to a servant girls. Of that population, one half listed the servant's master as the legal father.⁵²⁴

One can also see similarities between American and English servant practices though the appraisal of overseers on both sides of the Atlantic. While the historiographical discussion of overseers has typically been limited to an American context, the position was also important to England's domestic farm practices. Like with America plantations, English agricultural projectors also recognized the importance of overseers within large agricultural operations. Similarly, works on English husbandry

⁵²³ Josiah Child, *A new Discourse in Trade...* (1693), 154-5. Accessed through EEBO. Child was also an advocate of reducing the number of holidays and holy-days in England, so as to increase worker output.

⁵²⁴ Kussmaul, *Servants*, 44. See also Kirsten Fischer, *Suspect Relations: Sex, Race, and Resistance in Colonial North Carolina* (Ithaca: Cornell, 2002), Ch. 3.

often expressed the importance of competent taskmasters, particularity within projects that involved large numbers of English workers. Walter Blith wrote extensively on the importance of “careful ingenious Overseers” when discussing the English project of fen-draining, carefully enumerating the leadership qualities they should possess. Blith concludes that “a man rightly qualified for this work is worth gold, and very rarely to be found.”⁵²⁵ He also argues that a good overseer must handle a variety of operations simultaneously, and be able to accurately delegate a project’s various tasks in the most efficient manner, as the “ignorant” common workers will be unable to do so this their own. Equally important is the overseer’s ability to motivate his workers, through both encouragement and force. “Prize and value a good Overseer,” he states, “whose countenance and conversation is such with workmen, as will not onely awe and force them, but his wise and loving demeanor will compel them to their utmost faithfulness.”⁵²⁶ As will be seen in the next chapter, such sentiments closely mirror another author’s opinion of overseers from this same period: the Barbadian sugar mogul Henry Drax.

Finally, labor coercion was prevalent in England through policies of wage control, which were commonly advocated by improvers and experimental philosophers during this time. Although apprenticeship and farm servantry were not free labor practices in the modern sense, nor were they slavery, as customary safeguards placed limits on what

⁵²⁵ Blith, *English Improver*, 64. Fen-draining was a large land reclamation project occurring in the East Midlands in the 1630s and 40s, whereby projectors attempted to drain several hundred-thousand acres of fenland, turning it into enclosed pasture. The locals (pejoratively titled “fen people” by elites) were responsive to this plan until they learned that over half of the resulting pasture would be enclosed, as prior to the project all of the fens had been common land. Resentment grew to a boiling point in the 1640s, when locals used the chaos of the Civil War as an opportunity to destroy the newly-constructed dikes and sluices, and most investors lost large amounts of capital on the project. It was not until after the Restoration that the project was resumed and successfully completed. Interestingly, three of those involved in the Midlands fen-draining were individuals who would later go on to play major roles in Barbados’ new sugar plantocracy. Richard Ligon, Henry Walrond, and the Lord Willoughby family. See Keith Lindley, *The Fenland Riots and the English Revolution* (London: Heinemann, 1982), 127-8.

⁵²⁶ *Ibid*, 64.

unscrupulous masters could exploit from their workers. Likewise, cottagers and day laborers were protected by English custom from many of the most egregious forced labor practices found in America. Yet one area where seventeenth-century improvers could influence commoner work patterns without violating English custom was through manipulating wages. More specifically, reformers often advocated laws which would artificially depress wages, forcing commoners to work harder and longer to earn their daily provisions. Improvers became especially vocal about this after mid-century, when England's population stagnated and jobs became more abundant. The problem of worker semi-employment was endemic at this time, and primarily stemmed from an inelastic demand for what little consumer goods were available to the poor. In times of good harvests, a poor cottager may be able to buy cheap bread and all of his other needs with only three days of labor per week, and typically did not bother to work more as there was little to purchase with the extra capital.

This common attitude infuriated a host of English reformers. Royal Society member John Houghton ran a long diatribe about this in his *Letters for Improvement* serial in 1683, arguing how expensive goods make for a more prosperous kingdom. "The generality of poor manufacturers believe they shall never be worth ten pounds," argued Houghton, "therefore they seldom strive to get ten shillings beforehand." Houghton continued, claiming that if workers "can provide for themselves sufficient to maintain their manner of living by working only three days in the week, they will never work four."⁵²⁷ Thomas Manly agreed, complaining in 1669 that the poor work only enough "to

⁵²⁷ Houghton, *Letters for the Improvement of Trade* (June 16, 1683), quoted in Thompson, "Time, Work-Discipline, and Industrial Capitalism", 73.

spend in tipple” and are thus no richer in times of plenty than of dearth.⁵²⁸ John Locke also echoed these sentiments, asking “when a man is perfectly content with the state he is in, what action, what industry, what will is there left to continue in it?”⁵²⁹ For many of these reformers, the solution to this was laws for depressing wages. William Petty advocated laws for creating large government silos for storing excess grain in times of plenty, thus regulating the grain market, inflating bread prices, and keeping laborers at work.⁵³⁰ Such ideas later reached their starkest conclusions within Bernard Mandeville’s *Fable of the Bees*, where he advocates having a poor population that is not only forcibly underpaid, but also under-educated so as to ensure a perpetual class of cheap labor. “In a free nation where Slaves are not allow’d of, the surest Wealth consists in a Multitude of laborious Poor.”⁵³¹

From the beginning of England’s colonial expansion, improving English writers saw links between meeting the colonies’ labor demands and England’s established domestic servant tradition, although the relationship between these two went through several distinct changes throughout the century. Initially, colonial advocates argued that American labor needs should be met with traditional adolescent farm servants, under the command of yeomen and gentlemen farmers. The reformer and workhouse pioneer Richard White wrote in his *Planter’s Plea* (1630), that if a colony is to be successful it will need a continual immigration of young servants, who “must be continually drawne over to supply the rooms of the men-servants and maid-servants, which will marry away

⁵²⁸ Thomas Manly, *Userie at Six Per Cent* (1669). Quoted in Coleman, “Seventeenth-century Labour,” 291.

⁵²⁹ Quoted in Wilson, “Other Face,” 86.

⁵³⁰ William Petty, *Political Arithmetick* (1690), 45.

⁵³¹ Bernard Mandeville, *Fable of the Bees*, ed. F.B. Kayne, Vol I, 287-8. The comments come from his “Essay against the Charity of Schools” section, which was appended to work’s 1723 edition. Quoted in Daniel Baugh, “Poverty, Protestantism, And Political Economy: English Attitudes Toward the Poor, 1660-1800,” in Stephen Baxter, *England’s Rise to Greatness, 1660-1763* (Berkeley: University of California Press, 1983), 77.

daily, and leave their Master's destitute."⁵³² White was not alone, and similar sentiments were made by early sugar planters in Barbados. In 1645 William Hay, chief agent to the Barbados proprietor, was attempting to erect a sugar ingenio and requested "any sort of men or women or boys 14 years of age[,] what I shall not make use of and are not serviceable for mee I can exchange with others."⁵³³ While Hay's request was for any kind of labor he could get, he also held a preference for adolescent servants, which was a common inclination in the early part of the century. This early preference for younger servants was because of a widespread concern with shipping older workers to the colonies, particularly the vagrants and masterless men which so vexed English elites. Francis Bacon made the point clear in his "Essay on Plantations," where he argued that it was a "shameful thing" to send convicts and other degenerates to the New World. "It spoileth the Plantation; for they will ever live like Rogues, and not fall to work, but be lazy, and do mischief, and spend Victuals, and be quickly weary; and then certifie over to their Country to the discredit of the Plantation."⁵³⁴

This early attitude against using vagabonds as servants rapidly diminished within improving circles during the mid-seventeenth century, as the poor increasingly became seen as a resource which could be reformed and marshaled through new improving programs. Not surprisingly, treatises which advocated sending beggars and criminals to the colonies began to appear in the 1640s, the same time England became flooded with workhouse proposals. Gabriel Platte's *Macaria* (1641) was one of these initial works. In

⁵³² John White, *The planters plea· Or The grounds of plantations examined, and usuall objections answered...* (1630), 59. Accessed through EEBO.

⁵³³ William Hay to Archibald Hay, Barbados, September 10, 1645; Scottish Record Office, Hay of Haystoun Papers, GD 34/945. Reprinted in Galenson, *White Servitude*, 134.

⁵³⁴ Francis Bacon, *Essays, or Councils, Civil and Moral, of Francis Bacon...* (1696 edition), 92. Accessed through EEBO. Note that despite these early reservations, as shown earlier in this chapter young adult servants were nevertheless the most frequent deportees to Virginia and other colonies, mainly because of their enormous supply.

that work, Macaria's ideal island government contained a Council of Plantations which established that "every yeere a certain number shall be sent out" to Macaria's distant colonies, the number of which was to be determined by the Council.⁵³⁵ This mandatory annual emigration was combined with rules which managed the number of artisans who could engage in each trade on Macaria, and thus foreign servantry was part of a larger program for managing Macaria's entire labor force via a central institution.⁵³⁶ As mentioned in chapter one, this work was published by Samuel Hartlib and was one of Hartlib's many attempts, both in writing and practice, to establish a New World colony based upon his reformist principles. Hartlib himself had no qualms about sending the dregs of society off to plantations, and saw such migrations as beneficial for both colony and metropole. To Hartlib, labor in the plantations should be reserved for England's most recalcitrant beggars, those who proved unresponsive to the tactics of the workhouse. By doing so England could "rid the Land of such Brambles, and this is better, then to suffer them to live in mischeif, and hang them at last."⁵³⁷ Henry Robinson concurred in his famous mercantile treatise which was published that same year, and included an entire section on "increasing and improving our new Plantations in the Westerne Islands." To Robinson, plantations were "a matter of exceeding great moment enlarging both our Dominions and our Traffike."⁵³⁸ While Robinson admitted that it would be best if England could fill her foreign plantations with "people of good report and ranke," he

⁵³⁵ Gabriel Plattes, *A Description of the famous kingdome of Macaria...* (1641), 5. Accessed through EEBO.

⁵³⁶ See also J.K. Fuz *Welfare Economics in English Utopias from Francis Bacon to Adam Smith* (The Hague: Martinus Nijhoff, 1952), 27-29.

⁵³⁷ Hartlib, *Parliament's Reformation*, 5.

⁵³⁸ Henry Robinson, *England's Safety in Trade's Increase* (1641). Accessed through EEBO, 13.

concluded that “but for want” of such people, he saw no harm in giving the government the power to banish beggars and minor convicts instead.⁵³⁹

This attitude continued throughout the rest of the century. English improver John Worlidge argues similar sentiments in his *Systema Agriculturae* (1669), another farming improvement treatise. Worlidge’s work complains at length on the social damage caused by theft, and advocates sending all thieves to the West Indies, as it is cheaper and more effective than hanging. He also recommends that those sent be branded in the face, and that it be “free and lawful for any man to kill any such person returning or straying from such Employments.”⁵⁴⁰ Timothy Nourse also wrote at length on the poor, workhouses, and American servitude in his *Campania Foelix*, calling mandatory servitude “best work ever undertaken” in England.⁵⁴¹ Like Hartlib and Petty’s earlier sentiments on Workhouses, Nourse is able to combine categories of nature, improvement, servitude, empire, and central government into a single paradigm:

“And in case Persons of loose Lives, whether Gentle or Ungentle, should be found Refractory and Pernicious, ‘twere not the worst Method to cultivate them, as we do those Trees which are Canker eaten, from too much luxuriancy of the Soil, by pruning and lopping of their Superfluites, and then transplant them into a bearing Fruit. And truly our Western Plantations would very well agree with many unfruitful Plants.”⁵⁴²

With improvers and reformers making such direct connections between English workhouses and American plantations, it is not surprising that many of the techniques used in the Americas for surveying, controlling, and punishing the servile labor force—

⁵³⁹ *Ibid*, 13.

⁵⁴⁰ John Worlidge, *Systema Agriculturae: The Mystery of Husbandry Discovered* (1669), 202-3. Accessed through EEBO. Interestingly, the work begins with eulogies to both the ancient Georgic tradition its supposedly newer incarnation within John Evelyn and the Royal Society.

⁵⁴¹ Nourse, *Campania*, 238.

⁵⁴² *Ibid*, 248.

techniques which historians typically associate with the worst aspects of New World servitude and slavery—were advocated within English workhouse proposals with equal enthusiasm. Hartlib wanted to impose plantation-style surveillance measures upon England’s domestic poor, and desired that they all carry an identification pass with them, marking their employment and home parish. Those found without a card or outside of their parish were to be “kept to work either in the house of Correction, or in the Gallies, or clensing of streets, I mean little narrow places where carts seldome come . . . till such time they can be sent to the English Plantations, unlesse such can procure good security to live orderly.”⁵⁴³ Timothy Nourse’s treatment of poor houses begins with a eulogy of an ancient Roman law from the Emperor Valentinian, which dictated that any vagabond may be legally apprehended by any freeman within the empire, and made his slave for the remainder of his life. “Such a law as this,” writes Nourse, “would be of more advantage to this Nation than any possibly now extant.”⁵⁴⁴ He continues by listing a variety of petty crimes including pick-pockets, prostitutes, and “hedge-breakers” who, as they do not deserve death, should be committed to the workhouse for two years or more. He also advocated whipping within these spaces, it being “a Punishment of no great Pain, and of a short continuance.”⁵⁴⁵

In the colonies, laws were also influenced by England’s evolving ideas on coercing social marginals into employment. Barbados had been a heavy importer of servants since the late 1620s, and by 1650 there were substantial numbers of former servants in the colony, now free laborers. Moreover by this point, all of Barbados’ land had been bought up by planters and speculators, leaving these freemen with few options

⁵⁴³ Hartlib, *London’s Charity*, 4.

⁵⁴⁴ Nourse, *Campania Foelix*, 226.

⁵⁴⁵ *Ibid*, 229.

but to continue in plantation labor for low wages. Many of these workers succumbed to a life of wandering and begging on the island, while others reverted to traditional patterns of uneven employment, working when in need of money for basic necessities and not working when those needs were met. Not surprisingly, Barbados elites frowned upon this and devised legal measures to force these free workers into long-term contracts. This was particularly the case for the Irish in Barbados. Like Jamaica in the 1650s, Barbados had imported thousands of Irish prisoners from the mid-century Anglo-Irish wars. Many of these servants had lived out the terms of their indenture and were now faced with few employment opportunities and no way to afford a return passage to Europe, causing tensions between them and the island's English elites. English stereotypes of the Irish as lazy, savage, and beastlike did not help their situation. In 1654 four Irish freemen came to Barbados, and the Puritan governor Daniel Searle was immediately informed of their arrival. Shortly thereafter the governor and his council resolved that these newcomers must "put themselves into some employment with some freeholder of the English nation," and that their new English "masters" were to verify their employment to the governor. Failing this, the newcomers were to be banished from the island.⁵⁴⁶ Similar statutes were repeated throughout the decade, culminating with a public declaration by Searle in 1657, regarding Irish "freemen and women, who have no certain place of residence, and as vagabonds refusing to labour, or to put themselves into any service, but contriving in a dissolute, leud, and slothful kind of life, put themselves into evil practices ...and other felonous acts for their subsistency." Searle's plan was to adapt Hartlib's idea of an identification card system for these workers, and if any were found without a

⁵⁴⁶ Hillary Beckles, "A 'riotous and unruly lot': Irish Indentured Servants and Freemen in the English West Indies," *The William and Mary Quarterly*, Third Series, Vol. 47, No. 4 (Oct., 1990), 512-3.

work pass they would be sent “to labour for one full year on some plantation.”⁵⁴⁷ Many of the ideas of this proclamation were then incorporated into Barbados’ official servant and slave code of 1661.

After the Restoration, England’s appraisal of sending the poor to the colonies shifted again. Specifically, once England’s population began to stagnate after 1650, many begin to see the removal of excess Englishmen to the colonies as a drain on the nation’s economy. Evolving political economy ideas during this time also put a stronger emphasis on equating population density with wealth, as was seen in John Houghton’s comments in the opening of chapter one. Finally, many believed that reducing England’s domestic unskilled labor pool only worked to increase the poor’s wages, which was seen as antithetical to national production.⁵⁴⁸ However this opinion was not a consensus, and many within the improving and experimental philosophy community continued to advocate colonial deportation for a variety of reasons. Josiah Child, the wealthy merchant and writer who brought workhouses back into public discourse with his 1670 poor treatise, was a firm advocate for American indentured servitude. Child was a large proponent of international trade in general, and was personally involved in a staggering number of global commercial ventures, including a Jamaican sugar plantation which he co-founded the same year he released his treatise on the poor.⁵⁴⁹ Child’s 1670 treatise recites many of the proposals put forward two decades earlier: namely that the old parish system of poor relief is insufficient, and a national system should be put in place to

⁵⁴⁷ *Ibid*, 516.

⁵⁴⁸ Appleby, *Economic Thought*, 135-7. Appleby overstates her case however, and portrays the anti-colonization camp as the consensus of the late seventeenth century. The sources I have examined show that this was instead a very contested topic.

⁵⁴⁹ Josiah Child, *A method concerning the relief and employment of the poor...* (1670). On Child’s Jamaican plantation, see FN45.

manage the poor as a function of the larger English economy. His work also argues that a central workhouse fund should be created, and those in charge of this fund be given broad powers to find and detain English vagrants, force them into a wide variety of occupations, and send them to the fisheries or plantations if necessary and prudent.

Child's poor treatise was reprinted as a part of his larger and more influential economic treatise *A New Discourse of Trade* (1693), a comprehensive mercantile work covering an array of economic and social improvement topics. It also contains a chapter on the colonies and their role within the larger English economy, which is primarily a list of points against the argument that the colonies drain England of people and money. In short, the work promotes American servantry by arguing that the beggars and convicts sent to America would have been hanged if they stayed in England; that the colonies stimulate domestic production of colonial supplies; and that so long as the Navigation Acts are enforced, the wealth of the colonies will not be skimmed away by the Dutch or other interlopers. As such, Child's arguments are similar to other experimental philosophers of the period, including Bellars, Houghton, and Royal Society member Dr. Robert Plot. However in Child's work, what is perhaps most interesting from the standpoint of servitude and coercive labor, is that Child begins his chapter with a brief historical narrative on the growth of English colonies over the previous seventeenth century. The narrative not only justifies sending beggars and convicts to the colonies, but argues that their presence was, in retrospect, responsible for the success of the colonial system. "Virginia and Barbadoes were first peopled by a sort of loose vagrant People," he begins, "vicious and destitute of means to live at home." Fortunately for these individuals, they were picked up by colonial agents, "gathered up about the Streets of

London, and other places, cloathed and transported, to be employed upon *Plantations*.” To Child, the benevolent policing policies of Hartlib and his followers were not only responsible for the growth of the colonies, but gave these unfortunate people opportunities they would not have had at home. “Had there been no *English* foreign Plantation in the World,” he continues, such people “could probably never have lived at home to do Service for their Country, but must have come to be hanged or starved, or dyed untimely of some of those miserable Diseases, that proceed from want and Vice.”⁵⁵⁰

IV: Slavery

The later tracts of Child’s generation included a new developmental program which did not exist in the reform works of the 1650s: arguments in favor of African slavery. While writers of the earlier seventeenth century understood African slavery as a distant social and economic system, they are almost entirely silent on it within their reform writings, primarily because African slavery was not yet an established institution within English dominions. In 1650 there were an estimated sixteen thousand black slaves in the British colonies, and about 85% of these were very recent arrivals in Barbados. In comparison, by 1690 the English empire’s slave population had grown over sixfold to one-hundred and fifteen thousand slaves, and slaves numbered in the thousands in every colony outside New England.⁵⁵¹ Just as English economists and reformers took notice of their nation’s increased consumption of sugar and other colonial produce, they likewise noticed this shift in the imperial workforce. More importantly, the new use of slaves was easily incorporated into England’s improving tradition of coercing social marginals into large, elite-managed projects. Just as Hartlib imagined workhouses and servitude to be

⁵⁵⁰ Child, *New Discourse*, 170.

⁵⁵¹ Statistics compiled from John McCusker and Russell Menard, *The Economy of British America, 1607-1789* (Chapel Hill: University of North Carolina Press, 1991).

beneficial for the entire English commonwealth, later experimental philosophers saw Africans as yet another human commodity to be utilized within their larger improvement programs, supposedly for the good of all.

The first tract to openly advocate slavery within a larger program of imperial development was Sir Balthazar Gerbier's *Summary Description* (1660), a projecting treatise on the benefits of colonies in the tropical zone.⁵⁵² Gerbier was a Flemish immigrant and a prominent artist and projector within the Stuart court before losing favor in the early 1640s. Thereafter he migrated to the Netherlands where he gathered funding from the States General for a gold-digging expedition in Guiana in 1659. The expedition was a failure and he returned to the Netherlands in disgrace. After the Restoration he returned to England hoping to regain favor through the new Monarch, and issued a series of pamphlets on various national reform schemes to this effect, including his *Summary Description*. No doubt this work was influenced by his recent time in the Caribbean, which likely included stops at both Barbados and the several small Dutch settlements near the Orinoco River. Each of these colonies would have been places rapidly converting to an economy based upon slave labor in 1659, and by writing this proposal Gerbier was likely eager to profit from spreading news of this new system to the larger English public. While Gerbier's tract advocates many diverse benefits to funding West Indian settlements, substantial passages are devoted exclusively to African slavery's importance within his plan. His work argues two points on slavery which were already being circulated within Barbados during this time, and which would become staples of

⁵⁵² Sir Balthazar Gerbier, *A summary description manifesting that greater profits are to bee done in the hott then in the could [sic] parts off the coast off America...* (1660). Accessed through EEBO. I have modernized the spelling of Gerbier's text, which, as English was not his native language, contained many errors, even for his own period.

slavery's defense in the decades to come. One is simply that slaves are cheaper to maintain than English servants, as "Slaves need no cloths, and being once bought and paid are during all their life time workmen Without Wages." The second regards the stereotype that Africans make better workers than Europeans, particularly within southern climates, and "do more Work (at there ease) then two Christians can perform, both in the manureing off the ground, and in digging off mines."⁵⁵³ Finally Gerbier, perhaps conscientious that his proposal may shock or offend those in England not accustomed to a society of slaves, issues a lengthy defense of the institution. He first poses the hypothetical question whether or not planters may own slaves "without scruple" as some argue that it is "not Christian-like to use rational creatures in that quality." He then answers with points which would eventually become common standards within pro-slavery discourses over the next century. First he contends that slaves brought from Africa have already been enslaved by other Africans, and what is worse, they "live there in the Slavery off the Devil." However by being sent to the Caribbean, Europeans improve the slave's life, for "by their transportation among Christians are in the first place (by education and good example) changed as from brutes into rationals." Furthermore he argues that the slave's life as a laborer is no worse than that of white workers, ether in the Caribbean or Europe, who similarly live their entire life "like in servitude, and who do as much work (according unto the constitution of their bodies) as any of the Blacks."⁵⁵⁴ Importantly, Gerbier's defense has no mention of either race or any other ethnocentric argument about Blacks being inferior persons aside from their pagan religion. Instead, the argument is almost completely predicated upon the period's

⁵⁵³ *Ibid*, 6.

⁵⁵⁴ *Ibid*, 6.

ubiquitous improving paradigm which stated that forced labor improves the character of marginal workers, and that slavery is no different from other types of traditional and hierarchically justified labor schemes.

Another early justification for slavery came from the new improving belief that marginal people are an economic resource to be collected and refined, and Africans were easily incorporated into this tradition. This was especially the case later in the century when English debates on population density became more prominent within servitude and poor reform literature. In a 1682 edition of his *Letters of Improvement* serial, John Houghton published an essay by friend and fellow experimental philosopher Dr. Robert Plot, on the question of whether or not deporting servants to the colonies was detrimental to the overall English economy.⁵⁵⁵ Plot restates many of Josiah Child's earlier arguments on the importance of colonies within England's larger imperial economy, and then adds this: that when people emigrate from England to the colonies they actually *increase* the population of the mother country, and thus assist its economic growth, because in the colonies people can own slaves. He proves his argument through the following informal arithmetic: he first calculates that a regular laborer in England can make £10 pounds per annum. Next, he states that "they say, that for every white in *Jamaica* or *Barbados*, there are ten blacks." Erring on the side of caution with this statement, he assumes three blacks per white person in the colonies. He similarly states that each black slave can produce up to £16 per year. This is because £16 is the average slave purchase price, and he understands that whites in the colonies will not buy a slave unless that slave can make a return on their purchase price within a single year, otherwise "it is not worth their masters

⁵⁵⁵ Houghton, *Letters for the Improvement of Husbandry and Trade* (March, 1682), III, 36-40. Dr. Plot was the curator of the Ashmolean Museum, a Professor of Chemistry at Oxford, and Secretary of the Royal Society. See *Ibid*, 288.

while to buy them.” Thus he concludes that a single deportee to the colonies who buys three slaves nets £48 pounds per annum, and that figure increases once transatlantic profits are added into the equation. From this it is obvious to Plot that England would be best served by employing as many whites and blacks in the West Indies as possible. “I would advise that one hundred thousand *English* should quickly be sent to *Jamaica*, foreseeing that others would supply them with *negroes*, and other servants and slaves, as long as ever they could get an encouraging price.”⁵⁵⁶

While we may question Plot’s accounting methods for arriving at such a figure, he was not alone in seeing African slavery as a method of improving the English economy by forcefully adding marginal workers to areas where labor was in highest demand. Earlier in the century, Barbadian planter Thomas Modyford made a similar assertion when helping to plan the Western Design, arguing that captured Guianese Native Americans could be made slaves and “will by politic and rational means be as so many hands gained to the commonwealth.”⁵⁵⁷ Josiah Child made comparable arguments in his *New Discourse*, arguing that English migrants in the Caribbean exponentially increased the nation’s trades “because that one English man, with the ten Blacks that work with him, accounting what they eat, use and wear, would make employment for four men in England.”⁵⁵⁸ Quaker reformer John Bellars repeated this argument in his 1695 poor treatise, stating that it is “indisputable” that the colonies “greatly add to the English Territories, and increase her subjects, and inlagre her Trade.” This is particularly true, he adds, “if we consider that many who would have lived without Servants would have died without Posterity if they have stayed in *England*, have got both in *America*, and also their

⁵⁵⁶ *Ibid.*, 39.

⁵⁵⁷ Thurloe, *State Papers*, III, 62-3. See also Chapter 2, p 85.

⁵⁵⁸ Child, *New Discourse*, 179.

Negroes and Indians under them are subjects to the Crown.”⁵⁵⁹ Bellars was also hopeful that Africans and Native Americans would be beneficial to the English commonwealth as a medical resource. In his proposal for public hospitals for the poor, he advocated that “some Physicians and Chirurgeons should be sent to the *East and West Indies*, and the Continent of *America*, to seek what may be found of useful Medicines among the *Indians* and *Negroes*.”⁵⁶⁰ William Petty also advocated Slavery as a means of increasing England’s population and wealth, and in his *Political Arithmetick* (1690) he estimated that England’s slave trade generated more income for the nation’s custom houses than any other international product.⁵⁶¹ Petty even went so far as to argue that England should allow perpetual slavery amongst the English as well, provided they be guilty of capital crimes. Here again, biopolitical calculations on economics and population density are used to justify the author’s ideas. “Why should not insolvent Thieves be rather punished with slavery then death? So as being slaves they may be forced to as much labour, and as cheap fare, as nature will endure, and thereby become as two men added to the Commonwealth, and not as one taken away from it.”⁵⁶²

Others experimental philosophers and improvers who were not actively involved in slavery were nevertheless complicit. Sir Robert Boyle, the most famous experimental philosopher during this time, referenced American slavery at several points in his works. He once mentions a visit paid to him by Josiah Child, whom he calls “a very candid and judicious Traveller.” Child was informing Boyle about recent discoveries made by

⁵⁵⁹ Bellars, 1695, p14.

⁵⁶⁰ Bellars, *Essay on Physick*, 9.

⁵⁶¹ Petty, *Political Arithmetick*, 83.

⁵⁶² Petty, *A Treatise on Taxes...*(1662), 49. Accessed through EEBO.

merchants in the East Indies.⁵⁶³ Elsewhere, Boyle corresponded with various slave ship captains, from whom he gained empiric information about the natural features of the African coast.⁵⁶⁴ Finally Boyle was heavily involved in Native American resettlement schemes in New England, primarily through his role as president of the Society of Propagation for the Gospel (SPG). While the work done by this Society in New England was not slavery per se, many similarities existed. Throughout the 1660s he worked with fellow Royal Society Member and New England governor John Winthrop Jr., on plans for “civilizing” the local indigenous groups. These plans included “some employment by way of Trade or manufacture to imploy the Indians.”⁵⁶⁵ In 1662 Winthrop and the SPG drafted a proposal to this effect in New England, which favored placing various native communities into settled villages where, under the guidance of European overseers, they would be put to workhouse activities. Through this the Society hoped that “England would be supplied with substantial commodities as hempe, flax, several sorts of other things.”⁵⁶⁶ They also believed that these settlements would provide an outlet for English manufactures, being “a great benefitt to the English people heere, in a way of vending a store of their commodities, esp. drapery.”⁵⁶⁷ The following year Boyle wrote to New England, indicating his satisfaction with the project. He remarked that he did “much rejoyce to heare that Capt. Gookin hath proved soe usefull an Instrument amongst the Indians, as in governing their Plantations & ordering their Towne affairs.” This approval of Gookin included “his taking an Acompt of their labour and Expense of time and of the

⁵⁶³ Robert Boyle, *An essay of the great effects of even languid and unheeded motion...*(1685), 136.

⁵⁶⁴ Robert Boyle, *Of the reconcileableness of specifick medicines to the corpuscular philosophy* (1685), 25.

⁵⁶⁵ Robert Boyle to the Commissioners of New England, May 15, 1662. Found in Michael Hunter, ed. *The Correspondence of Robert Boyle* (London: Pickering & Chatto, 2001), vol. II, 22.

⁵⁶⁶ John Winthrop to Robert Boyle, Unknown date, Late 1662. *Ibid*, II, 58.

⁵⁶⁷ *Ibid*, II, 57.

proficiency of their Children in learning.”⁵⁶⁸ As mentioned in the previous chapter, Captain Gookin was a Puritan official who had been initially sent to New England by Oliver Cromwell in the 1650s, in an attempt to encourage settlers to migrate to Jamaica. Prior to that Gookin was a wealthy resident of Virginia, sitting on the House of Burgesses.⁵⁶⁹

Slavery’s approval amongst improvers and experimental philosophers can also be seen through their support of the Royal African Company (RAC). The Company had been re-chartered and re-organized in 1660 as a large joint-stock which was to have a monopoly on all trade with Africa including gold, ivory, and slaves. As such, it was designed to operate similar to the East India Company. For the rest of the century it was hotly debated whether or not the African trade was best served by this single company or if it should be opened to the public. While reformers and experimenters came down on both sides of this issue, none of them disapproved of the slave trade itself, and like American plantations they seamlessly incorporated the RAC’s practices into their improving visions. John Houghton wrote a lengthy piece in 1696 on the Royal African Company in his *Letters*, entitled “The great advantages of a joint-stock to *Guinea*. The manner of selling seventy thousand blacks.”⁵⁷⁰ The article argues that a formally chartered monopoly company such as the RAC would be the only profitable way to supply all of America’s plantations. He also expresses hope that with a large supply of slaves the English may discover silver in Carolina, and argues that the RAC should create further plantations on Africa’s coast, which could produce tropical produce and be staffed

⁵⁶⁸Robert Boyle to the Commissioners of New England, March 7, 1663. *Ibid*, II, 253.

⁵⁶⁹ Roger Thompson, ‘Gookin, Daniel (*bap.* 1612, *d.* 1687)’, *Oxford Dictionary of National Biography*, Oxford University Press, 2004 [<http://www.oxforddnb.com.floyd.lib.umn.edu/view/article/11005>, accessed 30 Nov 201005D

⁵⁷⁰ Houghton, *Letters*, II, 17.

by African slaves. Houghton was not alone in his appraisal, and in 1683 the Royal Society itself invested £520 of its communal dues in RAC stock.⁵⁷¹ Other individuals of the Royal Society were even more involved. Abraham Hill was a founding member of the Royal Society, served at various times as its secretary and treasurer, and helped publish the Society's *Philosophical Transactions*. In addition to these roles within the experimental philosophy community, he was also employed by the Royal African Company, serving four years on the Company's Court of Assistants and once as its Deputy Governor in 1691.⁵⁷²

V: Conclusion

Given the penchant of experimental philosophers and other improvers for coercive labor projects, it is easy to see how such individuals looked upon the West Indian practices of servitude and slavery with approval. To them, the potential of plantation labor was merely an American variant of English workhouses insofar as each held similar social potentials. First, plantation practices fit squarely within larger discourses on hierarchy, social order, and the irrational and even beastlike character of society's lesser sorts. They also meshed with the period's larger belief that elites must organize and force social marginals into productive tasks if these peoples are to be of any benefit, either on the private estate or in the public commonwealth. In both England and the Caribbean, the best dung was the master's foot. Second, like workhouses, plantations remained central to the period's mercantile visions and promised heretofore unachieved national abundance through increased domestic output, chiefly through collecting dispersed labor resources and coordinating them into centrally-organized tasks. Third,

⁵⁷¹ R.K. Bluhm, "Remarks on the Royal Society's Finances, 1660-1768," *Notes and Records of the Royal Society of London*, 13, 2 (Nov, 1958), 85.

⁵⁷² K.G. Davies, *The Royal African Company* (London: Longmans, Green and Co, 1957), 382.

these initiatives vowed to improve the lives of the involved workers through inoculating values of thrift, sobriety, industrious, and piety. In the case of African and Native American slaves this vision was extended through the discourse of religious salvation, chiefly through conversion to Christianity and educating these workers in protestant values. Finally, both workhouses and plantations promised to reward the projectors and undertakers of these endeavors through healthy profits from their new enterprises, be it producing English hemp or growing Caribbean sugar.

It would be almost a century before these discourses on tightly organized, coercive workforces began to unravel, and were eventually replaced by both the free labor movement and the antislavery debates of the late eighteenth and early nineteenth century. Yet long before this time, indeed from the beginning of England's experimental enthusiasm for coerced labor on plantations and workhouses, fissures were evident within this ideological bricolage. The most apparent discrepancy was that plantations were *not* workhouses—particularly the kind of workhouses imagined by altruistic thinkers such as Hartlib—and many of the labor practices within American servitude and slavery regimes differed greatly from the envisioned work camps of English reformers. For example, most of those who advocated American servitude as a social remedy to poverty had never been to an American plantation, and those few that did were often shocked at what they saw. As mentioned above, Richard Ligon was one such person, and his popular mid-century *History of Barbados* contains several passages on the relative cruelty of Caribbean masters towards their servants, who “are put to very hard labour, ill lodging, and their dyet very sleight. ... Truly, I have seen such cruelty there done to Servants, as I

did not think one Christian could have done to another.”⁵⁷³ Such comments were reiterated two decades later in a royal report on Barbados’ military defenses. The anonymous author remarked that the island’s white population mainly consisted of men “of no interest or reputation and of little innate courage, being poor men that are just permitted to live.” The report also accounts the island’s plantation work practices, commenting on shocking depravity of the island’s workforce. “I have, for my particular satisfaction, inspected many [of] their plantations and have seen 30, sometimes 40, Christians—English, Scotch, or Irish—at work in the parching sun without shirt, shoe, or stocking.”⁵⁷⁴ This military author concluded that such conditions made Barbados ripe for treason and sedition. A final example of the disconnects between American and English work regimes comes from an instance where a pair of gentlemen were taken prisoners during the Civil War and shipped to Barbados under the direction of Martin Noell. Being literate, they managed to draft a petition which was subsequently sent to England and published, entitled *England’s Slavery, or Barbados Merchandize* (1659). The petition was an attempt to both secure their release, and more broadly to raise public awareness of the cruelties being practiced upon themselves and other Englishmen within the colonies. As such, it gives long descriptions of their poor treatment on the island, including their being passed from owner to owner, their experiences in being forced apart from their families, their poor work and living arrangements, “and many other ways miserable, beyond expression or Christian imagination.”⁵⁷⁵

⁵⁷³ Ligon, *Barbados*, 43, 44.

⁵⁷⁴ Anon, “Some Observations on the Island of Barbados,” PRO, London (C.O. 1/21, no. 170.) Reprinted in its entirety in Jerome Handler, ed. “A Seventeenth-Century Commentary on Labor and Military Problems in Barbados,” *Journal of the Barbados Museum and Historical Society* 34,3 (March, 1973), 118, 120.

⁵⁷⁵ Marcellus Rivers and Oxenbridge Foyle, *England’s Slavery, or Barbados Merchandize* (1659), 5. Accessed through EEBO.

The above examples all deal with white indentured servants, and seventeenth-century observers were less likely to comment upon the wretched conditions of African slaves in the same way. This was often due to the belief that African bodies were more suited for the harsh labor and climate of the Indies. However despite this silence, the issue of African Christianization immediately became a cause of concern for European reformers. As seen in Gerbier's *Summary Description*, converting Africans was a prime vector through which African slavery was tied to England's improving discourses, which prescribed civilizing measures for laborers within their structured work programs. To these reformers African slavery was an example of moral and material progress, provided the Africans learned Christianity and other civilizing values from their new English masters. Yet from the very beginning of slavery in English dominions, reformers back in England were frequently disturbed by colonial reports that Africans were not being converted while laboring within Caribbean work routines. Again, Ligon complains of this discrepancy at several points in his *History*, arguing that some slaves would make as good a Christian as Europeans, but that their masters refuse to baptize them as they fear it would revoke their rights to masterhood.⁵⁷⁶ Similar complaints were made in Barbados by visiting officers from the Western Design fleet. As shown in chapter two, this English armada contained a number of Puritan reformers who thoroughly embraced the period's rhetoric of improvement, piety, and industry, and the Design itself was ultimately a plan for producing English settlements that would be ideally governed by these values. Yet when these leaders landed in Barbados to recruit soldiers many were astonished at what they saw and wrote to Whitehall on the island's various moral shortcomings. "It would grieve your heart to talke with the nigor slaves in the island, and especially thos that are

⁵⁷⁶ Ligon, *Barbados*, 543, 82.

most ingenious, with whom I have had some discourse,” wrote one commissioner. This officer was upset with several facets of Barbadian slaveholding, but was especially bothered by the fact that none of the slaves were being taught Christianity. “They are absolute atheists, worshipping nothing, being taken off their owne naturall superstitious worshippes. I asked them, why they would not be Christians? They sayd, they could get no body to teach them.”⁵⁷⁷ This dissonance between the desires of English reformers to Christianize Africans and the recalcitrance of American planters to comply with these wishes simmered for the rest of the century, often resulting in various imperial conversion mandates from the metropole. These edicts were often sabotaged in the colonies by various forms of planter obstruction, and colonial records from this period contain frequent complaints from Whitehall to colonial governors, regarding the poor enforcement of these laws.⁵⁷⁸

In sum, West Indian plantations often fell short of the idealized reformist discourses advocated in England. These failings were occasionally noted and even engendered English diatribes on the American colonies during this time, such as Richard Pinder’s sermon *A Loving Invitation ... Unto All Inhabitants of the Island Barbados* (1660). The tract was written in Barbados but published in London, and rebukes the Barbadian elite for their impious lifestyles. It accuses them of spending too much time living in idle luxury and enjoying worldly pleasures, and harangues them for abusing their slaves and servants too frequently. Most important, it argues that by engaging in debauch behaviors, American planters were not supplying their subordinates with proper

⁵⁷⁷ Birkenhead to Thurloe, Thurloe, *State Papers*, III, 159.

⁵⁷⁸ Amussen, *Caribbean Exchanges*, 114-6.

examples of sobriety and industriousness, which was a key component of progressive work routines:

“So long as you are bad examples your selves unto your Servants, you strengthen them in their wicked deboist wayes; and thus you become guilty before the Lord, both of their, and your own wickedness; then let amendment of life be brought forth, that you may become good examples to all under you, in patience, in moderation, and sobriety, in your Words and Actions; and that will be the way, whereby you escape God’s sore judgements, and be freed from his Wrath to come.”⁵⁷⁹

Note that this sermon does not question the fundamental justice of servitude or slavery. Nor do Ligon, Berkenhead, Pinder, or any other authors from this time interrogate the legitimacy of forced labor programs in general. Rather, their critique is limited to the way improving labor programs were put into practice within the colonies. When planters engaged in excessive selfishness and cruelty they were seen to distort the ideas of English reformers, and to disrupt the synergies which brought mutual benefits to master, worker, and commonwealth. In doing so, these American masters upset the hierarchical order prescribed by experimental reformers, allowing England’s improving designs to become base projects. However importantly, such critiques never threatened to debase England’s larger fundamental discourses regarding social marginals or organized work routines. Rather, these critics merely believed that planters should be reprimanded for improperly engaging in hierarchical reform activities. The best dung might be a *judicious* master’s foot, but was a foot nonetheless.

But these complaints about the West Indies comprise only a small minority of the writings on the Americas during the seventeenth century. As has been seen, most improvers and writers, unaware of the differences between ideal English improvement

⁵⁷⁹ Richard Pinder, *A Loving Invitation (To Repentance and Amendment of Life) Unto all the Inhabitants of the Island Barbados* (1660), 9. Accessed through EEBO.

schemes and the material reality of working plantations, simply folded these American work institutions into their broader early Enlightenment vision of increasing knowledge, expanding plenty, and social and moral improvement. It was not until the late eighteenth-century, when organized groups of abolitionists made serious commitments towards publicizing the horrors of American slavery, that visions on the Indies would change.

Until then, misinterpreting America's selfish coercion as genuine improvement was only one way in which England's experimental philosophers and improving reformers misread their New World plantations. Indeed, writings from this time contained a wide variety of misunderstandings on the American colonies. Some of these were accidental while others were intentional, and they influenced English society far beyond the development of labor camps. In the next chapter, we examine how these Caribbean misreadings shaped not only experimental philosopher work routines, but their fabrication of early modern science itself.

Chapter Four: Expertise

In 1702 the author, compiler, and natural philosopher Thomas Snow published his *Apopiroscopy: or, a Compleat and Faithful History of Experiments and Observations*. Snow's work was an attempt to create a comprehensive "natural or experimental history," in the tradition of the ideas laid out several decades earlier by Francis Bacon. To Bacon and his followers, such a work was to be a compendium of recent important experiments and discoveries related to early modern natural science, and their relevance to contemporary artisanal and mercantile industries. Such works had two primary goals. The first was that they were a general taxonomy project, whereby all of the world's recent innovations would be cataloged into a central body of textual knowledge. This was done to increase their utility by allowing for a central published reference point, but they were also instrumental in forming the basic knowledge blocks upon which further experiments and discoveries could be understood, classified, and judged. Second, as shown in chapter one, these works often contained a proselytizing component whereby the author would hope to convince the reader of experimental philosophy's value by demonstrating all the recent innovations which the methodology had supposedly reaped for society. Dozens of natural history compendiums were published throughout the seventeenth century, and by creating the *Apopiroscopy* Snow was consciously participating this tradition. His work begins by enumerating an extensive canon of earlier authors from whom he had compiled much of his information. The list ranges from chemists like Robert Boyle and Robert Hooke, to agriculturalists like Walter Blith and John Evelyn, to general reformers such as Bacon and Hartlib. It even references works such as Virgil's ancient *Georgics*, and Thomas Gage's *Survey of the West Indies*, the

work which helped inspire Cromwell's Western Design. Snow's *Apopiroscopy* also contains a lengthy prologue which eulogizes the previous century's breath of innovations and discoveries, culminating with the exclamation that "if *Adam* were now alive, and should survey the great Variety of Man's Productions, ... He would admire to see what a New World (as it were) or Set of Things, has been added to the Primitive Creatures, by the industry of his Posterity; and all these were but the Fruits or Off-spring of *Experiments and Observations*."⁵⁸⁰

Snow's work lists and details an incredibly diverse array of innovations from recent decades, with entries ranging from iron-making improvements, to new ballistics theorems, to horticultural tools, to navigation and astronomical aids, to perpetual motion machines. Like most natural philosophy compendiums of this time, Snow's work also pays special attention (and homage) to the evolving connections between scientific innovation and the progress of English trade. To this end, he at one point lectures on the positive effects specific innovations can have on creating new jobs and employments, giving four examples: 1) The amalgamation of mercury with gold, which created the gilders trade; 2) the invention of the metal coil or spring, which allowed for the clockmaker's trade; 3) experiments with *aquafortis* on precious metals, which advanced

⁵⁸⁰ Thomas Snow, *Apopiroscopy: or, a compleat and faithful history of experiments and observations: not only chymical and curious, but mechanical; and in several Arts, Sciences and Professions. Being Pleasant, Useful and Profitable. Extracted from the most Authentick Writers, Manuscripts, and the Author's Experience. By T. Snow.* (London, 1702), 19. *Eighteenth Century Collections Online*. Gale. University of Minnesota. 7 Sept. 2011
<http://find.galegroup.com/floyd.lib.umn.edu/ecco/infomark.do?&contentSet=ECCOArticles&type=multipage&tabID=T001&prodId=ECCO&docId=CW3307099976&source=gale&userGroupName=umn_wilson&version=1.0&docLevel=FASCIMILE>. Thomas Snow was a pseudonym for Richard Neve. It is unclear how proficient Snow was himself in producing scientific experiments. His work is mainly compiled through the above-mentioned incredibly thorough canon of seventeenth-century natural science works, although he does insist that these readings were augmented by many of his own personal experiments and observations. While Snow gives special homage to sugar-making, he does not seem to be connected to plantations of the West India trade in any special fashion. His remarks on sugar-making make only one small section of his large work.

the refining industry; and 4) innovations regarding *lixivium* (potash and other alkaline additives) within the colonial sugar industry, which allowed the mass-production of sugar within Britain's expanding empire. To Snow, this last item was of particular importance because it created more jobs than most. He claimed that sugar engendered a variety of recent sugar-making and confectionery trades, greatly augmented the apothecary profession, and was a venerable example of the "transplanting of arts and manufactures," which can be achieved through experiment and innovation. He continues his encomium on sugar by lauding the planters of Barbados and their intrepid forbearers who, about fifty years prior, possessed an admirable "curiosity" which drove them to invent and develop this "useful industry." Finally he extols the virtues of current Barbadians who have made their tiny island a paragon of advanced husbandry, calculating that the tiny island now produces over twenty million pounds of sugar per year.⁵⁸¹

As mentioned in chapter one, experimental philosophers were novel insofar as they found ways to link the distinct concepts of observation, invention, medieval trades, and linear accumulation into a single network of progressive national development. Moreover, these experimental philosophers saw the West Indies and other American plantations as central components to their improving vision. As seen in the works of Snow and other experimental philosophers, they were especially enamored with the *ingenios* (sugar mills) of Barbados and other West Indian colonies. By 1700, the seemingly novel technologies within West Indian mills allowed for the sale and consumption of sugar in England at heretofore unthinkable levels, to the point where the "invention" of *ingenios* could be seen as a powerful agent of social change. This fascination was expressed through a number of natural histories which commented upon

⁵⁸¹ *Ibid*, 18-19.

the sugar industry's development, and through these works experimental philosophers incorporated sugar-making into their paradigm of empiric experiment, technological innovation, and social progress.

However there is another part of this story worth telling, and it is important to note the discrepancies between these scientific narratives and the material reality of a working slave plantation. Like with coercive labor practices, experimental philosophers maintained a myopic vision of the Indies which tainted their understanding of an ingenio's day-to-day practices, and how those practices factored into the "invention" that was Caribbean sugar-making. Most important, when describing the ingenio and its effects, these philosophers were less interested in portraying accurate plantation activities and more concerned with creating a manageable representation of a distant object which could be easily assimilated into their new program of Baconian research. As seen in Snow's encomium of "curious" English planters, these narratives often worked by framing the history of technological progress as a series of distinct and major inventions, often created by elites, instead of as a concatenation of tiny developments involving a host of human and non-human actors and events.⁵⁸² Through this paradigm, a

⁵⁸² This article draws upon a number of recent works from the history of science and technology when framing its narrative of effacement of Caribbean sugar workers. Pamela Smith's idea of "artisanal epistemology" is invoked to describe the collection of tasks and knowledges assembled inside the plantation to create a properly functioning sugar estate, and to help describe the transmission of ideas about sugar-making from Caribbean workers to English natural scientists. See Pamela Smith, *Body of the Artisan: Art and Experience in the Scientific Revolution* (Chicago: University of Chicago Press, 2005). More recently, see Lissa Roberts et al., *The Mindful Hand: Inquiry and Invention from the Late Renaissance to early Industrialization* (Amsterdam: Royal Netherlands Academy of arts and Sciences, 2007). Steve Shapin's idea of the invisible technician is also invoked to describe how the knowledges of these artisanal sugar-makers were effaced in favor of an emphasis on a gentleman planter archetype, who creates and manages his ingenio through diligent observation and careful experiment. See Steve Shapin, *A Social History of Truth: Civility and Science in Seventeenth-Century England* (Chicago: University of Chicago Press, 1995). Both of these concepts have recently been explored more in-depth in Chandra Mukerji, *Impossible Engineering: Technology and Territoriality on the Canal du Midi* (Princeton: Princeton University Press, 2009). Finally, for information on concepts of technoscience networks,

technological development which may have been the result of myriad discursive choices involving a wide spectrum of socially distributed cognitions is winnowed into a single subject-object relationship between an inventor and the physical material he or she is manipulating—in this case the planter and his cane.

This chapter will compare these philosophers' accounts against plantation records from this period, showing the deficiencies between these narratives and the material reality of an ingenio's daily operation. Contrasting these sources illuminates the extent to which Barbadian planters depended upon the embodied knowledges of their servile labor force, and the extent to which this was effaced within experimental philosophy's narratives. As will be shown, successfully operating a Caribbean ingenio required the simultaneous application of a number of artisanal epistemologies and craft-skills, many of which were unknown outside of the routine tasks and "rules of thumb" employed by a few of the mill's workers. Thus, inventing or transplanting a sugar industry to a new locale had less to do with circulating natural history texts or other ideas amongst planter elites, and instead relied on literally transferring artisan slaves and workers from one locale to another. These migrations, which were often forced and which are so central to early modern Atlantic history, are thus inseparable from the ideas which allowed the novel "wonder" of sugar-making to grow and evolve. Controlling both the movements and knowledges of these workers and coercing them to contribute towards the larger ingenio project presented a central challenge to plantation owners, and is a theme that frequently appears within plantation records. Yet this theme is repeatedly effaced within experimental philosophy accounts. Exposing these discrepancies helps to restore the

combinable and mutable objects, and centres of calculation, see Bruno Latour, *Science in Action: How to Follow Scientists and Engineers Through Society* (Cambridge: Harvard University Press, 1987).

agency of these secret sugar-makers in Atlantic history, but more importantly it provides an example of early-modern technoscience networks at work. In this case, through a careful extraction of specific plantation aspects, a distant agricultural development is translated into a stable and combinable object, fit for incorporation into natural history's nascent metrology and able to enforce its new epistemology of individual observation and experiment.

I: A "History" of Sugar

Despite the claims of Snow and his colleagues, there was no "inventor" of the forms and technologies which comprised the sugar mill. Historians of slavery have long documented how ingenios evolved from a centuries-long collaborative process, moving across four continents and involving field hands, landlords, artisans, environmental factors, mass-migration, production and transportation innovations, credit institutions, and consumer demand patterns.⁵⁸³ Initially cultivated in ancient Asia, sugar slowly migrated westward through the medieval Middle East and was being grown on Mediterranean islands such as Cyprus and Sicily by the fourteenth century. Over next four centuries it moved from this region to Madeira and the Canaries in the Atlantic, to São Tomé in Africa, to Brazil, and finally to Barbados and the Leeward Isles (after which it moved on to Jamaica and Surinam, and then elsewhere). At each stop forms of land cultivation and labor organization and exploitation grew in size and complexity, increasing the plantation's output. While the Barbados industry was only one link in this

⁵⁸³ A good summary of these developments can be found in J.H. Galloway, *The Sugar Cane Industry: An Historical Geography from its origins to 1914* (Cambridge: Cambridge University Press, 1992), Philip Curtin, *The Rise and Fall of the Plantation Complex: Essays in Atlantic History* (Cambridge: Cambridge University Press, 1998), and Stuart B. Schwartz, *Sugar Plantations in the Formation of Brazilian Society: Bahia, 1550-1835* (Cambridge: Cambridge University Press, 1985), ch. 1-3.

global migratory chain, seventeenth-century natural histories rarely place it into this larger context.

Experimental philosophy's effacement of these complexities can be further seen through a closed analysis of a single step within this larger chain: the transfer of ingenios from Brazil to Barbados and the tiny island's subsequent "sugar revolution" in the mid-seventeenth century. The general timeline of the Barbadian sugar revolution is as follows: English settlers arrived at Barbados in 1627 and focused on tobacco and cotton planting throughout the 1630s. It is unclear when the first Barbadians began planting sugar, but it is assumed to be around 1640, when a global glut in tobacco prices caused Atlantic planters to search for a more profitable cash crop.⁵⁸⁴ The transition to sugar remained slow during the early 1640s, and the first recorded shipment of Barbados sugar to England did not occur until 1643.⁵⁸⁵ However things accelerated quickly after 1645, in part because of a large number of wealthy royalist émigrés who fled the English Civil War and arrived with plenty of capital to invest in new plantations.⁵⁸⁶ By 1650 the transition to sugar was occurring rapidly throughout the island, and was generally complete by 1660. Indeed, the change occurred so quickly that while in 1645 canes were still a rarity, within a decade a visitor could report that "the wealth of this island consists in sugar. Sugar cane or reed is planted in the countryside as far as the eye can see."⁵⁸⁷

Seventeenth-century natural histories which describe the Sugar Revolution follow three general paths: some claim ingenios were invented in Barbados; others claim that

⁵⁸⁴ Wim Klooster, "Anglo-Dutch Trade in the Seventeenth Century: An Atlantic Partnership, 21 in Allan I. MacInnes and Arthur H. Williamson, eds., *Shaping the Stuart World, 1603-1714: The Atlantic Connection* (London: Brill, 2005).

⁵⁸⁵ Robert Carlyle Batie, "Why Sugar? Economic Cycles and the Changing of Staples on the English and French Antilles, 1624-54," *Journal of Caribbean History* 8 (Nov., 1976), 14.

⁵⁸⁶ On these émigrés see Menard, *Sweet Negotiations*, Ch 3.

⁵⁸⁷ Jerome Handler, ed. "Father Antoine Biet's Visit to Barbados in 1654," *The Journal of the Barbados Museum and Historical Society (JBMHS)*, 33,2 (May, 1967), 66.

they were invented in Brazil but perfected by English planters; while others claim that the mills of Brazil and Barbados are essentially the same, yet Barbadians should nevertheless be lauded for their individual curiosity and methodic, trial-and-error adaptation of an existing technology into a new environment. In all cases, it is the planter who is singularly responsible for bringing mills into the English empire, and for the subsequent benefits they bring to Britannia writ large. Returning to Thomas Snow's *Apopiroscopy*, he gives the following account of how Barbadians came to grow sugar:

“I am informed by very credible Relations, there are not many Years effix'd, since in our Memory, a Forreigner accidentally bringing some *Sugar-Canes*, as Rarities, from *Brasil* into *Europe*, and happened to touch at *Barbados*, an *English Planter* that was curious, obtained from him a few of them, together with some hints of the way of Cultivating them, and using them; by which *Observations*, and the curiosity of the *English Colony*; they in a short time, well improved them, that that small island became, and is still, the Chief *Store-House*...”⁵⁸⁸

This account of the curious planter is similar to (and likely an embellished version of) one found in Sir Dalby Thomas' 1690 publication *An Historical Account of the Rise and Growth of the West-India Colonies*.⁵⁸⁹ As mentioned in chapter one, Thomas was an influential West Indian merchant and factor who frequently lobbied planters' interests to Crown and Parliament. His book, originally a proposal brought before Parliament regarding a West Indian banking project, contains a long testimony to the industriousness of planters and why they are the nation's greatest spur to economic growth. Thomas begins his narrative with a brief sketch of the pre-history of sugar in medieval Europe, after which he continues by claiming: “But no Nation made so considerable a progress therein as the *Portugalls*, who having with some Success, Improv'd the Art of Planting it in their *African Colonies* and Islands, did at last make it their main Business in

⁵⁸⁸ Snow, *Apopiroscopy*, 18.

⁵⁸⁹ Dalby Thomas, *An Historical Account of the Rise and Growth of the West-India Colonies*, Research Library of Colonial Americana Series (USA: Arno Press, 1972).

*Brasile.*⁵⁹⁰ Next, he narrates the transfer of mills to Barbados, claiming that in the 1640s:

“A *Hollander* happen'd to arrive from thence upon our Island of *Barbados*, where though there were good *Sugar-Canes*, the English knew no other use of them then to make refreshing Drink for that hot Climate ... But this *Hollander*, understanding sugar, was by one Mr. *Drax*, and some other inhabitants, there drawn in to make Discovery of the Art he had to make it.”

This development was followed by the arrival of many “ingenious men” who immigrated to Barbados during the English Civil War, and improved sugar-making to the point where “we at present exceed all the Nations in the world in the true improvement of that Noble Juice of the Cane ... And as our Nation has been ever famous for Meliorating Inventions of all Kinds, so in this we have gone so far, that [English planters] ... set the price of it in all *Europe*, to the Kingdom's Pleasure, Glory, and Grandure.”⁵⁹¹

As a West Indian merchant, it is likely that Thomas heard many first-hand stories about the arrival of mills to Barbados. He was also likely familiar with an even earlier narrative about this technology transfer, Richard Ligon's aforementioned *True and Exact History of the Island of Barbados* (1657).⁵⁹² Ligon was friend of the colonial projector Thomas Modyford, and the two Royalists initially fled to Barbados together during the Civil War. Upon arrival Modyford purchased a share of a Barbadian sugar estate, and Ligon lived and worked there from 1647 to 1651 before returning to England. Ligon's work, written in the natural history tradition, is a collection of careful observations about the island during that critical period when its economy was rapidly transforming into a

⁵⁹⁰ *Ibid.*, 13.

⁵⁹¹ *Ibid.*, 14.

⁵⁹² Richard Ligon, *The A true & exact history of the island of Barbados illustrated with a mapp of the island, ... together with the ingenio that makes the sugar, with the plots of the severall houses, roomes, and other places that are used in the whole processe of sugar-making*, 1657. Accessed through EEBO.

sugar monoculture.⁵⁹³ Ligon's account also repeats the theme of curious English planters, referring to "industrious men" who had gotten some canes from Brazil in an attempt to make sugar, deciding it "worth the while to set up a very small Ingenio, and so make tryall what Sugar could be made upon that soyl." However the early efforts of these planters were not fruitful, "the secrets of the work being not well understood." Nevertheless they persevered according to Ligon, and were helped by "new directions from Brasil, sometimes from strangers, and now and then by their own people, who being covetous of the knowledge ... were content sometimes to make a voyage thither." Ligon states that during his arrival in 1647 the planters had improved their works but were "still ignorant" on several key points, but that by his departure in 1650 their techniques were "much better'd" and he doubted that further improvement would be needed or made.⁵⁹⁴

It is interesting to note how in each of these narratives, the tale of sugar-making becomes more packaged and refined with each retelling. The messy particulars of the complex process are increasingly omitted, the contributions of foreigners and other actors are reduced, and the emphasis is slowly placed upon the sole ingenuity of the English planter/inventor. Ligon's planters, while ultimately successful in the end, were frustrated for years in their attempts, needing to make several trips back to Brazil.⁵⁹⁵ Dalby Thomas' protagonist needed only a single sojourning Dutchmen to stay with him a bit, learning the art from his teachings. Snow's planter does even better, starting out with only some bits of souvenir cane accidentally left behind by a foreigner, and a few "hints"

⁵⁹³ On Ligon's work being a natural history, see Susan Scott Parish, "Richard Ligon and the Atlantic Science of Commonwealths," *The William and Mary Quarterly*, Vol. 67, No. 2 (April 2010), pp. 209-248.

⁵⁹⁴ *Ibid.*, 85.

⁵⁹⁵ Another publication from Ligon's period confirms his statements about Barbadian sugar in the 1640s, saying that it was "of the worst sort." See George Gardyner, *A Description of the New World, or, America Islands and Continent*, (1651). Accessed through EEBO.

as to how to grow them. In each instance the story undergoes a translation away from complex web of details which comprised the event as it happened, and towards a packaged object suitable for easy incorporation into the new narratives of science and progress.

II: Ingenios

The extent of this transformation appears even larger if we examine documents prior to and outside of Ligon's narrative, where we find more evidence of outside assistance and other messy particulars which the natural history accounts strip away. In all three of the above reports, sugar-making is portrayed as a trade easily learned and replicated by unskilled observers. A simple analysis of the collective tasks required to operate an ingenio can easily dispel this. As mentioned above, ingenios relied upon a complex process of grinding, boiling, tempering, striking, curing, and packaging, and at each stage there was little room for error in regards to a number of variables. Moreover because cut sugar-canes rot within 24 hours if not processed, all of the mill's activities occurred in tandem, meaning that failure in any one of these stages could bottleneck the system and spoil the remaining crop. In sum, running an ingenio required a concatenation of tasks and skills which were too numerous to master quickly. Nor could a single set of memorized instructions prepare a planter for the array of variables regarding weather, disease, supply fluctuations, and irregular shipping schedules. Nor could they be learned from a book, even if instruction manuals and literacy were widely available during this time (and they were not).⁵⁹⁶ Training would also require at least one

⁵⁹⁶ Even as late as the eighteenth century the few manuals that did exist on sugar-making were only general primers. They refrained from giving specific figures on many important items, claiming such things had to be addressed in person and on a case by case basis. See for example William Belgrave, *A Treatise upon Husbandry of Planting*, (1755), p24-27.

full crop season in order to learn the process from start to finish, and given that the typical cane maturation cycle is twelve to fourteen months, this learning process would thus last up to a year or longer. Together these factors meant it would take months of hands-on experience before one could acquire even basic levels of competency in managing all the components of a successful ingenio.

Other factors contributed to preclude the independent invention or development of an ingenio. First, creating a sugar plantation required a substantial amount of start-up capital. Unlike other Atlantic cash crops, sugar production required an economy of scale that necessitated both a large labor force and a costly sugar works, meaning it was rarely produced in small quantities for individual sustenance or domestic markets. Thus, planters were typically not afforded the luxury of being able to slowly learn the craft through small experimental batches. While Ligon mentions a few Barbadians who set up a small mill to “make tryall,” this experimental procedure was only one component of a larger strategy which involved both multiple trips to Brazil and (as shall be seen below) the importation of foreign sugar-making specialists onto Barbados. Moreover only a few of the island’s wealthiest planters would have been in a position to experiment in this manner, as most had neither the time nor money for this strategy. Indeed, during the 1639-40 tobacco glut, Caribbean planters were commanded by crown decree to convert to cotton growing; few, however, responded. Things got to the point where the island’s governor was granted a warrant to “go from plantation to plantation and inquire into the excessive quantities of tobacco grown.”⁵⁹⁷ Peter Hay, a Barbadian agent writing to England at the time, explained planter reluctance towards cotton conversion as “a thing planters can hardly doe, because they are indebted, that if they leave planting of tobacco

⁵⁹⁷ *Calendar of State Papers*, Colonial Series, I 292.

they shall never be able to pay.”⁵⁹⁸ Sugar was sufficiently more labor and capital-intensive than cotton, which meant that those who could make the transformation were either wealthy newcomers who “plunged” into sugar-making with immediate massive capital outlays, or local elites who combined resources in joint partnerships, going substantially into debt purchasing the necessary labor and equipment.⁵⁹⁹ Such individuals would likely wince at the prospect of investing so heavily only to sacrifice the first few crops to the process of trial and experimentation.

These factors meant it was imperative to have someone on hand who was experienced in sugar-making, and that would mean more than a visiting foreigner and some hints on how to get started. In the case of Barbados, these skills would initially have to be learned via Portuguese or Dutch sugar-makers from Brazil, who would need to live on Barbados for an extended period and be available for daily consultation. Prior to the 1640s Brazil was the world’s largest producer of sugar and dominated the nascent European sugar market. Brazilian mills were originally established in the sixteenth century by Portuguese in the provinces of Bahia and Pernambuco, who transported ingenio technology from their older colony of São Tomé.⁶⁰⁰ By 1600 Dutch merchants had engrossed most of the shipping for Brazilian sugar, making the Netherlands a chief sugar entrepot during the early part of the century.⁶⁰¹ Of particular importance to this trade was a community of Sephardic Jews, *conversos* who, while originally from

⁵⁹⁸ J. H. Bennett, “Peter Hay, Proprietary Agent in Barbados, 1636-1641,” *Jamaican Historical Review* 5 (1965), 16.

⁵⁹⁹ Menard, *Sweet Negotiations*, 54. For examples of these planters in Barbados, see *ibid*, in particular Ch. 3.

⁶⁰⁰ An island near West Africa which along with Madeira and the Canary Islands was perhaps the first European colony to produce a single cash crop for European consumption using primarily African slave labor. See Schwartz, *Sugar Plantations*, Ch. 1.

⁶⁰¹ Jonathan I. Israel, *Empires and Entrepots: The Dutch, the Spanish Monarchy, and the Jews, 1585-1713* (London: Hambledon, 1990), 417-448.

Portugal, had grown accustomed to doing business beyond national borders and oversaw trading networks throughout Spain, Peru, Mexico, Brazil, and the Netherlands.⁶⁰² Thus a thriving trade of slaves, sugar, and plantation provisions operated between Portugal, Africa, Brazil, and Amsterdam, and by the 1620s Brazil had an estimated 350 ingenios while Amsterdam had over 20 sugar refineries.⁶⁰³ These connections were intensified after 1630 when the northern province of Pernambuco was conquered by the Dutch West India Company, who assumed control of Brazilian sugar exports until 1645, when an insurrection of the province's Portuguese citizens destroyed most of the industry.

Faced with this destruction, many of these international merchants sought new areas to develop profitable sugar-growing regions. It was these Brazilian émigrés who initially brought the knowledge of sugar-making to Barbados, providing a niche from which it could be disseminated into the rest of the colony. It should be noted that amongst Caribbean historians there is currently a debate about the extent of Dutch and/or Brazilian involvement within Barbados' developing sugar industry. While older sources have taken the words of Ligon and others at face value, newer quantitative evidence suggests that, statistically, the number of actual Dutch and/or Brazilian migrants to Barbados was quite small.⁶⁰⁴ Yet while these more recent works portray an island with

⁶⁰² Wim Klooster, "Communities of Port Jews and their Contacts in the Dutch Atlantic World," *Jewish History* 20, 2 (2006), 129-145.

⁶⁰³ Yda Schreuder, "The Influence of the Dutch Colonial Trade on Barbados in the Seventeenth Century," *Journal of the Barbados Museum and Historical Society (JBMHS)* 48, 2002, 47; Arnold Wiznitzer, *Jews in Colonial Brazil* (New York: Columbia University Press, 1960), Ch. 3

⁶⁰⁴ The most popular of these early historical works is Richard S. Dunn, *Sugar and Slaves*, however several other works repeat these claims. This line of argument is originally based upon Ligon's testimony and another anonymous manuscript created around 1670 entitled "Some Observations on the Island of Barbados" (PRO, C.O. 1/21, no. 170). The manuscript was transcribed and published by Jerome Handler in the *JBMHS*, 34,3 (1973). See also Vincent Harlow, *A History of Barbados, 1625-1685* (Oxford: Clarendon Press, 1926). More recently, Russ Menard's *Sweet Negotiations* argues against a large Dutch presence in regards to the financing of new ingenios, and in supplying the colony with black slaves. These arguments for limiting the Dutch Presence can also be found in Schwartz, ed. *Tropical Babylons*. Conversely, Yda Schreuder has published a series of articles in the *JBMHS*, emphasizing the Dutch role in

relatively few non-English settlers, this need not invalidate the method of knowledge transmission I am about to describe. What was important was not the number of Brazilian émigrés to Barbados, but the positions these few Brazilians held when coming to the colony. As will be shown, the vast majority of Barbados' initial sugar magnates had documentable connections to Brazilian sugar-making knowledge. Once in possession of this knowledge, it quickly spread to other English elites via networks of business, kinship, and personal friendship.

The various primary and secondary narratives which describe the initial import of sugar technology into Barbados typically credit one of three Barbadian planters: James Drax, Richard Holdip, or Constant Sylvester. While Holdip, who will be discussed later, was an English war veteran and agent of the powerful Company of Merchants Trading to France, both Drax and Sylvester were Anglo-Dutch merchants with connections to Pernambuco. Sylvester was from a Sephardic Jewish family and the son of Gyles Sylvester, a prominent Amsterdam trader.⁶⁰⁵ Barbados' early archival records show that Constant, initially residing in Amsterdam, was importing Barbadian produce to Holland as early as 1641. He became a Barbadian landowner in 1645 and had accumulated a sizeable fortune in slaves and sugar estates by his death in 1671.⁶⁰⁶ He had also made strong connections with many of the island's more powerful English planters, including

Barbados. See in particular Yda Schreuder Yda Schreuder, "The Influence of the Dutch Colonial Trade on Barbados in the Seventeenth Century," *JBMHS* 48, 2002, 44-63; Schreuder, "Evidence from the Notarial Protocols in the Amsterdam Municipal Archives about Trade Relationships between Amsterdam and Barbados in the 17th Century," *JBMHS*, 52, (2006), 54-82; and Schreuder "A True Global Community: Sephardic Jews, the Sugar Trade, and Barbados in the Seventeenth Century," *JBMHS*, 50 (2004), 166-194. Of particular note here is Schreuder's discovery that many Sephardic Jews used English aliases when conducting business in Barbados, hence making them invisible in the island's early record books.

⁶⁰⁵ Schreuder, "Evidence from the Notarial Protocols," 63.

⁶⁰⁶ Fredrick Smith, "Disturbing the Peace in Barbados: Constant Plantation in the Seventeenth Century," *JBMHS* 44, 1998, 40-41. He may have had business and property transactions in Barbados prior to these years, as this is merely the earliest recorded dates within the deed books at the Barbados National Archive. The books do not go back before 1640, and are scant for most of the subsequent decade.

Samuel Farmer and Francis Raynes, who were executors of his will.⁶⁰⁷ Samuel Farmer, originally a Bristol merchant, was a Barbados assembly member who was also one of the first to invest heavily in sugar, undertaking a plantation partnership with English Barbadian William Hilliard in 1645.⁶⁰⁸ Hilliard in turn was the owner of over a dozen estates on the island, a member of the governor's council by the early 1640s, and is mentioned in Ligon's *History* as the "eminent planter" who initially partnered with Sir Thomas Modyford when Modyford and Ligon first came to Barbados in 1647.⁶⁰⁹ Thus through one Dutch individual many of Barbados' early elites could have access to sugar-making knowledge.

In fact, the presence of transatlantic Anglo-Dutch partnerships in Barbados predates Sylvester and goes back to the colony's original founding. Barbados was initially discovered by a group of mariners returning to England from Pernambuco in 1624. The ship was financed by Sir William Courteen, a prominent Flemish merchant in the Stuart court who was living in Protestant exile from Hapsburg-occupied Flanders. Upon hearing stories of the island's vacancy and abundance from his ship's captain, Courteen funded a subsequent expedition in 1627 which founded Barbados' first permanent settlement. This was not Courteen's first colonial project within the region, as he was

⁶⁰⁷ Will of Constant Sylvester, Recopied Will Books, RB 6/8, 316-24, Barbados National Archive (BNA), Lazaretto, St. Michael, Barbados. Sylvester was also a Councilor and had also married the sister of Henry Walrond, once the island's acting governor and of a leading English family frequently mentioned in Ligon's *History*. Henry Walrond was the chief Justice of Common Pleas on the island and likely the son of Humphrey Walrond, one of the island's largest sugar planters during the time of Ligon's stay. See Will of Henry Walrond, Wills, RB 6/10, 333, BNA.

⁶⁰⁸ Recopied Deed Books, RB 3/2, 220, BNA. See also Menard, *Sweet Negotiations*, 62. The deed also mentions a Dutch merchant, John Berry, to whom Hilliard owed 1200 Dutch Guilders.

⁶⁰⁹ Between 1640 and 1660, Hilliard was involved in no less than 36 land deals on the island. See Deeds, Deeds Index and Counterdeeds Index, RB 3/43-44, BNA. On Hilliard as council member, see Extracts From the Council Books of Barbados, October 13, 1641 to May 2, 1652. RB X10/33, BNA. Thomas Modyford was a Royalist Émigré who quickly ascended the Barbados political ladder, becoming Assemblyman, Councilman, and even Governor in due time. In 1664 he was assigned by King Charles II to be the Governor of Jamaica, where he took a leading role in developing the plantation society of the nascent colony. See Dunn, *Sugar and Slaves*, ch 4-5, in particular pp. 81-2.

already involved in a series of attempts to settle the “wild coast” area of present-day Guiana with fellow Dutchman Jan de Moor. These Dutch settlements along the South American coast, some of which were producing substantial crops by the 1620s, were initially peopled by migrants from Vlissingen, a Dutch coastal city that had been garrisoned by the English in the early seventeenth century and contained a substantial English population.⁶¹⁰ When Courteen’s settlers landed at Barbados, they immediately sent emissaries to these colonies on the American mainland for assistance.⁶¹¹

Courteen’s story is also important because one of the settlers from his initial 1627 settlement was James Drax, another Anglo-Dutch merchant who eventually became the richest Barbadian planter and the individual most frequently associated with bringing sugar to Barbados.⁶¹² Like the other early settlers, Drax initially worked plantations of cotton and tobacco before moving into sugar sometime around 1640. He also possessed numerous Amsterdam connections including several business dealings with the Sylvester family, at one point arbitrating a transatlantic dispute between Constant and his father Giles.⁶¹³ Like Sylvester, Drax was also close to other early English elites in Barbados such as Hilliard and Farmer, and he oversaw their above-mentioned 1645 partnership for creating an ingenio. Indeed, these three planters, along with other close associates of

⁶¹⁰ Esther Mijers, “A ‘Natural Partnership’: Scotland and Zeeland in the Early Seventeenth Century,” in Allan Macinnes and Arthur Williamson, eds. *Shaping the Stuart World, 1603-1714: The Atlantic Connection* (Leiden: Brill, 2006), 244-7.

⁶¹¹ When Courteen’s men settled on Barbados in 1627, some went to the South American coast to procure Native American servants to help them establish their settlement. It is likely these Indians came from these colonies. See Harlow, *Barbados*, 5-6.

⁶¹² In 1651, a Father Biet visited Drax on Barbados, who told him about the earliest days in 1627 when he and his fellow settlers lived in caves for shelter. Handler, “Father Biet’s Visit,” 67.; Ligon, *History*, 23; Schreuder, “Evidence from the Notarial Protocols,” 59.

⁶¹³ In 1647 James Drax was recruited by Gyles Sylvester (then in Amsterdam) to arbitrate a land dispute between he and his son Constant (then in Barbados). See Schreuder, “Evidence from the Notarial Protocols,” 63. Also Constant’s will stipulates that all products from his Barbadian plantations be consigned to Henry Drax of London, who was also the executor of Constant’s estate there. See Wills, RB 6/8, 321, BNA. Furthermore, the first archival record of Sylvester in Barbados is from a sale between Drax and Thomas Middleton, which Sylvester oversaw. Smith, “Disturbing the Peace,” 40.

Drax, were entrenched at the top of the Barbados oligarchy from an early date, all holding positions on the governor's council by the late 1630s.⁶¹⁴ By 1654 Drax had earned enough money to relocate to London, leaving his plantations to his son Henry. By this time Drax had earned such esteem in the colony that the day of his departure occasioned a formal parade of over 200 of the islands top planters, who traveled from the governor's mansion through the capital of Bridgetown and to the wharf.⁶¹⁵ After his departure his son Henry continued to expand their Barbadian holdings while James became one of England's more successful West Indian merchants, earning a spot on Whitehall's Committee of Trade and Plantations.⁶¹⁶

Outside of this cadre of powerful Anglo-Dutch merchant-planters, several other Dutch merchant families, many Sephardic Jews from Brazil, lived and operated in Barbados during this period. As mentioned above, in 1645 the Portuguese began a protracted struggle to retake Pernambuco from the Dutch, which precipitated a wave of Jewish merchant emigration.⁶¹⁷ The Mercados were one such family who belonged to Brazil's Marrano community, a group of Jewish conversos whose agricultural lineage could be traced back to Madeira and São Tomé. Abraham de Mercado was one of the leaders of the Zur Israel Congregation in Recife, Pernambuco during the 1630s and 40s,

⁶¹⁴ Dunn, *Sugar and Slaves*, 58.

⁶¹⁵ The observer and French Missionary Father Biet wrote that "he was accompanied to the place where the ship was to embark by more than two hundred of the island's most important people, all well mounted and marching two by two in a column headed by the Governor and Colonel Drax." See Handler, "Father Biet's Visit," 69.

⁶¹⁶ Noël Sainsbury, ed. *Calendar of State Papers, Colonial Series*, Vol. II (London: Longman and Green, 1860), 4 (item no. 12).

⁶¹⁷ During the period of Dutch rule in Pernambuco many Jewish Marranos returned to practicing Judaism under the Dutch's free religion policy, and feared the return of the Portuguese inquisition. See Merle Marcus, *The Colonial American Jew, 1492-1776* (Detroit: Wayne State University Press, 1970) 191 and David Brion Davis, *Slavery and Human Progress* (Oxford: Oxford University Press, 1984), 94-98.

and played a role in the Dutch counter-insurgency during the Portuguese rebellion.⁶¹⁸ After the war he and his son David Raphael migrated to Barbados, where David later applied for English denization.⁶¹⁹ David, a Brazilian physician and sugar planter, was also credited with bringing a new kind of sugar mill to Barbados which was the result of his many years in the Brazilian sugar-making trade.⁶²⁰ The new design was apparently so successful that the device was patented in 1663 by Lord Francis Willoughby, then proprietor of Barbados.⁶²¹ David remained in Barbados until his death in 1685, leaving behind a Portuguese will.⁶²²

A second Portuguese Jewish family was the Acostas, a large merchant group of Sephardic Jews who were among the wealthiest of the Pernambuco planters before the Portuguese rebellion.⁶²³ David de Acosta, similarly a member of the Jewish congregation in Recife, also migrated to Barbados either during or after the war.⁶²⁴ By 1663 he had become a successful merchant and trader on the island, also applying to King Charles II for naturalization.⁶²⁵ He likewise lived in Barbados until his death, willing a substantial plantation to his heirs there.⁶²⁶ Beyond Barbados, the Acosta family had members and mercantile connections across the Atlantic basin. During this same time David's relative Joseph migrated from Pernambuco to New Amsterdam for similar reasons, and was also

⁶¹⁸ Wiznitzer, *Jews of Colonial Brazil*, 93, 137.

⁶¹⁹ *Calendar of State Papers, Colonial Series*, Vol. II, 420.

⁶²⁰ Marcus, *The Colonial American Jew*, 113.

⁶²¹ *Calendar of State Papers, Colonial Series*, Vol. II, 144 (item no. 498). David Raphael later travelled to Amsterdam to litigate on behalf of a group of Jewish Barbadian merchants. See Schreuder, "Evidence from the Notarial Protocols," 67.

⁶²² Portuguese Will of David de Raphael Mercado, Wills, RB 6/10, 398, BNA.

⁶²³ There was a Manoel de Costa during this time who was called "Prince of the Paraiba" by his contemporaries. Paraiba was the fertile region inland of Recife where the wealthiest planters lived.

⁶²⁴ Wiznitzer, *Jews in Colonial Brazil*, 137.

⁶²⁵ *Calendar of State Papers, Colonial Series*, Vol. II, 124 (item no. 420). Interestingly, the petition claims that David de Acosta was initially born in Spain, although this likely refers to Portugal, as the two nations were under joint rule at the time of his birth. Acosta's will also marks him as Jewish and he is listed in the above Zur Israel congregation registers.

⁶²⁶ Portuguese Will of David de Acosta, Wills, RB 6/10, 341, BNA.

a member of the Dutch West India Company.⁶²⁷ Similarly, a Benjamin Acosta fled to Martinique. Much like with the invention narratives surrounding Drax and Sylvester, there is loose evidence that this Acosta member established that island's first ingenio in 1654.⁶²⁸ Finally there was also a Gaspar Acosta, another member of this Brazilian community who fled to Jamaica. The story of Gaspar and his brother Don is detailed below.

In sum, the island abounded with Brazilian connections during this period, far beyond that of a single sojourning Dutchman who happened to bring sugar-cane to the attention of inquisitive English planters. These types of linkages were essential for the English to initially learn the complex workings of a sugar plantation. What the archives show is a host of wealthy transnational merchant families, many with a permanent planter presence on the island as early as the 1640s. While these foreign planters were never a majority within the island's plantocracy, their importance lay with their introduction of sugar-making techniques via their role as intermediaries between Pernambuco merchants and Barbados' new English elites. Through such networks, these migrants could transfer a working knowledge of ingenios to Barbados' top English planters, providing a node from which the technology could disseminate into the rest of the colony. Yet beyond this initial infusion of foreign knowledge, it takes more than a few newly-briefed planters to replicate the complex distributed cognition which guided a working ingenio. As mentioned above, sugar-mills required the simultaneous application of a number of tacit

⁶²⁷ Marcus, *The Colonial American Jew, 1492-1776*, 230,236. See also Arnold Wiznizer, *Jews on Colonial Brazil* (New York: Columbia University Press, 1960), 172.

⁶²⁸ "The French West Indies," *JBMHS*, 26,1 (November, 1958), 24. See also Marcus, *The Colonial American Jew, 1492-1776*, 85-86, on the effect of this diaspora on the French West Indies in general, see Robert Louis Stein, *The French Sugar Business in the Eighteenth Century* (Baton Rouge: Louisiana State University Press, 1988).

and formal knowledges in order to keep its various facilities operating as a single machine. Thus it would be imperative for one or more individuals, preferably with lots of experience in these matters, to be present within the mill at all times. Planters like Hilliard and Farmer would need more than occasional visits to Sylvester or Drax's estates for this kind of know-how. To complicate matters, planters often managed multiple estates, in addition to dealing with a host of other planter obligations (Council duty, deed disputes, militia service, warehousing negotiations, etc.), which would have made constant attention to the mill impossible even if they did possess such knowledge. Thus, maintaining a plantation required the employment of a number of subordinate, skilled workers.

Of all positions within the ingenio, that of chief overseer was the most important as it was he who saw to the mill's overall operation, in particular its grinding, boiling, and curing aspects. Under the Brazilian system, these employees were known as *mestres de acucar* (sugar masters), and were middling artisans who nevertheless commanded high wages for their work. In 1516, when the Portuguese were laying out their initial Brazilian settlements, Portuguese King Manuel commanded that a sugar master be sent there in order to help transplant the industry. Later Portuguese accounts from the sixteenth century describe both a constant demand for these individuals, and also a number of royally-decreed tax exemptions designed to lure more of these artisans to Brazil. One Portuguese Jesuit went so far as to complain that these overseers were the real lords of the plantation because of their frequent pampering.⁶²⁹ While this position was usually held by a white freeperson, there is at least one example from Brazil where a

⁶²⁹ Schwartz, *Sugar Plantations*, 24-5.

larger mill employed a skilled African slave.⁶³⁰ When ingenios were transferred to Barbados, most of the basic workflow routines and labor divisions were retained, including this top position. In his *History of Barbados*, Ligon gives a description of the various types of hands needed to run an ingenio. He stresses the importance of a “Prime Overseer” in several places, stating at one point that without this overseer the planter alone will “have too much to do.”⁶³¹ This “supreame overseer” was to be the intermediary between the planter and the “subordinate overseers” (meaning the boilers, watchmen, and drivers), who received general instructions from the plantation owner and translated these into more specific directions further down the chain of command. While Ligon insisted that the subordinate overseers and all other positions on the plantation could be staffed with slaves or servants, he maintained that the head overseer must be free, eat at the planter’s table as per the traditional English servant custom, and earn an annual salary of £50.⁶³²

The importance of a head overseer can also be seen in a twenty-four page set of instructions made by Henry Drax for his chief overseer Richard Harwood in 1679.⁶³³ Like his father twenty-five years earlier, Henry Drax was now leaving to become an English absentee planter and his farewell instructions itemize an extensive list of responsibilities which would require Harwood’s daily attention. As with Blith’s general

⁶³⁰ *Ibid*, 66.

⁶³¹ Ligon, *History*, 35, 113-114.

⁶³² *Ibid*, 71-2. The point of having the overseer eat with the planter was to reinforce status-based differences between him and the rest of the workforce. This tactic was repeated in other planter instructions, including those of Henry Drax in 1679. On “eating at the table, see chapter 3, 166.

⁶³³ See Peter Thompson, “Henry Drax’s Instructions on the Management of a Seventeenth-Century Barbadian Sugar Plantation,” *The William and Mary Quarterly* 3rd Ser. 66:3 (July, 2009), 592. Drax’s instructions were later heavily edited and reprinted within William Belgrove, *A Treatise upon Husbandry or Planting* (1755). Belgrove attributed authorship to Drax for these, titling them *Instructions for the Management of Drax-Hall* (1679.) See Thompson, “Henry Drax’s Instructions,” 565-570 for a detailed description of the relationship between these three sources.

comments on overseers in his *English Improver*, Drax stresses that a good overseer must be able to manage myriad diverse tasks at once, and also be able to compel his subordinates into performing their respective tasks through a combination of force and encouragement. Most telling in these instructions is that Drax explicitly forbids Harwood from *ever* leaving the plantation, as Drax found absent overseers “very pernicious to all proceedings.” Instead, Drax arranged for multiple attorneys to handle his business matters outside the estate, allowing for Harwood’s constant surveillance over the ingenio’s operation.⁶³⁴ Next, out of all the plantation’s activities, Drax commands Harwood to focus the majority of his time and energy within the boiling house itself, “the place where your cheife skille will be required.”⁶³⁵ It is important to note here that while Drax’s instructions for the ingenio seem quite detailed, he nevertheless admits that they are but “general rules” and that much of the daily activities will be left up to Harwood’s own experience and judgment. Indeed, at one point Drax tells Harwood that he gave him the job because of Harwood’s excellent reputation for sugar-making, of which Drax was “very well Satisfied.”⁶³⁶ Harwood also had a reputation for being an effective manager of slaves, and Drax likewise deferred to Harwood’s judgment in matters regarding slave treatment. “For the government of family both Whites and Blacks,” writes Drax, “I need leave no Directions welle knowing the good Command you have and the delight you take

⁶³⁴ Thompson, “Henry Drax’s Instructions,” 601. Attorneys were usually neighboring planters who agreed to periodically monitor an absentee’s planter for a fee. The attorneys would also act on the planter’s behalf in local legal and business arrangements, and keep a steady correspondence with the absentee planter about the plantation’s state of affairs. By the eighteenth century this position had grown into a full-time occupation for a class of managerial workers. The most complete account of plantation attorneys can be found in Barry Higman, *Plantation Jamaica 1750-1850: Capital and Control in a Colonial Economy* (Kingston: University of West Indies Press, 2008).

⁶³⁵ Thompson, “Henry Drax’s Instructions,” 601.

⁶³⁶ *Ibid*, 592.

in a Sober and welle ordered family.”⁶³⁷ Finally Drax requests that Harwood invite one Christopher Loader to stay at the plantation so that Harwood can educate Loader on how to be a better planter. Christopher Loader was a young neighboring landowner and Drax hoped that Harwood’s influence would “keep him Sober and make him to better mind his Business.”⁶³⁸ In sum, Drax’s instructions demonstrate the importance of having an overseer on hand at all times, the high amount of artisanal knowledge and individual judgment employed by overseers, and how overseers could transfer their skills onto neighboring planters and landowners.

Charting the movement of these chief overseers through early Barbadian society is difficult. The two main types of records for this early period, wills and land deeds, are forms which usually do not give references to individuals in wage-paying positions. The issue is compounded because verbs like “oversee” and “manage” are frequently used in varying and non-specific settings in these documents, and can refer to people as diverse as plantation owners, attorneys, chief overseers or sugar masters, field overseers or drivers, commissioned agents, or even a friend or relative sent to execute a specific task. The general consensus amongst historians is that by the late seventeenth century, the head overseers in Barbados were mostly of English decent, were likely former indentured servants who had accumulated ingenio experience, and who now worked for wages.⁶³⁹ How early English overseers initially learned their trade is uncertain, but like planters, it

⁶³⁷ *Ibid*, 587.

⁶³⁸ *Ibid*, 600. Drax’s commands are specifically that Loader “eat at your table” which would imply either Loader’s staying with him or, at the very least, making frequent visits if Loader lived nearby.

⁶³⁹ Chief overseers were usually free, and almost exclusively white. There were a number of lesser overseer roles on plantations such as slave drivers, watchmen, and boiling house supervisors, which were often manned by black artisan slaves. This occurred more frequently in the late seventeenth and eighteenth century, after indentured servitude had dwindled in Barbados and the island’s black population had risen to almost 80%. See David Galenson, *White Servitude in Colonial America: An Economic Analysis* (Cambridge: Cambridge University Press, 1981), for more specific information on this transformation.

would at one point needed to have come directly from foreign mill workers, likely imported by the earliest Barbadian sugar magnates.

One interesting set of documents from the Barbados archives offers some suggestions into not only the role and importance of these overseers, but also their incorporation into the above-described kinship and business networks which operated to disseminate sugar-making knowledge and technology. Like the Sylvesters, the Lucies were another cosmopolitan merchant family, likely Sephardic, operating out of London, Amsterdam, and other Atlantic ports during this time. Luke Lucie (aka Lucas), a London merchant, got into the Barbadian sugar boom by purchasing an undeveloped plantation there in 1645.⁶⁴⁰ This purchase was witnessed by one Segar De Hem, an employee of Lucie and presumably of either Portuguese or Sephardic descent. Fourteen years later, Lucie was back in London and filed a document with the London Aldermen, granting a Charles Jennens power of attorney over this same Barbadian estate, now developed and operational.⁶⁴¹ The document also contains powers and instructions for Seger de Hem, who had recently returned to work as an overseer at Lucie's plantation. De Hem was put in charge of all of the plantation's daily affairs, including "to rule, oversee, direct, and command" all of the plantation's servants.⁶⁴² The document states that Charles Jennens is to travel to Barbados, live on the Lucie plantation, and jointly manage its affairs with De Hem. Together their powers included everything from taking and managing plantation supply stocks, to the "sale and disposal" of finished crops, to pursuing Lucie's

⁶⁴⁰ P.F. Campbell, *Some Early Barbadian History*. (Bridgetown: Barbados Historical Society, 1993), 54.

⁶⁴¹ Luke Lucie power of attorney document. Deeds, RB 3/2, 475-7, BNA. The Lucies all have names which signify a possible Jewish heritage. Jacob Lucie, the most famous Barbadian planter of the Lucie family, had siblings named Isaac, Elisha, Abraham, and Samuel. See Will of Elias Lucie, Wills, RB 6/40, 213, BNA.

⁶⁴² *Ibid*, 475.

debtors within local courts.⁶⁴³ It is unclear how much experience De Hem possessed as a sugar master, but the document states that Lucie was bringing De Hem back to his estate to replace the previous overseer, Englishman Thomas Moore, whom Lucie judged to be either incompetent or fraudulent.⁶⁴⁴

Seger De Hem remained on the estate until his death in 1680. By this time the plantation had been transferred to Jacob Lucie, a relative of Luke who was similarly residing in London for business reasons.⁶⁴⁵ De Hem left behind a will which demonstrates both his modest but important role within the Lucie plantation, and also his foreign character.⁶⁴⁶ In it he mentions a brother Jacob De Hem, the overseer of a neighboring plantation run by the English Andrew's family, who died in 1677 and was buried in the Andrew family cemetery.⁶⁴⁷ Seger requests that he be buried "in the ground where my kinsman was lately interred," demonstrating his lack of immediate family on either the Lucie plantations or elsewhere in Barbados. He also mentions a sister, to whom Jacob Lucie should repay a debt owed to her by De Hem, out of wages owed to De Hem by Lucie.⁶⁴⁸ There are no other relatives or children. Seger De Hem also bequeathed some small monetary amounts to a few friends on the island, and concludes

⁶⁴³ Charles Jennens is also given permission to find and hire another manager, should de Hem die or "depart from the island." This departure clause is unusual amongst these documents, and is never mentioned within contracts that contain primarily English individuals.

⁶⁴⁴ The second half of Luke Lucie's document is a formal renunciation of the powers formerly granted to Thomas Moore, and both Jennens and de Hem are given power to "eject and expel" Moore from the plantation. There is also an issue of a large outstanding debt owed to Lucie by Moore, which is likely damages suffered by Lucie through Moore's neglect, incompetence, or embezzlement.

⁶⁴⁵ Will of Elias Lucie, Wills, RB 6/40, 213, BNA. Jacob Lucie was the son of Elias Lucie, who lived in Barbados and possessed a large estate there. In his will, Elias stated his wish that Jacob "come home" to Barbados, when his "apprenticeship" was finished if not earlier, to help his newly widowed mother manage the estate. Jacob Lucy in time become a substantial London merchant, and was Assistant Director of the Royal African Company for several terms during the 1680s.

⁶⁴⁶ Will of Seger de Hem, Wills, RB 6/10, 187. BNA.

⁶⁴⁷ "Historic Sites Re-Visited – I: Andrews Plantation, St. Joseph; Its Cemetery and History," *JBMHS* 1, 2 (Feb., 1934), 93-4.

⁶⁴⁸ From the will it is unclear where in the Atlantic world De Hem's sister resides.

that “All the rest of my estete except my funeral expenses I do give to the said Jacob of Lucy and his heirs for ever in manifestation of my real gratitude for the great kindness he hath at all times shown to me.” Finally he leaves instructions for the management of Jacob Lucie’s plantation after his death, appointing Henry Gallop, John Holder, and the above-mentioned Richard Harwood to manage the estate “till the said Lucy shall otherwise order and direct.” Witnesses to his will include Luke Lucie and Jonathan Cox, another English planter whose land’s neighbored Jacob Lucie’s plantation.

Such connections demonstrate the role of family and mercantile linkages in bringing foreign expertise to bear on the daily management of a sugar plantation. Moreover these links between overseer and planter, while superficially a simple wage-earning relationship, also demonstrate the deep degree to which these overseers were enmeshed into the maintenance, reproduction, and spread of the complex machine that was the sugar plantation. Despite their low social position, the De Hems were crucial contributors to the development of the Lucie and Andrew estates, and trusted components of the Lucie’s mercantile network. By bringing Seger De Hem to Barbados, the Lucies not only imported foreign knowledge to their Anglo-Dutch plantations, but that knowledge then flowed out onto the neighboring Andrews and Cox estates.

De Hem’s life also shows how the day-to-day knowledge required to operate an ingenio was transmitted and maintained through personal relationships. For example John Holder, one of the overseers appointed by De Hem, remained deeply involved with the Lucie family, appearing as witness to the will of Jacob Lucie’s father Elias in 1686 and presenting it to the local magistrate for verification. Richard Harwood, a friend of De Hem and an executor of his will, was also intimately connected with the Barbadian

plantocracy, previously serving under Henry Drax as mentioned above. After De Hem's death Harwood left the Drax plantation to work for Lucie, as per De Hem's instructions.⁶⁴⁹ Lucie must have favored Harwood, for the absentee planter attempted to influence the Barbadian Council into accepting Harwood as a member in 1686. The result of this political episode shows that despite the mutual dependence between overseers and planters when operating an ingenio, class-based differences nevertheless prevented the latter from judging overseers as true partners, either in knowledge or politics. In this case, the Barbadian councilmen issued a remonstrance against Harwood's appointment, claiming him unfit because of his "servile condition."⁶⁵⁰ After the affair Harwood continued in Jacob Lucie's employ as overseer until his own death in 1690. By this time he had also become the father-in-law of a Daniel Richardson, yet another friend of Seger De Hem mentioned in De Hem's will.⁶⁵¹

Connections to Brazil were the most likely source for importing foreign sugar-making expertise, however overseers and sugar masters from other areas were also represented. In 1654 a visitor to the Drax estate reported that one of Drax's overseers was a Frenchman named Monsieur Raince, who had previously worked at a sugar refinery in Rouen.⁶⁵² The connection is noteworthy, as in the early seventeenth century Rouen was the leading city of France's nascent refining industry, and coincidentally also

⁶⁴⁹ Thompson, "Henry Drax's instructions," 570.

⁶⁵⁰ *Calendar of State Papers, Colonial Series*. VII, 224 (item no. 802). The council also stated claimed "personal inability, and other scandalous circumstances" as reasons to keep Harwood off the Council. This is despite the fact that the lieutenant governor at the time called Harwood a "loyal and honest man." See Thompson, "Henry Drax's instructions," 570.

⁶⁵¹ Will of Richard Harwood, Wills, RB 6/41, 334. BNA.

⁶⁵² Handler, "Father Biet's Visit," 69. Many of the Jewish sugar-makers in Pernambuco had French sugar-making connections, although none to Rouen in particular are documented. See Wiznitzer, *Jews In Colonial Brazil*, 85, 111.

home to a number of English international merchants.⁶⁵³ In 1611, King James I issued a charter for the Company of Merchants Trading to France, a large association of cloth merchants that were incorporated for legal protection. The Company maintained a headquarters in Rouen which was staffed by commissioners for settling trade disputes. These commissioners were jointly appointed by the Company and the French king.⁶⁵⁴ While Drax was not a member of the Company, this merchant association did contain a few notables who were also highly active in early Barbadian plantation development. One was William Speight, who was an Assistant Director of the Company and who also established a coastal settlement in northern Barbados in 1635. This settlement later became Speightstown, the island's second largest city. A second important member was Sir Marmaduke Rawdon, a wealthy merchant with enterprises in multiple French cities. Rawdon was also granted extensive landholdings in Barbados in 1629, which were subsequently managed via his employee and sugar-making pioneer James Holdip, the story of which is detailed below.

Despite the overseer's importance, all of the ingenio's multiple activities occurred in concert and one individual cannot look to all the mill's aspects at once. Records almost never show more than one head overseer per plantation, and thus the mill relied upon a variety of other skilled positions, notably the head-boilers, kettlemen, curers, distillers, and watchmen. While the head overseer was typically a free, white person, these other positions were usually manned by servants and slaves. As with the tradition of head overseer, the use of skilled slaves within these roles can be traced to Brazil.

After trying unsuccessfully to create a slave labor force from Native Americans,

⁶⁵³ On Rouen's early leadership in Refining see Stein, *The French Sugar Business*, 142.

⁶⁵⁴ Cecil T. Carr, ed. *Select Charters of Trading Companies, 1503-1707* (London: Seldon Society, 1918), 62, 70.

Portuguese planters slowly began to transition to African labor in the 1580s. During that time the first Africans to arrive in Brazil were a variety of skilled ingenio workers from São Tomé, and the logic behind this decision was that Brazilian planters felt these individuals could be better trusted to operate the ingenio correctly.⁶⁵⁵ Portuguese plantation records also differentiate these workers from unskilled field slaves, both by appraising them above regular field hands within plantation estate appraisals, and also by granting these workers extra provisions.⁶⁵⁶ This trend continued in Barbados, where evidence suggests that the first slaves to work in Barbadian sugar were similarly of the skilled variety, and many had a Portuguese or Brazilian background. Richard Ligon's *History* mentions a group of slaves "who have been bred up amongst the Portugalls" that were residing upon James Drax's plantation during his stay in the late 1640s.⁶⁵⁷ These Creole slaves, presumably from Brazil, possessed European skills that the African slaves did not, including fencing whereby they "play[ed] at Rapier and Dagger very skillfully." A similar comment was made by Father Antonie Biet, the French Catholic missionary who visited Barbados in 1654. In a complaint that was common amongst West Indian visitors during the seventeenth century, Biet commented on the lack of religious instruction given to the African slaves by their English masters, concluding that "if any of them have any tinge of the Catholic religion, which they received among the Portuguese, they keep it best they can, going their prayers and worshipping God in their hearts."⁶⁵⁸

⁶⁵⁵ Schwartz, *Sugar Plantations*, 66. See also William Belgrove's account on how to operate a sugar mill also discusses this, allocating extra money for the purchasing of "a Mill-Man, a Boiler, a Clayler, a Distiller, a Groom, two Carters, two Drivers, and a Watchman. See Belgrove, *Treatise*, 41.

⁶⁵⁶ *Ibid.*, 67.

⁶⁵⁷ Ligon, *History*, 52.

⁶⁵⁸ Handler, "Father Biet's Visit," 67.

This use of skilled Portuguese slaves occurred elsewhere in the Caribbean, particularly after the destruction of Pernambuco. A noteworthy example of this knowledge dissemination via the African diaspora occurred in Jamaica in 1655. That year, when the English conquered Jamaica from the Spanish, they found an incipient sugar industry headed by a two Sephardic brothers, Don and Gaspar Acosta. Gaspar had recently immigrated to Jamaica from Pernambuco while Don was a wealthy landowner and Sargento Mayor within Jamaica's Spanish government.⁶⁵⁹ Upon the English invasion the Spanish community fled into the mountains, from where they hoped to wage guerilla war against the English. These efforts were impeded by the Acostas who suddenly switched sides and joined the English, giving them valuable information about the island, in particular the interior valleys where the Spanish had driven their herds of cattle.⁶⁶⁰ According to a first-hand Spanish account of the English conquest, Don Acosta's treason was because of the death of one of his favorite slaves. Don had been sent by the Spanish governor to negotiate with the English generals and was an official hostage in the English camp. While there, he was using a slave of his to send parlaying messages back and forth to the Spanish encampment, and in particular to his brother Gaspar. After a few days of negotiations, a member of the Spanish camp grew suspicious that this slave was leaking intelligence to the English, and killed him. The Spanish author of this account remarks that "although an Angola black, this negro was clever. He could read and write, knew the movable feasts, conjunctions, moons and tides, as well as though he had thoroughly

⁶⁵⁹ Wiznitzer, *Jews in Colonial Brazil*, 60, 137; C.H. Firth, ed. *The Narrative of General Venables* (London: Longmans, Green, & Co., 1900), 39, 47, 99, 124. See also Anon, "The English Conquest of Jamaica, 1655-1656, found in *The Camden Miscellany, Vol.XIII* (London: Royal Historical Society, 1924.) As Morranos, these Acostas must have, at least publically, retained their Christian confession while in Jamaica.

⁶⁶⁰ Venables, *Narrative*, 39. Securing the cattle was essential if the English were to adequately provision their army.

studied them; he was a good sugar-master, and could give an excellent account of himself when necessary.”⁶⁶¹ It is possible that Don, who was living with the English as a hostage at this time, had already turned and that there was truth in the Spanish claims of treason. As was shown in chapter two, Jamaica under the Spaniards was notorious for being a slowly-developing colony, and perhaps Acosta envisioned that his estates would have more potential under English rule. As a Portuguese converso, Acosta would have also welcomed the freer religion policy which the English might bring. In any case, the episode provides another example of skilled sugar-making slaves amongst those émigrés who left Pernambuco after 1645.

By the 1670s this initial generation of Portuguese slaves would have likely either passed or been acculturated into their new colonial societies, yet the tradition of elite skilled slaves within the ingenio persisted. In Henry Drax’s instructions to Richard Harwood, Drax makes numerous references to such artisan slaves, mentioning for example his negro “owerSeers and head Boylers,” who should be given double the rations of regular slaves as a form of extra payment for their unique role within the complex.⁶⁶² He also lays out a special set of responsibilities for these head boilers, in particular that they closely oversee the subordinate boilers’ during the clarifying process. These head boilers are to “Soberly Punished” if they neglect this supervision, as an entire season’s crop could be ruined but for “want of skill in the Boiling-House.”⁶⁶³ These head boilers were also responsible for overseeing the potting of sugar once the solution had been “struck” and transferred from the final kettle. Drax demands that these boilers

⁶⁶¹ Anon, “English Conquest of Jamaica,” found in *Camden Miscellaney Vol. XIII* (London: Royal Historical Society, 1924), 11. By stating that the slave was “Angolan” it would have meant that he was from either Brazil or Portuguese Angola.

⁶⁶² Thompson, “Henry Drax’s instructions,” 586.

⁶⁶³ *Ibid*, 593.

ensure that the potted sugar is neither too hot nor too cold, and that it is “in its due firme.”⁶⁶⁴ Elsewhere, when discussing the process of tempering the sugar by adding lixivium or other alkaline additives, Drax commands that only Harwood or these head boilers be allowed to do this as they are the only ones with the knowledge to do so properly.⁶⁶⁵

As mentioned above, boiling sugar required a careful attention to temperature, duration, and the amount of alkaline contents, knowledge which was not accessible through formularized knowledge channels and could only be taught via experience. Some early modern authors commented on this feature of sugar-making, and like with other “secrets” of early modern trades, the skill occupied a tenuous and ambiguous position within the evolving metrologies of early modern science.⁶⁶⁶ In 1698 Royal Society member John Houghton published a lengthy treatise on Caribbean sugar-making as part of his ongoing *Letters of Improvement* serial. When describing the processes of the boiling house to his readers he states that: “The principal knack, without which all their labour were in vain, is in making the juice, when sufficiently boil'd, to kern or granulate. Which is done by adding to it a small proportion of lee made with (vegetable) *ashes*; without which, it would never come to anything by boiling, but a syrup or an extract.” Celebrating an embodied artisanal technique as a “knack” was a common technique of experimental philosophy writings during this time, and was a method of emphasizing the technique’s importance to both trade and natural science while

⁶⁶⁴ *Ibid.*, 593.

⁶⁶⁵ *Ibid.*, 593.

⁶⁶⁶ See for example Shapin, *Social History of Truth*, chapter 8; Lissa Roberts, “The Death of the Sensous Chemist: The ‘New’ Chemistry and the Transformation of Sensous Technology,” *Studies in the History of the Philosophy of Science* 26, 4 (1995), 503-29; Simon Schaffer, “Experimenters’ Techniques, Dyers’ Hands, and the Electric Planetarium,” *Isis* 88, 3 (Sep., 1997), 456-483.

simultaneously denying it legitimacy as a formal form of knowledge. By categorizing sugar boiling this way Houghton was, perhaps unwittingly, placing the activities of slave sugar boilers on par with other artisanal occupations in England. Houghton was not alone in describing sugar-making as such, and this trope of experience dominated the thinking of planters and natural scientists alike for much of the next century. Several decades later a Caribbean planter published a treatise on sugar-making, wherein when discussing how slaves manage to master the proper striking technique he exclaims that “the Negroe-Boilers have no Rule at all, and guess by the Appearance of the Liquor; and indeed it is wonderful, what Long Experience will do.”⁶⁶⁷

Servants and Slaves were also frequently used in the role of watchman, or lesser overseer. These overseers would be responsible for coordinating field work such as weeding and cutting, and whatever other tasks the head overseer asked them to supervise. At the beginning of the Barbadian sugar revolution planters relied upon Christian servants for most of their labor needs including these overseer positions, and Ligon makes frequent reference to them in his *History*. However as the island became more dependant upon slave labor, Africans were recruited into this supervisory role. Henry Drax’s instructions mention the use of slaves in this way, claiming that “Negroes so qualified under your directions, will quickly make able Overseers.” This incorporation of slaves into the traditional labor hierarchies described in chapter three included a call for temperance by Drax, who warned that there must not be “too much severity or leinity” used by these overseers, and that they should not possess too much partiality over individual members in their gang.⁶⁶⁸ Elsewhere there is evidence of slave overseers

⁶⁶⁷ Quoted in Bennet, “Caribbean Sugar-Production Standards,” 161.

⁶⁶⁸ Belgrove, *Treatise*, 64.

being rewarded and even freed for years of good service to the plantation. In the will of Barbadian planter Tobias Frere, he leaves a set of stipulations for his heir Tobias Jr., including that he “pay unto my negro Guy my overseer five pounds sterling yearly during his natural life provided he continues a faithfull servant as he now is”⁶⁶⁹ Tobias Jr. must have been equally impressed with Guy’s work, as when he died only four years later he bequeathed “unto my overseer Guy Frere the sum of one hundred pounds sterling to be paid unto him within twelve months after my decease.” Tobias Jr. also willed that Guy and his wife and children be freed after thirteen more years of service or upon the death of Tobias’ heir Edward Burke, whichever comes first.⁶⁷⁰

III: Transmission

These examples of Brazilian transplants, wage-earning sugar masters, and slave boilers are only a few of the chief labor components necessary to construct and operate a successful plantation. Beyond the millhouse itself, sugar estates required a host of auxiliary artisans including millwrights, blacksmiths, coopers, masons, carters, potters, drivers, watchmen—professions too numerous to detail here. In sum while the mill externally appeared as a single economic unit, the inside contained a complex gradation of interconnected tasks and workers—the secret sugar-makers of the Atlantic—all of whom were necessary for the ingenio to operate as a single machine. This array of requirements proves the invalidity of experimental philosopher accounts which maintain that the mill was the product of individual planter ingenuity. Not only did the knowledge of how to create an ingenio come from outside the curious mind of the planter, but he was

⁶⁶⁹ Will of Tobias Frere, Wills, RB 6/12, 342, BNA.

⁶⁷⁰ Will of Tobias Frere, Jr., Wills, RB 6/40, 208, BNA.

rarely aware or in control of the multiple tasks which allowed the mill to function as a single unit.

As stated above, the sugar plantation was an evolutionary object which moved across the Atlantic in a series of stages. Some of the above examples give glimpses of this process at work, as the knowledge of how to build and operate an ingenio was distributed from person to person during the Barbadian sugar revolution. Moreover, transmitting this knowledge was a task which went beyond simple sets of verbal or written instructions due to the embodied nature of much of an ingenio's work. The plantation required both the continuous presence and input from a variety of skilled workers and slaves, and without the contributions of *all* the workers described above, the ingenio would fail and its reproduction in a new locale would be impossible. Thus, creating a new sugar plantation had as much to do with importing the right kinds of labor as it did with sharing the right texts or ideas, as much of the required knowledge literally travelled upon the backs of the ingenio's workforce. In Barbados, this material reality explains why planters almost never started from scratch when constructing new plantations but rather assembled them through components brought wholesale from a prior space, transferred and reassembled as a single prefabricated unit. This in turn explains why the ingenio moved across the Atlantic in distinct, traceable stages rather than spontaneously appearing in random locales.

A few final examples should make this point clear. To do this, we return to one of those three Barbadian planters eulogized in English sugar narratives as a prime figure in bringing canes to Barbados: Captain James Holdip. Holdip was initially an agent for the wealthy London cloth merchant Sir Marmaduke Rawdon, and spent several years in

French port cities under Rawdon's employ. In 1627, at the very beginning of Barbadian settlement, the island's proprietor granted ten thousand acres of the island's best land to a constituency of London merchants, Rawdon being the chief member. Holdip was then assigned by Rawdon to be the governor and chief rents collector for this corporate fiefdom.⁶⁷¹ He arrived in Barbados in 1629, and by 1631 had assembled a massive plantation named Locust Hall. That same year he was described by a visitor as "the beauty, hands, eyes, feet of all the other planters; he hath in one year that which any other hath, and also more than any other hath, yet not so perfect. Next year he will be worth looking on."⁶⁷² He was also highly corrupt and fraudulent, as much of Locust Hall was embezzled from the ten thousand acres he was employed to manage. Furthermore, over the course of the 1640s he used the chaos of the English civil war to swindle his Royalist employers out of almost the entire remainder of their Barbadian claim.⁶⁷³ Indeed, prior to the 1660 Restoration, Holdip was involved in no less than twenty-seven Barbadian land deals, being the seller in each case.⁶⁷⁴ Holdip was also one of the earliest planters to grow sugar, converting his plantation sometime around 1641.⁶⁷⁵ While there is no evidence to suggest how he initially created his ingenio, archival records show how he introduced many, many other planters to the practice. Often when selling off his newly-stolen lands, he would include stipulations within the mortgage that allowed the new owner to begin sugar-making with a minimum of effort. It is no coincidence that these most of these sales occurred in the late 1640s, when the Barbadian sugar revolution was

⁶⁷¹ "The Earl of Carlisle's Patent unto Capt. James Holdip sent him by Phoenix of London," 1629/30. Hay Papers, Huntington Library. Reproduced in RB X10/15, BNA and in *JBMHS* 35, 4 (1978), 306-7.

⁶⁷² "Diary of Henry Colt" (1631), reprinted in *JBMHS* 21,1 (Nov., 1953), 12.

⁶⁷³ Campbell, *Some Early Barbadian History*, 42.

⁶⁷⁴ Deeds, Index and Counterindex, RB 3/43-44, BNA.

⁶⁷⁵ Harlow, *A History of Barbados*, 40.

at its peak, and that many of Holdip's customers were wealthy English newcomers eager to buy large plots for immediate sugar production. Holdip's arrangements for assisting new planters in sugar-making became more complex and comprehensive over time as the sugar revolution progressed, and provide an excellent window into how a planter with no prior sugar-making knowledge could come to operate an ingenio.

The first of these examples is from 1644 when Holdip sold 200 acres of his enormous Locust Hall plantation to Thomas Applewaite, another London cloth merchant.⁶⁷⁶ The deed stipulates that Holdip will provide to Applewaite "so many sugar canes to plant upon his premises sold as shall be needful." The land deal was also contingent on Applewaite receiving a batch of servants from an incoming English ship, and would have been void had the ship not arrived.⁶⁷⁷ This early record demonstrates how Applewaite, a Londoner with presumably little planting experience, was dependent upon both the expertise of an existing planter and upon an external supply of laborers, without which his plans for sugar-making would have been impossible. While there is no mention of an ingenio in this contract it is likely that, as the land was adjacent to Holdip's plantation, some type of sharecropping arrangement would have been made until Applewaite could build his own mill.⁶⁷⁸ Other contracts followed. In 1648 he and fellow

⁶⁷⁶ Deeds, RB 3/1, 536, BNA.

⁶⁷⁷ In Dunn's *Sugar and Slaves*, Richard Dunn mentions this deed stating that the 25 servants were to go to Holdip for payment of the land. Dunn's citation comes from a reprinted version of this deed found in Richard Pares, *Merchants and Planters*, Economic History Review Series (Cambridge: Cambridge University Press, 1960), which is a paraphrase by Pares and is incorrect. The correct version can be found in Deeds, RB 3/1, 536-8, BNA, and is also reprinted in "Applewaite of Barbados," *JBMHS* 7,1 (Nov., 1939), 11.

⁶⁷⁸ This type of sharecropping arrangement was the norm in Brazil, and also existed on some of the other English sugar-making islands during this time. See John Cordy Jeaffreson, ed., *A Young Squire in the Seventeenth Century, Vol. 1, from the Papers of Christopher Jeaffreson...* (London: Hurst and Blackett, 1878), 316.

planter John Wadlos drafted a deed with James White.⁶⁷⁹ White was to purchase another 300 acre section of the Locust Hall plantation, directly adjacent to the new Applewaite estate. The contract also stipulates that Holdip and his partner Wadlos will “at their own proper arts and charges plant ... as many sugar canes at each distance as is usual” upon that land, and to do so in time for them to be ready by the next year’s harvest. They furthermore agreed that if any canes should “fail” that Holdip and Wadlos will resupply them. Finally White paid for the plantation via a series of London exchange bills, and should any of the bills prove to be invalid or insufficient, Holdip and Wadlos have the right to commandeer and work White’s plantation and seize its profits until the debts are paid. In this case not only does Holdip agree to provide the tools and skills necessary to produce sugar, but the indenture insures his active and continual involvement in making the new plantation successful.

This kind of technology transfer can be best seen through a rental agreement made by Holdip the following year. Because this contract involves the creation of a plantation which is to be leased to a third party, it contains many details that are not mentioned in traditional sale deeds. Holdip and Wadlos made an agreement for yet another section of the Locust Hall estate, this time granting Richard Campbell 350 acres adjacent to the new White plantation. Campbell will lease the land for the next eleven years, and Holdip and Wadlos have agreed to provide everything required to establish a working plantation. To wit: Holdip and Wadlos will first supply Campbell with 50 slaves, 20 indentured servants, and 30 Cattle from their own plantation stock. Next they agree to plant, with the help of those 70 slaves and servants, enough canes to cover 190 acres of the plantation, in time to be ready for cutting by the next harvest. Between each

⁶⁷⁹ Deeds, RB 3/3, 574-7, BNA.

24th row of cane they will also plant Cassava for the sustenance of Campbell and the 70 workers. Next they agree to “provide and erect sufficient coppers, stills, and all other utensils and materials ... necessary and convenient for ye employment, maintaining, and perfecting of a sugar ingenio.” The contract includes stipulations for a mill, boiling house, distillery, curing house, home for Campbell himself, slave quarters, and all other tools and objects needed to run a plantation.⁶⁸⁰ Some of the dimensions of these planned buildings are given within the contract, while others such as the boiling house “shall be edificed according to the directions agreed upon by them with ye workmen (meaning the hired overseers).” Also, during the first year of the lease they agree to supply a carpenter, smith, mason, and cooper, and agree to pay the wages of the head overseer. Finally upon harvest time they will provide additional cattle for use in the plantation mill and 10 donkeys for delivering the sugar to port. The 70 servants and slaves are to stay on the plantation for the duration of the lease and to assist Campbell with sugar-making, although Holdip has the right to recall any of them for his own use if needed. Campbell also has the right to ask for additional assistants from Holdip as he needs, but must pay for them on his own account. For all of these things, Campbell must replace any servants or slaves who die or any servants whose time expires, must return the plantation “clean and well-ordered” after 11 years, and offer up the vast majority of the plantation’s annual sugar crop as rent.

Holdip of course was not alone in these types of dealings, and many contracts from this period involved the sharing of vocal knowledge, skilled servants, and most importantly the embodied knowledge within these skilled servants when reproducing a

⁶⁸⁰ The original document also included a schedule which itemized all of the individual items (skimmers, sugar molds, ladles, etc.) needed to run the ingenio. This itinerary however has since been detached from the deed.

new ingenio.⁶⁸¹ Through the above business arrangements we can see all the occupational components of a plantation at work, operating jointly to sustain the ingenio as a cohesive unit. Furthermore the crucial importance of each of these components explains why successful mills in new Atlantic settlements were transferred wholesale from a prior space, rather than assembled from scratch. Indeed, instead of starting with an individual planter who crafts his skill through isolated observation and experiment, building an ingenio was a collaborative process of distributed cognition, involving not only family, neighbors, and business partners, but also employees, servants, and slaves. While the mill externally appeared as a single innovative unit, the inside contained a complex gradation of interconnected tasks, workers, and knowledges.

All of this puts the natural histories of Snow and other experimental philosophers in a new light, as planters neither invented nor possessed all the knowledge necessary to construct an ingenio. Rather, much of that knowledge actually came from inside the ingenio *itself*, in the form of embodied knowledge within the workers, servants, and slaves who were hired, borrowed, sold, and transferred to new locations for reproducing the mill at another site. There are two consequences to this discrepancy between the philosopher's vision and the plantation's reality. The first is that by placing past events into a teleology of individual experiment and scientific improvement, the efforts of these secret sugar makers in Atlantic history were effaced by experimental philosophers, in order to translate the ingenio into an object that could be incorporated into the networks of Baconian science. The second is that this translation from Caribbean practice to English text is another example of how objects' meanings were distorted when crossing

⁶⁸¹ William Hiliard for example, arranged a similar contract for his nephew Richard that same year, loaning him skilled servants for a period of time for use on the land sold to his nephew. This loaning of slaves was reflected in Richard's repayment terms. See Deeds, RB 3/3, 617-20, BNA.

transatlantic knowledge networks. The same channels that effaced the role of slaves and servants within ingenios are the same networks which effaced the cruelty of Caribbean servitude and slavery, translating these practices into examples of English hierarchical labor routines. In both cases, the result of this process was that the practices of a distant colonial settlement were not interpreted and analyzed through a neutral medium, but through loaded cultural discourses and paradigms which underwrote discussions amongst metropole elites. This happened despite the commitment of experimental philosophers to Francis Bacon's emphasis on empiric objectivity.

In the opening lines of the *Apopiroscope*, Snow makes a public appeal to all who have "received any Lights, either from *Nature, Education, Observation, or Experience.*" He extols society's Enlightened individuals who pursue discovery and invention, beseeching them to "offer it to the World," so that others may benefit from these recent discoveries.⁶⁸² Yet despite such calls for illumination and transparency, philosophers like Snow actually shrouded the true workings of things by highlighting the select actions of individual elite Europeans over broader migrations of socio-technological knowledge. When these authors appropriated ingenios for their Baconian metrologies and progressive narratives, they invented stories about their development and role within society. In doing so, sugar's true makers were kept secret.

⁶⁸² Snow, *Apopiroscope*, 2.

Epilogue

Nassau William Senior was one of Britain's most famous political economists of the early nineteenth century. A champion of the nascent free market ideology, Senior was a colleague of liberal philosophers such as David Ricardo, Thomas Malthus, and James Mill. Born in 1790, his father was an international merchant while his grandfather was the solicitor-general of Barbados. Despite these strong familial links to the Caribbean, Senior detested slavery and was a vocal proponent of its abolition. While he attacked slavery on moral grounds, his main argument against the institution came from its supposed inefficiency compared to wage labor. Beyond abolition Senior advocated a number of novel liberal political economy ideas, and he is most famously known for his leading role in the Poor Law Amendment Act of 1834. The Act dismantled many of the workhouse reform systems of the previous two centuries, systems which Nassau believed interfered with laissez faire economics and therefore with national prosperity. Thus, Senior detested both slavery and subsidized worker welfare. While present society may see few connections between these two political agendas, to Senior they were linked through a consistent liberal economic vision which he articulated in a series of lectures on wage labor at Oxford University in 1830.⁶⁸³ In a published preface to these lectures, Senior decries both slavery and workhouses in a single breath, and juxtaposes the two institutions as such:

“The poor-laws ... are an attempt to unite the *irreconcilable advantages* of freedom and servitude. The laborer is to be a free agent, but without the hazards of free agency; to be free from the coercion, but to enjoy the assured subsistence of the slave. He is expected to be diligent, though he has no fear of want...”⁶⁸⁴

⁶⁸³ Nassau William Senior, *Three Lectures on the Rate of Wages, Delivered Before the University of Oxford, in Easter Term 1830...* (Reprints of Economic Classics. New York: Augustus M. Kelley, 1966).

⁶⁸⁴ *Ibid.*, ix. My italics.

In this passage, not only does Nassau clearly demarcate the categories of freedom and slavery, but his argument rests upon the assumption that these two categories are inherently antithetical. As has been seen in the previous chapters, such ideas were not possible only one hundred years prior. Comments like this, which seemed natural and self-evident to Nassau and his contemporaries, demonstrate the radical changes which occurred in the late eighteenth century in regards to how people juxtaposed freedom, slavery, and moral and material progress. To earlier reformers and experimental philosophers, slavery was not viewed as fundamentally different from either workhouses or any other type of coerced labor within the early English empire, and was merely seen as a component of a larger early Enlightenment paradigm which stressed the utility of forced labor within English improvement projects. It was precisely this early Enlightenment paradigm which allowed England to create a national workhouse system in the first place—a system which, according to later economists, failed because it embodied two “irreconcilable” forms of work and being.

As an early articulation of *laissez faire* economics, Nassau’s above comment is representative of the later liberal Enlightenment. This later Enlightenment vision, despite being almost two centuries old today, has more in common with present society than it does with earlier Enlightenment discourses which dominated the British Atlantic until shortly before Nassau’s own birth. As seen in this work’s introduction, many of the liberal Enlightenment’s ideas on the relationships between freedom, slavery, and progress—ideas which were a construction of the late eighteenth century—have been incorporated into almost all works and viewpoints on slavery over the past two hundred years. Like Nassau, most historians since 1800 have taken these relationships to be

essential and trans-historical. This final section will briefly comment upon the development of these new linkages between freedom, slavery, and progress in the late eighteenth century, before remarking on what is missed when historians continue to view plantations as non-Enlightened spaces.

I: 1800

There are numerous historical narratives which explain the rise of human rights and the beginning of the antislavery movement during the late eighteenth century, so only the crude minimum needs to be set here.⁶⁸⁵ As seen in this work's introduction, antislavery's origins remain a convoluted and contested topic, and several overlapping themes contributed to its formation in the late eighteenth century. Beginning with the concept of inner-faith that was central to many of Europe's early modern protestant movements, there was a long, slow shift away from thinking about one's relationship to society as a series of ties, belongings, and obligations, and towards the notion that people primarily existed as rational, autonomous individuals. This rise of individualism then led to the slow development of the idea of human rights, which had incipient articulations during the struggles of the English Civil War, and was later expounded upon by authors such as John Locke during the Glorious Revolution of 1688. This development was augmented by changing religious attitudes in the eighteenth century, as new sects moved away from older Calvinist notions of hierarchical order and discipline, towards creeds that emphasized empathy and benevolence for fellow human beings. By the mid-

⁶⁸⁵ The best accounts on the fall of slavery from an intellectual perspective remain the trio of works by David Brion Davis. Such works clearly demonstrate the ubiquity of slavery prior to the 1770s and the myriad reasons why they lost favor across the globe in the succeeding century. See David Brion Davis, *The Problem of Slavery in Western Culture* (Cambridge: Cambridge University Press, 1967); *Ibid, The Problem of Slavery in the Age of Revolution, 1770-1823*. (New York: Cornell University Press, 1975); and *Ibid, Slavery and Human Progress* (Oxford: Oxford University Press, 1986).

eighteenth century slavery was beginning to be legitimately questioned on grounds of whether it was consistent with Christian conduct and natural law, and a few begin to see slavery as a necessary economic evil rather than simply another component of moral and material progress. These disparate cultural vectors combined to reach a tipping point in the aftermath of the Seven Years War, as the global dislocations of that struggle caused many groups—in particular Britain's transatlantic Quaker community—to morally re-evaluate many of their actions, particularly their practice of slave holding. The result was the birth of a transatlantic antislavery movement which remained in continuous operation for the next several decades. The movement was assisted by the rhetoric and events of the American and French Revolutions, and tapped into this period's broader discourses on liberty and human rights. By 1790, abolitionist sentiment had become commonplace amongst British citizens. These antislavery currents were assisted by the arrival of the new liberal political economy ideas discussed above and in this work's introduction, ideas which were initially articulated by Adam Smith and later reached a full flowering within the writings of Senior and his colleagues. While these liberal political economists were wrong about the supposed inefficiency of slavery compared to free labor, their ideas were given traction by a host of new British industries—in particular the Manchester cotton firms and new imperial projects in India—which benefited from low tariffs and economic maxims that justified cheap wage labor.

By 1800, these factors had combined to form a conviction that true moral and material progress lay in promoting a universal system in which people were treated as rational, autonomous agents. These individuals should be free to choose their own destinies in regards to pursuing their own faith and political convictions, their own

consumption patterns, and their options for public employment. Furthermore these same forces re-assigned the role of plantations within Anglo-Atlantic thought, and slave estates came to be understood as backwards spaces that relied on cruel and outdated labor routines which explicitly and violently forbade its workers the above pursuits. Here, new discourses of sentimentality played a powerful role within this transformation, and during this time abolitionists saturated the public sphere with texts that emphasized the most sensational cruelties of the plantation: whippings, kidnapping, torture of dissidents, and rape. While these politicized tracts were powerful tools in motivating a mass-antislavery opinion, it is important to see that England's rejection of slavery was also symptomatic of new understandings on the relationships between the Enlightenment, modernity, and the roles of labor organization within moral and material progress. Again, it is no coincidence that Senior worked to destroy both slavery and workhouses at the same time, as both relied upon the same early Enlightenment paradigm which argued that the best possible way to improve a society was to force its lowest population strata into collective work tasks.

While the new liberal Enlightenment of the late eighteenth century contained provisions which made slave plantations appear as anti-enlightened spaces, it is important to note that plantations nevertheless remained consistent with many aspects of Enlightenment thought well into the nineteenth century. Britain (and the United States at this point) continued to believe in the power of a Baconian program of experimental, practical knowledge. This included the belief that exotic spaces contained the potential for national improvement through transplanting, importing, and developing the flora, fauna, and resources native to those regions. By making cities such as London and New

York major repositories and entrepôts of distant products, the people of these commercial centers continued to benefit from the abundance of diverse consumables. Moreover, this ever-increasing product variety continued to play into western notions of linear progress and the belief of society's current superiority over previous civilizations. Furthermore, the idea of exporting western people and traditions to distant frontiers (and placing white people in supervisory roles over native, non-white populations) remained important markers for the propagation of both Christianity and western civilization, and such ideas played major roles within Britain and America's imperial expansion throughout the nineteenth century. Western societies also remained committed to experimental philosophy's idea that industrial and commercial innovation was essential to human progress, be that innovation mechanical, chemical, financial, or even managerial. As shall be seen below, Atlantic slave plantations continued to innovate within all these areas well into the nineteenth century, despite abolitionist claims to the contrary. The modern liberal Enlightenment also continued to support the seventeenth century's projecting ideas related to profit and improvement, ideas which played such a central role within the early development of Caribbean plantations. While the title of "projector" had become an archaic phrase by this time, elites maintained the belief that they were rightfully entitled to be the primary beneficiaries of the new economic, mechanical, and financial projects they chose to undertake. In sum, many of the discourses which initially made plantations paragons of moral and material progress in the seventeenth century did not simply disappear in this later period, nor did plantations cease to adhere to these discourses. Rather, by foregrounding the contrasts between new free labor and the bloody practices of slavery, abolitionist and liberal economic writings effaced these

continued connections between plantations and the Enlightenment within the public sphere.

Most important is that, despite the liberal Enlightenment's abandonment of slavery and its new insistence on free labor, strict control of both workers and populations nevertheless remained central to this later Enlightenment's modernizing vision. Throughout the nineteenth century there were a flood of proposals from political economists and other thinkers on ways to "reform" the rising proletariat populations in cities such as London, Manchester, and New York. Such proposals introduced a variety of novel surveillance and enforcement routines, which were crafted to transform this new working class into obedient workers who would submit to factory-style discipline after being divorced from traditional agrarian sustenance patterns and accepting meager wage rates.⁶⁸⁶ This transformation was not done easily or peacefully within England, as can be seen from the litany of popular protests and public riots which occurred during this time. While hunger replaced the whip as the primary tool for discipline within northern regions, the underlying desire for a stable, deferential workforce remained constant from Barbados to Manchester. In many ways the Enlightenment's long tradition of creating a disciplined workforce even accelerated after 1800, and several nineteenth-century writers argued that by turning upon slavery, liberal factory owners were able to cloak the cruelties of their own labor-coercion programs.⁶⁸⁷

⁶⁸⁶ See E.P. Thompson, "Time, Work-Discipline, and Industrial Capitalism," *Past and Present* 38, (Dec., 1967), 56-97; and Michel Foucault, *Discipline and Punish: The Birth of the Prison* (New York: Vintage, 1978), esp. pt. III. For America, see Sean Wilentz, *Chants Democratic: New York City and the Rise of the American Working Class, 1788-1850* (Oxford: Oxford University Press, 1984); and Seth Rockman *Scraping By: Wage Labor, Slavery, and Survival in Early Baltimore* (Baltimore: Johns Hopkins University Press, 2008).

⁶⁸⁷ Such arguments were not only made by planters, but by domestic British labor leaders from the same period. See Patricia Hollis, "Anti-Slavery and British Working Class Radicalism in the Years of Reform," in Christine Bolt and Seymour Drescher, eds. *Anti-Slavery, Religion, and Reform: Essays in Memory of*

All of these paradoxes and inconsistencies were evident to planters in the early nineteenth century. In the ensuing propaganda war between pro and anti-slavery factions, planters attempted to defend slavery through the same intellectual paradigms which had supported the institution for well over a century, yet suddenly these defenses carried very little credit outside of slave society regions. Take for example the tract *Slavery Not Forbidden by Scripture* (1773), written by the anonymous “West Indian” in response to an antislavery work which appeared in Philadelphia earlier that year.⁶⁸⁸ Here, the author employs many of the wider Enlightenment tropes which were commonly applied to plantations before the 1770s, although unlike earlier writings these arguments suddenly possess a self-reflexive and defensive character. Among his points are that slavery is justified in the Bible, that West Indian slaves fare no worse than most of the English poor, and that slavery is comparable to other coercive institutions such as naval impressment. He argues that plantations, like the navy, are vital to the health of the state, and that if petitioners came to Parliament asking for an end to impressment, the government would quickly respond that “the safety of the state required these extraordinary exertions of power. Will not the same reason oblige government to allow slavery to continue in the colonies?” He also argues that colonies are essential to Britain’s prosperity as the West Indies are home to a number of products which cannot be produced elsewhere, and that “Britain, without her Southern and West-India colonies, must be a mere cypher.” Next, he repeats the political economy argument that blacks should be seen as laborers added to the commonwealth, and that without their productive

Roger Anstey (London, 1970), 294-315; Robert Hind, “‘We Have No Colonies’--Similarities within the British Imperial Experience,” *Comparative Studies in Society and History* 26, 1 (Jan., 1984), 3-35.

⁶⁸⁸ Anon. *Slavery Not Forbidden by Scripture, or a Defense of the West-India Planters...* (Philadelphia, 1773). Accessed through ECCO.

labor power the empire would be compromised. Elsewhere he gives his support to large business owners. He admits that sugar planters have engrossed most of the best land into massive estates and have created tremendous wealth disparities between themselves and the rest of the West Indies' inhabitants (both black and white). Yet he argues that this is a necessary evil, as this kind of arrangement benefits Britain writ large by increasing the overall number of products and jobs available within England's packaging, shipping, finance, and manufacturing industries. Finally he adds the traditional mercantilist that, were Britain to abandon the West Indies, the trades engendered by plantations would be lost to foreign nations, to the loss of the British people. In sum, the anonymous author draws upon a litany of reasonings in favor of plantations that, prior to the late eighteenth century, were commonly shared not only among planters but by reformers, scientists, and political economists alike. Indeed, in one passage this planter-author waxes metaphorically that "The British Empire is one vast machine, and every particular district and colony, may be compared to separate wheels that give motion to the whole. Some aggrandize the state by commerce; others by furnishing useful subjects." Such a claim could just have easily come from either Samuel Hartlib, William Petty, or Robert Boyle.

Despite such efforts by planters, these defenses of slavery seemed increasingly shallow and disingenuous to the British public in the early nineteenth century. Moreover, this sudden conviction that plantations were spaces of backwards cruelty persisted despite continued efforts by planters to "improve" their estates through traditional Enlightenment channels.⁶⁸⁹ During this time, Caribbean colonies continued to be exemplary of imperial

⁶⁸⁹ Works such as Drescher's *Economic Abolition* (Pittsburgh: University of Pittsburgh Press, 1977), and *The Mighty Experiment* (Oxford: Oxford University Press, 2004), clearly demonstrate that plantations continued to be economically viable and profitable up until the slave Emancipation act of 1833, despite abolitionist and free market claims to the contrary. Moreover, a handful of recent Ph.D. dissertations, two

economic diversity by transplanting and producing new crops such as coffee, Bourbon cane, and breadfruit. On plantations themselves, planters stayed at the forefront of innovation by adapting a variety of new mechanical technologies, in particular the use of steam-powered mills on Jamaican sugar estates.⁶⁹⁰ Finally in regards to managerial techniques, planters experimented with a variety of ways—through both coercion and cajolery—to increase the amount of work they could extract from their stationary slave labor force, and were highly successful in doing so.⁶⁹¹

However in regards to softening newer pan-Atlantic attitudes on slavery, plantations, and the Enlightenment, none of this mattered. The proliferation of antislavery literature, the new emphasis on sentimentality discussed above, and society's emerging fascination with free labor won a fast and decisive ideological war against older arguments on the necessity of legal coercion and the importance of plantations to mercantile economics. Of all the rhetorical tools at the planter's disposal in 1800, their most effective was not one that came out of early seventeenth-century notions of mercantilism or national improvement, but a separate yet parallel discourse which developed over the previous two centuries: race. Like with the history of antislavery, there are dozens of works which trace the development of racial ideologies within the

by Jamaican graduates, demonstrate how plantations were far from economically backward during this time, and show the myriad ways in which plantation owners continued to incorporate improving technological and managerial regimens into plantation practices. See Veront Satchell, "Technology and Productivity Change in the Jamaican Sugar Industry, 1760-1830," (Ph.D. Dissertation, University of the West Indies, Mona, 1993); Heather Val Jean Cateau "Management and the Sugar Industry in the British West Indies," (Ph.D. Dissertation, University of the West Indies, Mona, 1994); and Justin Roberts, "Sunup to Sundown: Plantation Management Strategies and Slave Work Routines in Barbados, Jamaica and Virginia, 1776-1810" (Ph.D. Dissertation, Johns Hopkins University, 2008).

⁶⁹⁰ Veront Satchell has recently made the convincing argument that the Steam Engine was adapted more rapidly and thoroughly in Jamaica than in any other region of the British Empire. See Veront Satchell, "Steam for Sugar Cane Milling: The Diffusion of the Boulton and Watt Stationary Steam Engine to the Jamaican Sugar Industry, 1809-1830" in Kathleen Monteith and Glen Richards, eds., *Jamaica in Slavery and Freedom: History, Heritage, Culture* (Kingston: University of the West Indies Press, 2001).

⁶⁹¹ See in particular Roberts, "Sunup to Sundown," esp. Chapters 1 and 6.

Atlantic.⁶⁹² While racism was initially linked to earlier English ideas on the general inferiority of outsiders, women, the poor, and other social marginals, racial discourse quickly assumed a life of its own shortly after English plantations began to be dominated by slave labor. By the late eighteenth century, planters and many others within the British and American Atlantic held and articulated complex ideas about blacks that were inconceivable in the early seventeenth century. Indeed, in the anonymous pro-slavery tract mentioned above, it is telling that despite all the early Enlightenment arguments which highlight the plantation's positive imperial role, these arguments combine to account for less than one-half of the author's thirty-page tract. The rest is filled with complex stereotypes on the savagery of African nations, the inherent stupidity and inferiority of black slaves, and why blacks would be doomed if released from the guidance of their white masters and allowed to work on their own economic projects and at their own pace.⁶⁹³ While whites outside the West Indies and the American South no longer believed in the plantation's positive role within the emerging nation-state, most citizens nevertheless concurred with these racial assessments. Over time, these stereotypes became slavery's primary defense, thus becoming further entrenched within western society. Even after emancipation, asymmetrical power relationships based upon racial stereotypes have continued to plague the western world, and do so even in the present.

⁶⁹² For a review of these works see the introduction of Mark Smith, *How Race is Made: Slavery, Segregation, and the Senses* (Chapel Hill: University of North Carolina Press, 2007). For an older but still masterful and relevant account see Winthrop Jordan, *White Over Black: American Attitudes Towards the Negro, 1550-1812* (Chapel Hill: University of North Carolina Press, 1968).

⁶⁹³ Even here, however, we can see traces of earlier English attitudes on the lack of intelligence by social marginals, and also ideas on how the larger community is best served by corralling and forcing these marginals into tasks designed by their social superiors. This anonymous pro-slavery tract also bears an uncanny resemblance to the racist apologies of "outdated" slavery used over a century later by U.S. historians such as U.B. Phillips and William Dunning, which are mentioned in the introduction.

II: 2012

My first experience with a Caribbean sugar mill came almost fifteen years ago when, as an ESL teacher working in Belize, I lived near one. While Belize is a tiny underdeveloped country, their only mill is an enormous modern complex, Belize's largest building, and the nation's only structure tall enough to require aircraft warning lights on its smokestacks. In terms of labor organization, Belize's relatively small sugar industry is more fortunate than most. Prior to the nation's 1981 independence from the United Kingdom, the factory and surrounding lands were owned by Tate & Lyle, a multinational British agribusiness which has roots in Liverpool's nineteenth-century sugar refining industry. Upon independence the company was pressured by the new government to divest its lands to the surrounding tenants, and today approximately 6,000 small farmers sell their canes to the central mill (which is still owned by T&L). The farmers are represented by the Belize Sugar Cane Farmers Association, and recently this organization has been instrumental in getting the Belizean industry to adopt international Fair Trade standards.

In neighboring Guatemala, things are much different. Guatemala is currently the world's fourth largest sugar exporter, and has the most profitable national sugar industry within Latin America and the Caribbean.⁶⁹⁴ Guatemala's many plantations are controlled by a conglomeration of thirteen individual mills that operate in a loose confederation. Over the past decades Guatemala's sugar industry has been charged with a litany of child labor and other worker exploitation violations, by both the United Nations and other

⁶⁹⁴ "Child Labor and Exploitation in the Guatemala Sugar Industry," *Plaza Pública*, January 12, 2012. <<http://www.plazapublica.com.gt/content/child-labor-and-exploitation-guatemalan-sugar-industry>>. Accessed March 16, 2012. The article's claim is based upon data from the Economic Commission for Latin America (ECLAC).

NGOs. Farmers and cutters do not own the land they work, and there are no worker associations.⁶⁹⁵ Workers are typically trucked to plantations from urban centers and live in barracks while they serve twenty-day contracts. Workers are paid 20 quetzals (approx \$2.50 US) per ton of cut cane, and each day they are charged that same amount for room and board. Thus they must cut 2-3 tons per day in order to earn any money from the system. Cutters work up to fourteen hour shifts, and stimulant drug abuse is widespread. In a recently wiki-leaked diplomatic cable, a U.S. embassy official admitted that “companies set rigorous daily quotas that are humanly impossible to meet in legal conditions,” and that “the threat of layoffs for those who do not meet their quotas is used as a way to work forced labor.”⁶⁹⁶

Today, most people in developed countries live with the comfortable belief that slavery is no more.⁶⁹⁷ The common assumption is that, despite all of the horrors and inequalities of our modern world, we can at least rest knowing that the concept of chattel property is universally condemned. Such assumptions are then typically contextualized as a major victory for human rights around the globe, and proof in the progressive, expanding nature of those rights. As such, our current conceptions of slavery and emancipation differ little from those of Thomas Clarkson and other early abolitionists. Thinking about slavery as a defunct institution, incompatible with either the Enlightenment or modernity, helps to reinforce this narrative of progress.

⁶⁹⁵ During the Civil War of the 1980s, there were several incipient attempts at unionization, and organizers were routinely kidnapped and executed.

⁶⁹⁶ “Child Labor,” *Plaza Pública*, January 12, 2012.

⁶⁹⁷ I say most because, despite its universal condemnation, the practice of slavery nevertheless persists in many pockets of the contemporary world. See Kevin Bale, *Disposable People: New Slavery in the Global Economy* (Los Angeles: University of California Press, 1999).

It is just and honorable to celebrate the demise of a labor system that relied upon the premise that a person's skin color makes them chattel. Nevertheless, by focusing upon the supposed backwardness of slave plantations, and by celebrating their inconsistency with both modernity and the Enlightenment, we make a grave mistake in assuming that many Enlightenment and modernist tendencies had no place within the slave system. As has been shown from this study, many Enlightenment discourses, particularly those developed before 1750, held slave plantations as paragons of modern development. More important, many of these discourses maintain tremendous power within the present. We (meaning developed nations such as the United States) remain interested in exotic locales for the tropical products they offer (especially coffee, sugar, and bananas), and take a heavy hand in controlling how these goods are produced and shipped to northern commercial centers. We remain committed to the idea that innovation—be it mechanical, chemical, financial, or managerial—is both key to a prosperous future and can prevent rival nations from surpassing our economic dominance. Many of us view the role of the entrepreneur—those who attempt to produce wealth through new projects—as an almost sacred figure in society, and often reward that person by allowing him or her to retain the wealth that is generated through their projects, often in amounts that are vastly disproportionate to the benefits their project provides to the larger public. Finally, we remain complicit within a system which believes that a stable, docile worker population is key to the increased production of many contemporary products, and support the myriad techniques that—while not technically slavery—operate to stabilize labor pools by locking workers into long-term labor routines at a minimum expense.

This last item is perhaps the most enduring legacy of the connections between slavery and the Enlightenment. While slavery is no more, income discrepancy between rich and poor has never been higher, and across globe worker exploitation has risen to unprecedented heights. From Guatemalan cane cutters, to migrant farm workers in the southern U.S., to debt-peonage in Pakistani brick factories, to Asian disposers of computers and other hazardous materials, to sex-trafficking and child labor throughout the globe, forms of human exploitation remain high.⁶⁹⁸ While some of these jobs are classified and condemned by modern NGO groups as examples of “modern slavery,” many are wage labor arrangements that nevertheless exploit workers by creating structural constraints that nullify any concept of economic choice. In the contemporary Central American sugar industry, its abject conditions kill more young males than HIV and diabetes combined, yet local workers continue to participate in the system because, as one cane widow states, there is “no other way to support a family.”⁶⁹⁹

By categorizing plantations as backwards, un-enlightened spaces, we create stories not only about plantations, but also about modernity and its Enlightenment legacy. More specifically, by limiting our thinking on slavery and the Enlightenment to a nineteenth-century liberal framework, we shield modernity and the Enlightenment from critiques about their roles within past plantation regimes and contemporary wealth discrepancies. Most important, when analyzing plantations within a strictly liberal paradigm, we are unable to see the plantation’s contributions towards creating a modern

⁶⁹⁸ For a breakdown of the most egregious types of contemporary coerced labor systems, see “Forced Labor Commodity Atlas,” *Verité*. Accessed through Digital Commons, Cornell University. <<http://digitalcommons.ilr.cornell.edu/cgi/viewcontent.cgi?article=2191&context=globaldocs>>. Accessed March 16, 2012.

⁶⁹⁹ Kate Sheehy, “Mystery Kidney Diseases in Central America,” *BBC News Magazine*, December 12, 2011. <<http://www.bbc.co.uk/news/magazine-16007129>>. Accessed March 16, 2012.

system that relies upon the efficient management of laboring populations for the purposes of creating commodities and wealth. While these systems eventually disavowed the concept of formal slavery, they nevertheless continue to operate, and often create working and political conditions frighteningly similar to slavery. One can even argue that our society continues to praise both liberal (now neoliberal) economics and rational choice theory because we, like the original abolitionists, continue to imagine these Enlightenment discourses in binary opposition to the whip and slave ship. However, if we think about slavery within in a broader context of early modern forced labor and its myriad contributions to modern systems of production and governance, we open a space for critiquing these modern systems which would not otherwise exist. Today, nominally free workers in Central American sugar fields have had their options constrained by a variety of technological and managerial systems, to the point where risking bodily harm for meager wages is perceived as a rational choice. These systems are neither accidental nor spontaneous creations of our contemporary world, but are the accumulated product of centuries of thinking on methods to secure labor resources through invention and experiment. Despite their importance to modern work routines, these systems—and their history—are obscured by contemporary discourses which idolize the individualizing free labor facets of the liberal Enlightenment, maintaining an imaginary dichotomy between freedom and slavery. These systems, and their attendant discourses, are in need of redress.

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Abbreviations

JBMHS = Journal of the Barbados Museum and Historical Society

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