"Knowing 'More about Eating Wheat Than Growing It': Agricultural Knowledge and the Experience-Based Georgic Ethic"

B.R. Cohen, University of Virginia
For the Yale Agrarian Studies Seminar, 1 February 2008

> "Books! 'tis a dull and endless strife:
> Come, hear the woodland linnet,
> How sweet his music! On my life,
> There's more of wisdom in it."
> Wordsworth, "The Table Turned," 1802

> "Who are to be believed in this discussion, either the observing, practical farmers, who have ocular demonstrations of their own experiments, or chimical [sic] men, who know more about eating wheat than growing it?"
> Gideon Ramsdell, *Genesee Farmer*, 1832

> "That many of these theories, concocted by the philosopher in his closet, are destined to fall before the superior knowledge of the *practical* farmer, we do not doubt. The philosopher must exchange his laboratory for the open field."
> [Anon.] *The Southern Planter*, 1842

This paper is about knowledge, experience, and the georgic ethic, as discussed by reference to the contentious issue of book farming. Book farming is the practice of guiding field management—soil fertilization and augmentation, crop rotation, crop selection, and the like—by reference to written works on agriculture.[1] The term denotes a form of knowledge that differs from traditional, familial, and experiential knowledge. It is codified, collected, and portable, packaged in text and disconnected from the place where it was made. The tension it introduces to agrarian culture has everything to do with place-based environmental ethics and a whole lot to do with trust and credibility in the knowledge-making process. Should the farmer, planter, or yeoman trust those books? Is book farming a legitimate activity? Who wrote them and what do they know?

Book farming names a problem that is longstanding and philosophically rich. Such loose debates, whether named "book farming" or not, are always an instantiation of the age-old problem of armchair philosophy, of listening either to the hands-on workers or the physically disengaged pontificators—"men with silk gloves on," as an anonymous rural press contributor once wrote. Compare, from one view, the wisdom of street-wise urbanites to country bumpkins, or, from the opposite view, the old farmhand with his homespun wisdom to the clueless city slicker. Or consider the ever-present contrast evoked in studies of science and society between knowledge gained from local experience and that produced remotely (as in a laboratory) and then transported to the local site—the agricultural researcher Paul Richards, writing about indigenous agricultural revolutions,

found in this vein that farmers' experience of working the land provided the basis for new agricultural knowledge, not scientific experimentation from afar; the rural sociologist Jack Kloppenburg has written that farmer-based knowledge should play a larger role in the construction of new agricultural policies, where "such knowledge is local in the sense that it is derived from the direct experience of a labor process which is itself shaped and delimited by the distinctive characteristics of a particular place with a unique social and physical environment"; in a familiar reference for the readers of this paper, James Scott, discussing the practical knowledge called metis in distinction to "more formal, deductive, epistemic knowledge," discusses much the same.[2]

For my interest, credibility and trust sit at the center of such contentious issues about generating new knowledge of agricultural sites and then new policies about how to act: who do you trust and why? Although I suggest the cultural dynamics that lay underneath it may be timeless, book farming becomes a particularly fertile[*] site of analysis for a study of agro-environmental ethics, history, and culture when paired with the rise of scientific agriculture.

In the early American Republic, where this paper takes its focus, book farming was either a problem or a solution.[3] The dispute between those two positions turned on the perceived role of science for improvement. For those who favored it, book farming represented the pinnacle of modern thought and the very underpinning of improvement. The best methods and most detailed studies could be published and distributed for all farmers, equally and at the same time, to see. As well, sharing knowledge with one's neighbors was an important sort of communication, simultaneously fostering community and bettering each individual's land. By codifying practice and theory in text, book farming advocates thought they could negate certain harmful features of the agricultural community, offering a break from dogma, tradition, and the resistance against philosophy born of ignorance. One anonymous writer, representative of the advocate spirit, wrote that "The *mere* clodhopper, the contemner [despiser] of '*book-larnin'* tells his ill-fated progeny to…put their trust in their mules and their oxen, and for the rest to watch the changes of the moon, and the shifting of the winds…as more important than all the philosophy that ever was promulgated…." Another considered the resistance of dirt farmers, who "will neither take an agricultural paper, read it when given them, nor believe its contents if by chance they hear it read," a position of mere stubbornness.[4]

For those who opposed book farming, however, it was just another quick, easy, and ill-considered solution to the problems of land management. A rural press contributor using the pseudonym "Anti-Philosopher" considered it simply "the rage of the day." He condescendingly remarked that the "desire to explain every thing upon *philosophical* principles" was only a fad.[5] On the contrary, he asserted, personal experience was the best guarantor of agricultural knowledge. A direct acquaintance with one's own plot of land, anti-philosophers everywhere contended, could hardly be superseded by advice from beyond the farm. Book farming was bad farming promoted by "men with silk gloves on," the product of inexperienced agents of improvement who, rather than help, were likely to damage the fields.[6] Who should they believe, the local farmer Gideon Rasmdell asked in the *Genesee Farmer*, "chimical [sic] men, who know more about eating wheat than growing it" or the experienced farmers themselves? It turns out the improvement trope could in fact make things worse, with plenty of evidence from generations of farming to

[*] That's right. I don't fear the pun.

know that miracle solutions were often wasteful—just so many "fine spun lubrications," to quote the editor of Baltimore's *American Farmer*, John Skinner. And thus, the argument that science and improvement were synonymous did not come across naturally to the minds of the working agriculturalists.

Subtly threaded through the issue of book farming was the georgic ethic of environmental engagement. With its basis in Virgil's *Georgics*, the ethic defined a working relationship between humans and the land. Although scholars have often considered the georgic ethic a hard form of the pastoral—similarly deriving from a Virgilian epic, the pastoral comes to us from *The Eclogues* or, as it is sometimes called, *The Bucolics*—it more rightly stands in distinction to its more popular sibling. Where the pastoral defines life as leisure, the georgic defines life as labor. Where the pastoral offers the aesthetic of a passive landscape, Romantic, placid and calm, the georgic demands attention to the lived experience of work and practice in the landscape. The pastoral may offer an ideal relationship between humans and the land, but the georgic offers the one that early Americans, in their agrarian world, more faithfully lived.

Returning now to my opening lines, this paper is about agro-environmental knowledge production, taking the georgic ethic and book farming together. How does one know what the soil is? Who says so? And why do others believe them? Focusing on the Early Republic, I use the georgic ethic as a way to examine the how, who, and why. This is my basic argument: the early years of "systematic" and then "scientific" agriculture that the book farming debates represent were shaped by a georgic context of lived experience and place-based virtues. My descriptive aim is thus to draw out the terms and values of the georgic ethic as a way to understand new agricultural knowledge-making practices that made possible the scientific agriculture of the nineteenth century. More ambitiously, this descriptive work is a précis for my normative interest, which, given space constraints, are more properly suited for a follow-up to this paper: to bring the georgic ethic more prominently into the discourse on agro-environmental ethics and practice. Following the agricultural writer Laura Sayre, I believe that the georgic ethic discussed below "*is what we need now*."[7] That is, although the georgic ethic comes from a particular historical context and saw its appeal reach a zenith at the turn of the agrarian nineteenth century, the terms it represents and the mode of activity in the environment it leads one to espouse remain possible and vibrant today. But let me stay with book farming for the present paper, offering an epilogue at the end that speaks to the possible value of the georgic for contemporary agrarian discourse.

The georgic ethic and georgic science

My interest is on book farming and the place-based virtues of a georgic ethic. Let me speak first, then, to the georgic context that spanned the pivot of the eighteenth and nineteenth centuries and found new expression, with new homespun terms, in the nascent rural press of the antebellum period. To put it briefly, the push for "systematic" agriculture that sat at the core of book farming debates had been shaped by three interlacing contexts: the georgic ethos in agricultural treatise writing, the rising value of systematic experimental

activity on the farm, and the tensions brought about by a potential disconnect between knowledge and experience.

The georgic context has been somewhat buried in historical and environmental scholarship because of the dominance of the more Romantic, pastoral ethic. The pastoral, like the georgic at once an environmental ethic, a poetic construction, and a landscape aesthetic, has served the literature on environmental studies well. Its analytical utility comes perhaps from its relevance for a wide range of scholarly approaches. It helps define a middle-ground along a spectrum from wilderness to civilization, as Roderick Nash expresses it in his *Wilderness and the American Mind*; it stands as an ideal, an organic, life-affirming antipode to dehumanizing technology, as Leo Marx explained it in his landmark *The Machine in the Garden*; it suggests an ideal of literature that emphasizes, as the ecocritical scholar Lawrence Buell says, "an ethos of rurality or nature or wilderness over against an ethos of metropolitan." Donald Worster, in *Nature's Economy*, draws clear distinctions between the Arcadian (as synonymous with Pastoral) and imperial studies of nature. That Arcadian view represents a peaceful relationship to the world within which humans live (as with, for example, Thoreau), while the imperial school of thought is understood by its goal of controlling and dominating nature (as with, for example, Linnaeus and Bacon).[8]

As a way to express a sense of contrast in studies of environmental thought, of nature writing, and of techno-scientific history, the pastoral offers a clear tool demarcating one view of nature from another—civilization from wilderness, culture from nature, city from country, mechanical from organic. It is born of Virgil's *Eclogues* and of the aesthetic and emotional response to timeless, gentle, and leisured cultivation. It situates humans as part of the natural world, not outside it; even as they cultivate, herd, and develop their resources, they do so within the constraints of a world greater than themselves. As the classicist Bruno Snell framed it a half century ago, the Arcadia of Virgil's *Eclogues* is set in "a far away land overlaid with the golden haze of unreality."[9] In the 1830s, Thomas Cole, the founder of the Hudson River Valley School of landscape portraiture, portrayed the pastoral as the prelude to civilization in his magisterial sequence *The Course of Empire.* His landscape shows humans gently and almost passively placed within the contours of the mountains, valleys, streams, and fields of his view. People frolic.

Figure 1. Thomas Cole (1835) "The Pastoral or Arcadian State," from his five-portrait series The Course of Empire. This portrait followed the first in the series, "The Savage State," and preceded "The Consummation of Empire," in the process exemplifying the middle ground of the pastoral between wilderness and civilization.

But Virgil gave us more than the pastoral: he also presented the land as a site of labor. In this georgic world, people work. As the environmental literary critic Timothy Sweet argues, the georgic and pastoral stand as two distinct modes of orientation to the land: for the georgic, labor is life; for the pastoral, leisure is life.[10] Human intervention is a central tenet of the georgic ethic, not a problematic relationship to be explained away. The distinction between the two ethics, then, is not that the georgic elides nature/culture or wilderness/civilization differences while the pastoral keeps them separate; nor is it that the one places humans in the landscape while the other keeps us out. The distinction I want to emphasize has the georgic highlighting the ways humans *interact* with their world and the pastoral highlighting the two sides of that interaction instead of the mediation between them.

That element of interaction introduces moral demands, since it emphasizes relations between different people and between people and their land. Virgil understood this. Rather than defining his work reductively, he combined moral instruction with practical advice in the person of the farmer. In so doing, he enfolded moral and material elements: promoting the occupation of farming was part and parcel to modeling the practice of agriculture as civic virtue. In American historical lore, Thomas Jefferson's 1780's view that "Those who labor in the earth are the chosen people of God" stands as the early national expression of agriculture's virtuous identity. Today, Wendell Berry's neogeorgic call to return human labor to the core of an environmental ethic, Wes Jackson's focus on agrarian viability, and recent work by pragmatist-oriented environmental ethicists—who

promote an approach that asks us to debate environmental matters based on practices in nature, not just abstract reflection about it—stand as part of the legacy of this ethic.

Figure 2. Scene of working farmers, from Diderot and D'Alembert's *L'Encyclopédie*. Unlike strictly pastoral imagery, this plate represents farmers working the land, rather than sitting in passive contemplation.

Because my focus is initially on the early decades of the American republic, the revival of the georgic in the genre of the eighteenth-century agricultural tour is more relevant here than a faithful reference to the original. There, the term was taken up by Scottish and English rural improvement advocates, finding expression in the "Georgic Tours" literature of that time. These Georgic Tours formed a literary genre that sought to promote Enlightenment ideals of improvement through observations of farming. The

purpose of the Georgic Tour was to promote an admittedly malleable ideal of "improvement"; its premise was to refine that generic ideal and to suggest that improving the future possibilities and current productivity of the countryside required an intimate knowledge of that place, knowledge best gained by direct experience on the land. By collecting observations from the land, putting them into writing, distributing them as an eighteenth-century version of "best practices," and doing so with the intimation that "science" would have some role to play in the process, the Georgic authors were inventing and directing the goal of agricultural improvement.

Historian and agricultural writer Laura Sayre, in her study of the prominent eighteenth-century rural British tourists Arthur Young and William Marshall, has observed that the georgic "suggested new ways of reading and writing the rural landscape, establishing an essential connection between the intellectual work of the gentleman and the physical work of the laborer."[11] A more fine-grained approach to tilling, cultivating, fertilizing, and managing the soil would lead to more productivity and better control of the land, the men posited. Virgil had advised farmers, "you who work the land," to test soil variety by feel, and by taste, and by crumbling it in one's hands.[12] These were all tactile measures that relied on direct observation and required immersion in the experience. One cannot speculate about feel; one has to actually touch something to gauge it. As an appeal to the virtues of farming, in the person of the improvement-minded tourist of the eighteenth century the georgic was a way to knot together the civic virtue of labor with the demands of agricultural improvement.

This intersection of agriculture, improvement, and georgic values was most evident in Scotland and nearby.[13] But prominent Americans tapped into this wider Atlantic world of improvement advocacy, as George Washington and Thomas Jefferson (to take perhaps the two *most* prominent examples) carried on thick series' of correspondences with Young, Marshall, and friends. The American ideal of improving agriculture was consistent with English and Scottish Enlightenment values of progress. While that American improvement discourse may have helped cull the georgic tradition from Britain, in the new nation that ethic encompassed moral and material duality far more directly. In one way, the strong cultural narrative of unbounded land and the burgeoning cultural ethic of the practical Yankee made the appeal to promoting a georgic attitude especially forceful and clear. In a second way, it dovetailed with a set of social values based on the practice of farming, where practice was understood as experience. The story of how agriculture and the American improvement ethic were brought together through this new thing, "science," puts modes of practice and experience into the foreground.

In this American context and as part of the wider Enlightenment Republic of Letters, improvement advocates like Samuel Deane, in his *The New England Farmer, or Georgical Dictionary* (1790), aimed to put the science of agriculture more centrally into the conversation on soil and society. He drew in part on Alexander Hunter's set of essays from the 1770s, the *Georgical Essays*, which had already been well-received in Europe and America.[14] In a similar georgic spirit, Thomas Ewell, in his *Plain Discourses on the Laws or Properties of Matter* (1806), aimed to use chemical principles to achieve agricultural gains. As with his contemporaries, Ewell saw his work as a discourse on modern chemistry "connected with domestic affairs," believing that "Agriculture is the most intimately connected with chemistry."[15] Another popular text of the antebellum period, Daniel Adams's *Agricultural Reader*, deferred to Dr. Deane's georgic testimony throughout its

pages. Adams lauded Deane's work not just for its bald agricultural facts, but for the insistence that through its advice "civilization, with all the social virtues, would, perhaps, be proportionably promoted and increased."[16] He too encouraged the participation of farmers in a world of improvable land, supporting Deane's georgic orientation and motivating his readers with the overriding moral cause inherent in agricultural improvement.

As Laura Sayre has noted, georgic writers approached the labor-agriculture-writing junction "by stressing the time and effort of authorial production, by basing the authority to write about farming on a résumé of farming experience, and above all by insisting that the experience of farming could only be fully realized through habits of writing and reading."[17] The strong deference to authority, experience, and writing was common among the georgic agriculturists, establishing a union that would later pervade the antebellum agricultural press. Despite a confusing assemblage of interpretive elements—farming, writing, morality, improving—lived experience stood as the common factor binding them together and foregrounding the moral component of the rhetoric. When Jefferson and Washington contributed to the goal of improvement through experiments and fertilization—as written in tours, treatises, and letters—they were following through in practice with the connection of agriculture to the success of an agrarian and republican social system.

No longer could "the farmer" rely only on the undigested, unaccounted for, unquestioned experience that defined centuries of traditional knowledge practices. Keeping accounts of systematic experiments, doing so with rational deliberation, and reporting them to neighbors should become the basis for daily practice on the farm. This was also the basis of lived experience from which the rural press developed in the 1820s and within which arguments for and against the value of science for agricultural improvement soon gained meaning in the debates.

Cultivating the Land in the Rural Press

"Fear not to attempt an improvement or discovery..." Richard Peters, *Memoirs of the PSPA*, 1818[18]

Turn-of-the-century treatises were given common cause by their concern for soil improvement through attention to fertilization; those concerns were echoed and reinforced in the later rural press. John Taylor, for example, widely read author of a series of essays collected in *Arator* (1813) and a character of georgic sensibility, believed that "the first necessity of agriculture is fertility," with his peers and followers taking similar views.[19] At the time, a fertilizer was thought of as a natural agent added to the dirt, a product of the farm or the land such as animal dung, vegetable manure, lime, marl, and Plaster of Paris (or gypsum). To fertilize a field was to perform a simple, routine task that generations of farmers had enfolded into their daily practices. The dung heap was long a mainstay of farm life, so there was certainly nothing new about using various manures to help vegetation grow.

The *methods* for using fertilizers, however, were coming into development as was an increased understanding of variety. It was the methods of agriculture that formed the basis for systematic studies. At the same time, the vagueness in earlier references to "science" for the sake of agriculture was becoming more specific by calling for systematic

approaches and invocations of chemistry. Following the tone set by works like Samuel Deane's *Georgical Dictionary* and others referenced above, the plea for systematization was everywhere. Adams's *Agricultural Reader* asserted that "the *'era of systematic agriculture'* has actually commenced."[20] Improving the moral structure and material capabilities of agricultural America was becoming a matter of method and system.

Book farming was bound up with the rural, or agricultural, press. That press began in earnest by the 1820s, shaped by the rising prominence of agricultural societies (which were interested in communicating their meeting minutes and public addresses), diligent local editors, new publishing and mailing opportunities that made serialized literature possible, and the plea for improvement that pervaded American culture at the time. Its purpose was to advocate rural economy by providing a forum for presenting and debating the issues of agriculture. It worked as a complement and counter-weight to urban newspapers, listing market prices for farm goods, advertising rural products, and commenting on agricultural development. Historians generally credit the *American Farmer* of Baltimore, which began publication in 1819, as being the first successful agricultural paper. By the Civil War, 400 different agricultural papers had appeared, at least one in every part of the country.[21]

The *American Farmer*, Albany's *Plough Boy* (1819), and Boston's *New England Farmer* (1822) stand as three prime examples of the early wave of the rural press. Each paper participated in debates about book farming and each of their editors acted as a pro-book farming advocate by invoking georgic values. In terms of rhetorical style, the papers were part of the same spirit of "improvement or discovery," as the Philadelphia improver Richard Peters put it, fostered in the transactions of agricultural societies and public addresses. The editors, John Skinner (1788-1851) at the *American Farmer*, Solomon Southwick (1773-1839) at the *Plough Boy*, and Thomas Fessenden (1771-1837) at *The New England Farmer*, were farmers in the general sense of term, their identity embedded within the common culture of land cultivation even if they did not all or always engage in daily farming activity.

Despite a diversity of editorial backgrounds, the early years of the press shared more common features than they were divided over, not the least of which was concern for the very issue of book farming. In this regard, the editors and their papers exhibited a distinct lack of overt political sectionalism, a strong though mostly informal affiliation with regional agricultural societies, and a propensity to couch book farming in terms of the specific problem of soil exhaustion and its converse, fertility. Each paper participated in bringing the science of agriculture into public debate even though none of the editors had any chemical or scientific training. They were all, however, determined to act as purveyors of method, system, and rationality.

The rural press was an extension of georgic writing. It was dedicated to the dual georgic values— material and moral—of agricultural progress with the principle that it would "improve the soil and the mind," as Albany's *The Cultivator's* masthead announced with each issue. It carried forth discussions about soil exhaustion and fertility that the georgic authors had made their modus operandi. And the press pursued with weekly and monthly attention the possibilities of improvement through system, method, rational practice, and science.

In the forum of the rural press, the value of advice was understood through a georgic prism, a perception defined most clearly through the virtues of labor, discipline,

and practice. Such attitudes came across clearly with the juxtaposition, time and time again, of the sun-browned, practical, observant, and experienced farmer to the closet-bound, fine-spinning concocters called philosophers, "chimical men," or, eventually, scientists. Contributors to papers from South to North reinforced those contrasts, many times on the side of book farming, but just as often to the disparagement of such speculative practice. As with Gideon Ramsdell, quoted earlier, the simple case was one of perceiving "the observing, practical farmer" as more suited to consider the issue than men more versed in eating than growing wheat.[22] Much farther south, an anonymous contributor in Virginia lauded an agricultural survey while noting that "knowledge…sanctioned by ocular demonstration…could have none of the disadvantages attributed to *book farming*." Many others followed the same tack, indicating their awareness of the pitfalls of written works while forwarding the salience of local, lived experience.[23] With respect to the later rise of agricultural science, the georgic ethic framed a kind of scientific pursuit that was amenable to rural virtue while attentive to the demands of systematic study. In the early years of the nineteenth century, at a time when the demands for improvement were simultaneously moral and material, the form of environmental knowledge production is best cast as a georgic science.

As I noted earlier, the book farming debate that first earned its name in the Early Republic continued far beyond the antebellum period. But of relevance here is that, within that period, the terms of that debate and the position of science within it shifted. Whereas the early years of the debate saw "science" (in quotes at that time) as either better or worse for the farm—was it progress or not?—debaters of later, mid-century years accepted the validity of scientific agriculture and argued instead *how* it should be circulated and funded. Thus was book farming consistent as a term of reference, while the position of science moved about within the debate. Using codified works of agricultural was valid if it was codified by the right person, the person of georgic character.

Ultimately, the fundamental issue was whether or not the science was virtuously pursued, not if it was scientific or not. The virtuously pursued science is what I call georgic science. The same John Skinner who sided with "the *experience* of the sun-browned practical Farmer," for example, believed that "No man can be a good farmer, and make the most of his land and his means, without some acquaintance with chemistry." His concern, rather than being trapped in a dichotomy of pro- or anti-science, was more nuanced, again asking questions about *whose* science was valued, the farmer's or the philosopher's. Once more associating the moral and material, Skinner claimed that the farmer correctly using chemistry would become in "*society*, a more accomplished gentleman."[24] Social and epistemic authorities were not separate: the value of the fact was related to the virtue of the fact-gatherer. By the end of the antebellum period, scientific agriculture was in the ascent as a credible activity, one fundable at political levels beyond the local scale.

Dandies and Homespuns, Virtue and Vice

The georgic reference point so commonly evoked at the turn of the century eventually gave way to new language in the rural press—in fact, uses of the specific term "georgic" were rare. By the Jacksonian Age, the same issues of experience and place were

highlighted by a different set of key terms. One prominent and contemporary way to formulate the issue was by juxtaposing the *homespun* ethic to that of the *dandy*, the former virtuous and true, the latter lazy and despised. The term itself—homespun—referred first to homemade clothes and had political significance in the years of the social movements favoring American-made products over imported ones. In rural discourse, the values inhering in the label homespun were the same as the georgic—diligent, hard-working, industrious, practical. As a way to contrast against dandyism, the salient issues were still place-based. Homespuns lived where they worked; dandies gave the negative image of urban sophistry (not to mention the more recognizable gender-based representation of the dandy as effeminate and dainty). The georgic ethic did not fade away, even its visibility as a term did. Rather, the ethos espoused by a georgic sensibility formed the core of homespun rhetoric.

The concept of georgic science might also be called homespun science, the homespun confirming the georgic salience of place—geographical and cultural—in the acceptance of agricultural chemistry. As homespun science was about both the production of new knowledge and the morally apt way to do it, the method of identifying and then acting upon agricultural lands became a stirring topic of debate. A few editorials illustrate the point.

Thomas Fessenden wrote a long editorial called "The Science of Agriculture and Book Farming" in the first volume (1822) of his *New England Farmer*. It would be a start to a long conversation on the value of science. The very title is worth attention, since it shows that the two notions, science and book farming, were not the same thing. Fessenden's purpose was to discuss just how they were related. In the editorial, he combined economy, fertility, morality, and scientific credibility and equated them with the merits of book farming. Unlike Ramsdell writing to the *Genesee Farmer*, or the anonymous contributor to *The Southern Planter* who suggested philosophers leave their closets for the fields, Fessenden was a forceful proponent of book farming. He outlined existing qualms about the science of agriculture while carefully explaining its virtues in a commentary that urged prudence, reason, and dutiful observation. He said that while practical farmers could not be smitten with all the "theories not sanctioned by actual and repeated experiments," nor afford to be "full of notions," they should still seek to separate speculation from fact. His view, he suggested, was even-handed, allowing for the criticisms of skeptics while tempering them with appeals to dominant values. But he presented the equitable view to transcend it. Those farmers who "never knew any good result from what they call *book-farming*" had misplaced their criticisms. They could improve their land by recognizing that "*Book knowledge…is power.*"[25]

Fessenden did not approach the merits of book farming with accusations of ignorance against anti-book farmers or claims for the unbridled acceptance of all novelties, but he did associate the merits of book farming with the value of a systematic science. Quite simply, he did not want to "check enterprise, but [rather,] inspire caution, and teach us that every novelty may not be an improvement, altho' every improvement was once a novelty." Despite towing the line so carefully in his effort to appeal to the range of his audience, his position *was* pro-book farming. It was directed at the proposition that anti-book farmers believe all theories and "whim-whams" derive from those "who know nothing about farming but what they get out of libraries." Farmer "B," Fessenden's foil, rejected book advice because it was "not worthy of the attention of real, genuine, practical

farmers." But if the knowledge observed and recorded in print was based on the testimony, observation, or experience of practical husbandman, Fessenden explained, absurdities would "fast [yield] to reason and the lights of science."[26]

Throughout his commentary, Fessenden emphasized that the sanctioning of these matters—who did it?—was what counted. His comments to that end were couched in a homespun framework. In so doing he presented a view of science where chemistry and philosophy, the terms he used synonymously for "the science of agriculture," were evaluated for their relevance to working farmers. His was not a strictly pro- or anti-science vision. Nor did Fessenden himself call for unbridled deference to the science of agriculture, but one which asked for the use of reason by average citizens, the practical husbandmen. Book knowledge would aid the georgic and homespun goals of social stability, morality, and truth if sanctioned by industrious farmers.

Solomon Southwick offered a similar view in Albany's *Plough Boy*. With an overtly moralizing tone, he tied his purpose of communicating agricultural knowledge to the promotion of a specific lifestyle. From this publishing platform, he offered an ethical framework within which farmers could separate speculation from fact. "Henry Homespun," Southwick's pseudonym, conveyed an entire homespun ethic for the periodical, wrapping reprints and commentaries in a cloth of right living that valued industriousness and common sense while disparaging idleness and insolence. A writer using the common pseudonym "Arator" wrote to the *Plough Boy* about "the Science of Agriculture" suggesting that prudence and "industry in all our laudable undertakings" were within the "scope of moral possibility" entailed by improved agriculture.[27] Southwick agreed and used his paper to push the moral superiority of industriously practiced science. He wrote, like Fessenden, Taylor, and Peters before him and like "Arator" and other contributors, that those who were "careless and slothful" with "the sin of idleness" were always cast as the negative shadow to the positive frame of the farmer's virtuous lifestyle.[28]

"The Moral Plough Boy" explained his purpose as aiming "at improving the moral, political, and economical condition of the people at large." The homespun rhetoric enabling this condition was defined most clearly in opposition to dandyism. "The Homespuns and the Dandies are antipodes," Southwick wrote.[29] Where Dandies were concerned with frivolous amusements, Homespuns were hard working. "The Dandies indeed would be harmless, were it not for their idleness, which is always infectious" and so Southwick saw his mission as denigrating the one and promoting the other.[30]

When Henry Homespun advocated the tenets of agricultural science, he was siding with a specific kind of systematic work, not a universal sense of "science." When he took an implicit stand in favor of book farming, he aligned himself not with science writ large, but science for the sake of the agricultural life. Southwick skillfully distinguished between a general sense of philosophy and a specific thing like homespun science, a practical pursuit that was good for farms, good for improvement, and right for a moral society. As we see with Southwick, Fessenden, and others, the criteria for defining science, in the antebellum context, were not internal to its practice. The direction of credibility-gaining moved the other way. The criterion for defining science was external, being granted *by* farmers *toward* a science that was aimed at a moral understanding of right farming. Southwick's Albany paper was much like Skinner's in the Upper South and Fessenden's in Boston. When those editors deployed the phrase "science" so loosely and often, they had in mind

the use of systematic, diligent, observational methods of practice for the benefit of the community.[31]

The ubiquitous claims for industriousness over idleness, to "walk abroad in the majesty of virtue" and remain "strangers to vice," were not difficult propositions to accept, then anymore than now. They were basic restatements of classic Protestant values: work was virtuous. Fessenden's editorial essay on book farming was meant to place the practice of rational agriculture into a framework the practical husbandman already understood, that of the cautious and informed use of new ideas. Science, then, had to fit the agrarian ethic to be promoted, as it was one tool among many selected by the craftsmen.

The above agricultural paper references were often prescriptive, saying how things should be done, but not ensuring that they were actually practiced as such. They show us the world the improvers wanted to create. But the case for introducing and accepting science or agricultural chemistry could not be made from editorial perches alone; the story also involved the testimony of farmers and planters dealing with the complexities of written advice and experience on a daily basis, those not just speaking the georgic ideals, but crafting them in their work. They offer more insight into matters of resisting and promoting book farming.

Resisting and Promoting

The resistance or acceptance of book farming in the context of moral, political, and economic improvement was a matter of authority and belief. Who sanctioned the observations and reports? Who had the authority to tell a farmer what was good and right? These kinds of questions had to be asked and answered in community settings and within local and familial networks. Below, I consider the examples of farmers both wealthy and of more humble means, to offer a glimpse of the reality of book farming in the fields of the early Republic.

William Fanning Wickham (1793-1880) was a Virginia book farmer. He experimented with different fertilizers, mined marl and other manures from his property, suggested methods and systems of analysis for the cause of improvement, considered the validity of new scientific or philosophical principles about agriculture, read and contributed to several rural periodicals, and even translated foreign articles for *The Farmer's Register*.[32] These activities were part of the farming practice to which he was devoted for decades. He was a well-educated and wealthy landowner of over 3000 acres at Hickory Hill in Hanover County, situated to the north of Richmond and east of Charlottesville. He was also a trained lawyer, owner of as many as 275 slaves by 1860, and son to a century-old family of southern gentry.[33] His social stature enabled him not only to examine chemically nuanced systems of improved agriculture (by virtue of his education), but to write about his experiences with those methods with some degree of social credibility. For him, book farming represented a tension between the activity of farming and the contemplation of theorizing, between observation and speculation.

Wickham grew a diverse set of crops, including wheat, corn, and clover on a series of fields. He was fertilizing wheat with marl in systematic fashion by the 1820s. As early as 1828, as he recorded in his diary, he "began to haul marle into the low field from the old

bank" using "3 to 400 bushels" to the acre. He later opened "a new pit in the hill side near the river on the low grounds" and from there planned "to cover all the low grounds in the barn field with marle and to fallow it in the autumn for wheat." The corn that year was his best ever, though he did not indicate whether the fertilizer deserved the credit. "The season could not have been more favorable" was his only comment.[34] The next season Wickham concluded that "the effect of the marl…in the long field at the Lane is astonishing…." Opening up new marl pits, devoting more and more labor to the projects (from one horse cart per day to three), and ever increasing the bushels per acre, he was developing a kind of proto-industrial agricultural fertilization process. His experimental success was literally visible from afar—"The young clover in the wheat field looks well especially on the marled land which can be distinguished at a considerable distance." By the late 1830s, Wickham's fertilizer use was regular and predictable; he had plaster experiments underway as well.[35]

With fertilizing techniques, crop rotation strategies, advanced mechanical implements, and even a steam sawmill by 1848, Wickham would be considered an "advanced" farmer. He was practicing and experimenting with the most up-to-date farm management and agricultural methods. By then, he had extensive experience and trust in methods of fertilization and what he considered agricultural science. Still, Wickham did not always trust the dictates of scientific methods gleaned from treatises, preferring the experience gained from his own land. His extant means of learning how to farm—from his father, from his neighbors, through the experience of his early years—were slowly being complemented by the science of agriculture.

Wickham exercised his authority as a diligent practitioner in his community and through his self-representation (in dairies and through the rural press). A debate in *The Southern Planter*, an agricultural paper published in Richmond, demonstrates the point. In 1841, he wrote to correct misperceptions he saw in print about ploughing techniques that encouraged farmers to till their manure underground in the fall instead of the spring. Different techniques were being advocated by the editor, by Wickham, and by at least two correspondents. First, an article from *The Genesee Farmer* in upstate New York had commented on the "scientific opinion" of a popular treatise of the 1840s, *The Practical Farmer*, noting that its method of fall ploughing was consistent with "established principles of philosophical agriculture." The article was reprinted in the *Southern Planter* and, in response, Wickham wrote in favor of spring ploughing. He there questioned the wisdom of the "scientific" opinion because it conflicted with his experience, not because it was scientific. Then, in a further reply, a third participant entered the debate. "A Hanoverian" wrote to the *Southern Planter* to question Wickham's contribution and the "increased improvement which that mode of using effects." The "Hanoverian"—writing from Wickham's own Hanover County—wanted to understand the difference between the uneven sets of advice.

But who was to be believed? All parties agreed on the goals: improved crop yield from legitimately conveyed advice. Tilting the scales, the editor then re-aligned himself, siding with Wickham. To do so, he explained Wickham's credentials—"not a man likely to make a mistake"; one who "has no theory to advance [but] only repeats the facts"; "we hardly know one upon whose judgment we would sooner rely."[36] Wickham's authority in the debate was understood at first from his reputation as a practical farmer. He then benefited from the sponsorship of the *Southern Planter*'s editor, who vouched for

Wickham's character. For our interest, the debate exemplified, first, that the *kind* of observation mattered (not whether there *were* reported observations or not) and, second, that the accepted authority of the observer ultimately settled the matter.

Wickham successfully cultivated the image of the diligent, georgic farmer. His descriptions of experimental practice did not rely on technical chemical language, but they did stand behind a planter of accepted social authority offering reports of his own positive experiences with systematic fertilizing experiments. He had tried marl, plaster, crop rotation, and clover in addition to the animal manure long used on the plantation; his later use of guano, in the 1850s, fit perfectly into this mode of operation.[37] All these efforts presupposed the goal of improvement and the value of book farming. On one reading, the ploughing debate could be interpreted as a matter of competing claims between the scientific opinion of *The Practical Farmer* and the local, non-scientific opinion of *a* practical farmer. But that would be to misread the subtleties of value and virtue. More centrally, the debate hinged on *what kind* of scientific opinion was being wielded, where fact-based testimony had merit based on the valued source of authority, where the place of the observation gave it credibility. Homespun virtue won out.

At the same time, John Walker (1785-1867) was a book farmer in a different sense. He wrestled more with the authority of agricultural advice at a personal, rather than philosophical, level. As the historian Claudia Bushman has explained in her monograph detailing John Walker's antebellum diary, he was also less wealthy than Wickham and less educated, had fewer slaves (though he did have some), and was more ambivalent about taking farming advice from books. His engagement with philosophical principles of agriculture—the validity of which was the bone of contention on his view of book farming—was more troublesome than Wickham's. Walker represents yet another tension in the concept of book farming: for him, the debate was between believing in an almanac or an agricultural journal, between traditional approaches to farming and so-called modern ones.[38]

In a comprehensive reading of John Walker's journals, Bushman implicitly takes as her theme the recurring issues of trust, authority, and belief. While reading "progressive materials," she finds that Walker was also seeking advice from other sources of epistemic authority like the almanac. He often tested his moon-farming methods against the recommendations of periodicals like *The Southern Planter*, indicating his "continuing concern about authority and trustworthy power." The "problem of whom to believe, [of] what was the best source of authoritative advice," dogged Walker as he weighed the suggestions from written articles against his own history.[39] A full reading of his papers, taken together, characterize him as a farmer struggling with multiple questions about authority and belief.

As with Wickham, Walker was also using marl by the early 1830s. His diaries indicate that he read John Taylor's *Arator* and had at least a passing familiarity with issues of soil exhaustion. For him, being a book farmer meant reading the rural press and comparing moon lore against new methods of planting. In 1825, vexed by issues of authority and by the promise of new techniques, Walker constructed an experiment to compare almanac advice based on the stars against his own observations based in his fields. "Who should he believe?" Bushman asks. After all, "The competition between modern and traditional could be seen in his wavering but stubborn loyalty to planting seeds according to phases of the moon." It seems that Walker used an array of available approaches. "Walker

incongruously mixed the superstitions of the past. At the same time he was reading progressive materials, he consulted almanacs to monitor the progress of heavenly bodies." But this is only incongruous if we take the inevitability of scientific success as the benchmark against which to judge Walker. In his own context, as part of his homespun life, his dual use of almanacs and the rural press was entirely consistent. He utilized the methods available to him and incorporated different techniques without recognizing the later clarity of differences in those methods.[40] Walker was like Wickham in the sense that he was in the midst of introducing newer methods to his agricultural practice, but differed in the scope and sophistication of his experiments.

In some cases, Walker saw a nice convergence between printed advice and his personal observations. Lime use, for example, was being widely promoted. Walker's own experience with that fertilizer had been positive. He even bought a lime scatterer after seeing an advertisement in *The Southern Planter*. Bushman makes the valid point that Walker "likely did not understand its effect on the soil," but that lack of understanding was typical and an artifact of a different *kind* of knowledge—georgic, or hands-on, or "practical"—not a complete lack of knowledge.[41] Influenced by the press, he used a mixture of ashes, lime, and plaster to prepare the soil and his seeds for planting. (Often, the debate was about how best to roll seeds in fertilizer before planting them, not just about how to modify the soil conditions directly with the fertilizer.) With Walker, we have a working farmer struggling to gauge the ideals of science and improvement against a long tradition of capable and successful planting.

Smaller-scale farmers also grappled with the issues of the authority of advice. For the sake of space, I forgo exploring their example here, but the tensions of authority, trust, and belief with the call for new soil-treatment practices remained consistent with the cases of Walker and Wickham.[42]

***

What does any of this say about resistance? And how could it be overcome? One important concern was that it was hardly clear to the practicing farmer how new ideas would work or where they would lead—that is, if they *were* progressive or destructive, if they were improvements or novelties, if they were fact or speculation. Indeed, there had been ample evidence to show that not all new ideas were good ones. As Fessenden quipped, "every novelty may not be an improvement, altho' every improvement was once a novelty."[43] But how could you know?

With respect to the role of science on the farm, those resisting book farming perceived a breach between their goals of improvement and the *value* of science. Southwick, Skinner, and Fessenden tried to redress this perception by connecting virtue and the political economy of agriculture to science. They worked hard to convince real, genuine, practical farmers that their concerns may have been justifiable against the dandies, but they were not justifiable against book farming.[44] They did this by proposing that book farming, when right, was georgic or homespun science. Another dominant concern was that those who were already distrusted—the dandy, the insolent, the man of "whim-whams" who was "full of notions"—seemed to have undue influence on practicing farmers. So how could a practicing farmer tell the difference between valid improvements and dandy-esque novelties, between legitimate observations and contrived speculation? The early years of

the rural press, then, fit into a preexisting climate of georgic interaction with the land, where resistance to book farming was resistance to science. The responses to these concerns, of course, were part of that same milieu, always emphasizing that the practicing farmer could tell the difference between novelty and improvement by deferring to a specific moral *practice* that happened to be a right kind of science.

Given the prevailing lens of diligent and valued labor, these were questions not just about method and system, but about whom to believe and why. They were about trust and reliability. The level of discourse where discussions of book farming took place was filled with platitudes. Don't be a dandy, be homespun; be a stranger to vice, a friend to virtue. Within these terms, and lodging the authority in the hands of the farmer, whether one accepted the value of science was a matter of whether one saw the system or method as virtuously pursued and reported.

Southwick's "moral, political, and economical" goals were of a piece with the value of science, in just the same way that Americans like Washington and Jefferson in the eighteenth-century were promoting a multi-purposed georgic science. What began as an association of science with dandies, in the sense that science was speculative and theoretical, became bifurcated into dandy science and homespun science. The former was still speculative, but not definitive of all science; the latter was fact-based and derived from agricultural experience. The place of the science of agriculture in rural antebellum America was one that was understood through a georgic or homespun prism. It was alive and well, circulating indeed, but not only because of the contributions of "chimical men." The framing of the book farming debate reveals that the salient issue in the rural context was one of credibility, not novelty.

Places Cultural and Geographic

"Agricultural theories,…or *guesses*, for they are little better, are as plenty as black berries."
[anon.], *The Southern Planter*, 1842

"Mr. Justus Liebig is no doubt a very clever gentleman and a most profound chemist, but in our opinion he knows about as much of agriculture as the horse that ploughs the ground, and there is not an old man that stands between stilts of a plough in Virginia, that cannot tell him of facts totally at variance with his finest spun theories."
[anon.], *The Southern Planter*, 1845[45]

Samuel Swartwood, a Maryland farmer, boasted gleefully in 1819 that "I desire, most ardently desire, that my favorite theory should obtain proselytes."[46] Apparently, there were a lot of Swartwoods. With the agricultural press growing in number and diversity, theories of soil fertility were seemingly endless and proposable by anyone. James Garnett, speaking before the Agricultural Society of New Castle County, Delaware, in 1842, summarized that precise issue: "[C]ertain great theories and systems, promulgated from high places, like other humbugs, have their day, until some plain farmer declares, and proves too, that the author has been misled by his ignorance of the facts upon which he has attempted to reason."[47] The anonymous epigraph above of 1845 about Liebig's ill-formed

farming credibility points to the same contrast, in that case characterized as one between fine spun theories and farm-based facts.

The tenor of such remarks was reminiscent of late-eighteenth century, georgic-era rhetoric about locating improvement in the hands of the working farmer. However, the concerns by the mid-1800s fit into a context somewhat different over that of the early century. Those earlier arguments for the place of science on the farm—that science is good—had moved into new claims for the place of properly collected "facts" on the farm—that science is good if it is sanctioned by epistemic authority, a kind of legitimacy granted only to land-based facts, not disengaged speculation. Put another way, the generality of claims for scientific studies of the land had become clarified inside the deeper social issues of trust and credibility. All those issues were approachable through the guise of virtue and, ultimately, the virtue of the fact.

A fact could be enlightened, strong, sound, pure and well-ascertained. "[U]nvarnished facts are very scarce," another *Southern Planter* contributor wrote, "and yet, they are only foundation upon which sound theories can rest." A report from the Hole and Corner Club of Albemarle on "EXPERIMENTS" proclaimed that "Science calls loudly now for well ascertained facts, from which she may deduce the laws of agriculture."[48] Even when reviews of prominent European chemists appeared in the American rural press, they were delivered in a context of practical farming that deferred to field experience. Negative reviews of Liebig, for example—who *since* the mid-nineteenth century has been hailed as the father of modern agriculture for this chemical theorizing about the constituent elements of the soil, nitrogen, phosphorous, and potassium (N, P, and K)—again called attention to deficiencies in Liebig's fact-gathering skills. In this sense, when the average, non-specialized farmer wrote to the rural press, he was saying nothing too different with respect to the rhetoric of facts than the reports coming from scientific journals.[49]

The widespread use of the laboratory metaphor for the field served only to strengthen the importance of place-based facts. Scholars are more accustomed to discussing field-based work and laboratory-based work in a later nineteenth-century context, after the so-called laboratory revolution of chemistry.[50] But those metaphors had already been developed in the decades before the Civil War. "The soil," said the president of the Maryland Agricultural Society, Robert Smith, "is the great laboratory in which the food of plants is prepared." The open field and the farmland were the places for agricultural chemistry development. By the late 1850s, Richard Eppes of Virginia could look upon his land and take the farm-as-laboratory observation farther to claim that "A farm is another name for a chemical laboratory. It is only another way of manufacturing."[51] Liebig too proposed such metaphors of farm and lab, but his contribution was hardly singular.

The book farming debate reveals the nuances of science, improvement, and the land. It shows, basically, that new means for understanding the land—new forms of mediation between human and nature—were being produced with new methods for working on it. It shows too, in the context of improvement advocacy, that science was not clearly or inevitably linked to agricultural practice beforehand. Rather, the terms of that new science of agriculture had to be debated and clarified not just by Davy or Liebig, but within the communities that would grant authority to the new sciences.

Consistent across the decades was the issue of credibility and virtue. Book farming debates in the 1820s sought to distinguish between the unfettered pursuit of improvement and the correct, well-considered means for doing so. The rural press editors had to argue for the value of science, to convince their readers that science had a place on the farm. But the meanings within book farming arguments shifted over the decades, so that a mid-century appeal to book farming—synonymous with the science of agriculture, by that point—was one that argued that the virtuous pursuit of science was akin to a virtuous pursuit of farming. The different form of acceptance of agricultural science by the mid-nineteenth century was not *whether* science had a place on the farm, but *in what way* it had a place. Questions about book farming, then, tie together several issues of the place of scientific authority. Why improve? Because improvement was not only a program of economic and social progress, but also a plan for cultural stability, of utilizing new methods and practices to maintain a stronger society. Why write? Because communication was the staple of improvement, the legible means by which agricultural improvement could take place. Why resist? Not just because of mindless ignorance or feet stuck in tradition, but for valid and rational reasons that hinged on the authority of those who prescribed change and the system of belief within which the acceptance or rejection of new practices were based. What mattered? Given the system of belief and authority, the important factor in debates about book farming was *who* as much as *what*.

The most fulfilling way to look at the issue of book farming is by recognizing the georgic philosophy of praxis embedded within it: how those who labor in the earth know the land versus those who write in closets, speaking from disengaged speculation; the active versus the contemplative. The connection between this praxis-oriented approach to agricultural knowledge (that to work the land is to know it) and a practical philosophy of science (that science should be based on providing practical, and practicable, results) is the common value set of utility, diligence, and labor. It is not enough to say that Americans were practical, or that they promoted a Baconian fact-gathering philosophy of science. Despite the resistance to general theories in agricultural chemistry, what the opponents of book farming were really concerned about was who provided those theories and from where the facts were found. There were theories, and they were everywhere. What mattered was whether or not they were wedded to the belief that "working is knowing." James Campbell, a Pennsylvania Whig speaking with a neo-Jeffersonian voice before Congress in 1856, assumed and extended the argument that science was a tool to be applied to the farm, a set of practices and methods, by conjoining the nobility of agriculturalists with science. Let "science, applied to the culture of the earth, go hand in hand with practical labor," he would say. In the process, he subsumed the earlier material and moral discourse of georgic virtues within his understanding of the role of science in society.[52] His argument, he believed, rested on the virtue of the farmer, the "noblest race." It was this understanding of the value of scientific pursuits that sat at the base of what became modern agriculture.

By the 1850s, the story of scientific agriculture and experiential knowledge had begun to shift towards a new era of greater political scale and viability. This paper is far too long already for me to give shape to that next era. My interest here at the end, rather, is to note that the formation of the USDA in 1862, the establishment of agricultural colleges and state technical schools promulgated by the Morrill Land Grant Act (also 1862), and the growth of agricultural experiment stations that each help define agricultural knowledge

production in the latter half of the century were all made possible by the cultural legitimacy of scientific agriculture produced by rural actors in the half century before.[53]

That Epilogue I Mentioned at the Top

I've used the early years of the book farming debate to explore how the place-based virtues and vices of the rural community set the terms for evaluating science's utility or, put another way, how science gained a place of cultural and epistemic authority in agricultural settings. Although the analysis in this paper comes from within a situated historical setting, my greater ambition for the topic follows from three areas: (1) of experiential knowledge versus speculative, (2) of the relationship between pre-existing cultural values and modes for accepting new knowledge, (3) of how knowledge of the land informs new policies of land management practices. Each of those concerns is as much contemporary as historical. By way of prodding further discussion, let me offer three areas of possible utility in agro-environmental discourse today.

First, I would suggest from the above that, just as Americans first accepted science as a means to interact with their land by the late antebellum period because it was considered virtuous and useful, so policy makers today can seek to implement land-based policies (be it for the sake of agricultural biotechnology, alternative organic practices, or otherwise) by working from a basis of pre-existing value sets of those whose lands are subject to the policies. Such a mode of operation would require policy advice to focus on dominant cultural values before speaking to material practices that are the result of those values. It's possible in this sense that such a case may be far more relevant outside North America than within it. Second, the lessons from antebellum America reveal a diffracted view of science, rather than a singular sense of the term – *whose* science was a more important question than whether or not the policy was science-based. Although the contributors to scientific production today are of an entirely different sort, lay or non-expert audiences are still left to interpret the validity of whose science—the government's, a university's, a non-governmental organization's (NGO), a corporation's, an independent testing firm's—should hold sway over the definition of environmental policies. Third, the terms of debate in the early Republic revolved around the value of experience and the virtue of engagement, just as environmental land policy in a twenty-first century context striving for more participatory democracy must meet the local demands of experiential value and the virtue of citizen engagement.

Although the georgic ethic lacks popular cache in today's world of bio-geneto-chemical agriculture, its value for current debates about new agricultural practices remains. Possibilities for sustainable agriculture would be better produced if defined through a georgic framework that assumes human work on the land and human connection to the soil and seeks to keep the experience of that work locally relevant and meaningful. The burden is to pursue that case more forcefully, illustrating the role a georgic framework can offer in global settings as well as the socio-economically privileged American one, so that the value of local knowledge practices and the virtue of engagement with the land can stand as central elements of agrarian policies. The georgic ethic helps foreground the point that knowledge is constituted in practice. Whose practice, in what forms, from which value

basis, and towards what ends might better be placed as central, not ancillary, questions in the new agrarian policies.

---

[1] This paper is a concatenated version of the first two chapters of *Notes from the Ground: Science, Soil, and Society in the American Countryside* (forthcoming from Yale University Press). As such, and for the sake of the Agrarian Studies Seminar audience, I have attempted to keep footnotes dealing with theoretical issues to a minimum. For the most part, the footnotes below offer only citation information for quoted sources in the text. Full footnote traffic can be found in the forthcoming book.

[2] P. Richards, *Indigenous Agricultural Revolution*; J. Kloppenburg, "Social theory and de/reconstruction of agricultural science," 528; J. Scott, *Seeing Like a State*, 6.

[3] The secondary literature on book farming is vast, although almost unanimously none of those scholarly works address the social dimension of science, instead taking it as given that science was a force on the horizon, inevitably to be accepted and utilized. To begin with, see Albert Demaree, *The American Agricultural Press, 1819-1860* (New York: Columbia University Press, Columbia University Studies in the History of American Agriculture No. 8, 1941/1974) and Demaree, "The Farm Journals, Their Editors, and Their Public, 1830-1860," *Agricultural History* 15(1941): 182-188.

[4] *American Farmer* [hereafter *AF*] (1819) 1: 210 and *AF* (1831) 13: 359-360.

[5] Anti-Philosopher [pseudonymous], "Philosophy," *Southern Planter* (1842) 2: 177

[6] [Anon.] *Northwestern Farmer* 2 (October 1857): 374, as quoted by Mildred Throne, "'Book Farming' in Iowa, 1840-1870," *Iowa Journal of History* 49 (1951): 117.

[7] Sayre, L. (2005), 189 [in *Black Earth and Ivory Tower*, for which the full bibliographic information escapes me at the moment]

[8] Roderick Nash, *Wilderness and the American Mind* (New Haven, CT: Yale University Press, [1967] 1982); Leo Marx, *The Machine in the Garden: Technology and the Pastoral Idea in America* (Oxford: Oxford University Press, [1964] 2000); Lawrence Buell, *Environmental Imagination: Thoreau, Nature Writing, and the Formation of American Culture* (Cambridge, MA: Harvard University Press, 1995), and Donald Worster, *Nature's Economy: A History of Ecological Ideas* (Cambridge: Cambridge University Press, [1977] 1994)

[9] Snell (1953), p. 282, as quoted by C. Martindale (1997), "Green politics: *The Eclogues*," in *Cambridge Companion to Virgil*, 110.

[10] See Timothy Sweet, *American Georgics: Economy and Environment in Early American Literature* (Philadelphia: University of Pennsylvania Press, 2002)

[11] L. Sayre, "Farming by the Book: British Georgic in Prose and Practice, 1697-1820," (Ph.D. Dissertation, Princeton University, 2002), p. 8 (of chapter 1).

[12] Lembke translation, 2005: p. 22/ Book II/ Line 34. See Lines 226-258 for hands-on "guidelines on how to recognize each type" of soil.

[13] Within the academic culture at Edinburgh, medical and chemical studies that made possible studies of agriculture and chemistry were deployed by prominent philosophers, chemists, and patrons such as James Hutton, William Cullen, Henry Home (Lord Kames), and the Reverend Dr. John Walker. They all took part in sustained studies of agriculture, further forcing the integration of chemical pursuits with Enlightenment ideals. See as well Alexander Hunter, *Georgical Essays*, 8 volumes (London, 1770-1774); Archibald Cochrane, *A Treatise Shewing the Intimate Connection that Subsists between Agriculture and Chemistry* (London, 1795) and Samuel Parkes, "Extract from *Parke's Chemical Essays*," *The New England Farmer* 1 (May 29, 1824): 349. Other work on "the application of chemistry to agriculture" and "the chemical history of vegetables" spoke to the promise of unlocking the potential of agricultural improvement to aid the concurrent goal of cultural progress. See, for example, the chemically informed work of Francis Home, *The Principles*

of Agriculture and Vegetation (Edinburgh, 1757); Lord Kames (Henry Home), *The Gentleman Farmer, being an Attempt to Improve Agriculture by Subjecting it to the Test of Rational Principles* (Edinburgh, 1776); and A. Fothergill, "On the application of chemistry to agriculture," *Letters and Papers of the Bath Society* 3 (1791): 54-62. William Cullen, one of the foremost chemists of the Scottish Enlightenment, prepared an unpublished manuscript called "Lectures on the chemical history of vegetables" as early as 1755.

[14] Samuel Deane, *The New England Farmer; or Georgical Dictionary*, 3rd edition (Boston: Wells and Lilly, 1822; reprinted by New York: Arno Press, 1972), 265; Hunter, *Georgical Essays*. See also the Reverend Dr. John Walker's "Georgical Lectures" of 1790 in Withers, "A Neglected Scottish Agriculturist," and Withers, "Improvement and Enlightenment."

[15] Thomas Ewell, *Plain Discourses on the Laws or Properties of Matter* (New York: Printed by Brisban and Brannan, 1806), 22

[16] Daniel Adams, *The Agricultural Reader, Designed for the Use of Schools* (Boston: Richardson and Lord, 1824); quote from Deane, *Georgical Dictionary*, 213. In colonial America, a new husbandry was already being developed with increased attention to mechanical implements. See Jared Eliot, *Essays Upon Field Husbandry in New England, and Other Papers, 1748-1762*, ed. Harry Carman and Rexford Tugwell (New York: Columbia University Press, [1762] 1934); in England, prior to Eliot, see Jethro Tull, *The Horse-hoeing Husbandry; or, An Essay on the Principles of Tillage and Vegetation* (London, 1733).

[17] Sayre, "Farming by the Book," 8.

[18] "Notices for a Young Farmer," in *Memoirs of the PSPA* 4: xlii-xliii

[19] As quoted by Thomas Griffin, "Paper Laid Before the Agricultural Society of Virginia," reprinted in *AF* (1819) 1: 18.

[20] Adams, *The Agricultural Reader*, 33.

[21] Statistics are from Demaree, *The American Agricultural Press*, 36 and Danhof, *Change in Agriculture*, 56.

[22] Ramsdell, "My Motto is—Wheat Will Turn to Chess," *Genesee Farmer* 2 (October 13, 1832): 326

[23] Anonymous, "Letter to the Editor," *The Farmer's Register* [hereafter *FR*] 5 (March 1837): 659.

[24] *AF* 1 (1819): 209-210

[25] Fessenden, "The Science of Agriculture and Book Farming," 15.

[26] Ibid., 15-16.

[27] *PB* (1819) 1: 75

[28] *PB* (1819) 1: 19; Madison's address on 23; meeting minutes on 37; utility on 75; idleness on 12.

[29] *PB* (1819) 1: 23.

[30] *PB* (1819) 1: 2.

[31] Okay, a compromise for those readers interested in academic footnotes. An earlier version of this paper had a long commentary on historiography here. I'll leave some of that as follows, should you be interested:

Scholars writing about book farming have struggled to separate the uses of agricultural science from dominant narratives of progress, improvement, and rationality, falling prey to the same rhetorical constructs the calculating editors used. Their interpretation of book farming contrasts modernity with tradition and ignorance with innovation—those opposing book farming were ignorant and backward looking; those in favor were modernist and "scientific." Such a view, however, uses the later credibility of science as its own explanation while concealing a far deeper debate about how and why tools like agricultural chemistry became part of American agriculture. More broadly, for those seeking to wed the science of agriculture to the nineteenth-century goal of improvement book farming stood as a precise example of the difficulties incumbent upon the contrasts of tradition and progress, rational and folk wisdom, almanac-based and scientific text-based information, locality and distance, and amateur and professional. Those pro-book farmers, of

course, claimed that the future lay with quantified and systematic means for scientifically improved ends, that the ubiquitous call to improve could be achieved with science. Unfortunately, the historiographical focus on rural science has generally treated the science-improvement bond uncritically, assuming that it was inevitable and unproblematically achieved. But in the fields of the early American Republic, it was not clear that the science of agriculture and agricultural improvement were synonymous.

This scientific hagiography follows from the historiographical tradition set out by Avery Craven, *Soil Exhaustion as a Factor in the Agricultural History of Virginia and Maryland, 1606-1860* (Urbana, IL: University of Illinois Press, 1926), Lewis Gray, *History of Agriculture in the Southern United States to 1860*, Albert Demaree, *The American Agricultural Press, 1819-1860*, and Paul Gates, *The Farmer's Age*. Craven, for example, says that "such men as Washington, Jefferson, Madison, John Taylor, J.M. Garnett, etc., formed what might be called a school of gentleman farmers who had run counter to the general backward drift" (128). Recent scholars too, such as Cashin (1994), have continued to rely on these assumptions. Clarence Danhof (1969) provides a notable exception to this pattern by showing the rationality of resisting change, though his work still assumes a value-neutral model of science as progressive. McMurry (1989) also usefully questions the assumptions of prior analyses of book farming. She points out that "as sources of authority, the 'book' and 'tradition' have often been treated as polar opposites, by the farm journals themselves and by historians….But in the nineteenth century, when the modern research system was not yet established, the evidence indicates that there was not such a tidy contrast" (15). Briefly stated, the basic difficulty with prior assessments of book farming has been the use of a reified science as a resource used to explain other issues of acceptance and resistance. As an additional problem, whether or not book farming was synonymous with agricultural science was not clear in the primary literature of the early nineteenth-century nor has it been clear in the historical work that describes that literature. Rossiter, *The Emergence of Agricultural Science* equated book farming with "the science of agriculture" (7); McMurry suggests that historical scholarship about book farming makes this equation neat, though she does not commit herself to such a synonymic definition; and some rural press editors, such as Thomas Fessenden, in his "Book Farming and the Science of Agriculture" (1822), do not assume the two are the same.

[32] See the correspondences and diaries in the Wickham Family Papers, Mss1 W6326 c FA2, specifically Series 4, Boxes 5 and 6, at the Virginia Historical Society, Richmond, VA. Also, see the Virginia Heritage Database, http://www.lib.virginia.edu/vhp/ (accessed 22 January 2004), for archival details about the Wickham collection. Joan Cashin, "Landscape and Memory in Antebellum Virginia," *The Virginia Magazine of History and Biography* 102 (1994): 477-500, especially pp. 493-496 and Gregg Michel, "From Slavery to Freedom: Hickory Hill, 1850-80," in *The Edge of the South: Life in Nineteenth-Century Virginia*, ed. Edward Ayers and John C. Willis (Charlottesville: University Press of Virginia, 1991) also discuss William Fanning Wickham. On Wickham's anonymous contributions, see Edmund Ruffin, "Writers of Anonymous Articles in *The Farmer's Register*," *Journal of Southern History* 23 (1957): 9-102, which references the contributions by Wickham.

[33] See Wickham Papers, Mss1 W6326 c FA2, Series 3, Box 1 at the Virginia Historical Society, Richmond, VA.

[34] See Diary entries for 27 April 1828, 25 December 1828, 3 March 1829, 24 January 1830, and 25 March 1830 for early comments on quantities of marl in Wickham Papers, Mss1 W6326 c FA2, Series 4, Box 5, Diary Volumes I; also see correspondences in Box 6, all at the Virginia Historical Society, Richmond, VA.

[35] 18 April 1830; 17 June 1830; August 1832 (passim) in Wickham Papers, Box 5, Volumes 1 and II

[36] *The Southern Planter* (hereafter *SP*) 1 (1841): 189, 190-191, 228-229, and 243.

[37] See Wickham Papers, especially Volumes I-III of his Diary, in Box 5, Series 4, Mss1 W6326 c FA2, at the Virginia Historical Society, Richmond, VA.
[38] Bushman, *In Old Virginia*, passim.
[39] Bushman, *In Old Virginia,* 52-55.
[40] Ibid., 52
[41] Ibid., 48
[42] I elaborate this point in Chapter 2 of *Notes from the Ground*, but this seemed as good a place as any to abbreviate the present paper.
[43] Fessenden, "The Science of Agriculture and Book Farming," 15.
[44] Southwick thought "sound and extensive science [is] acquired only by…laborious study and research." *PB* (1819) 1: 19. Skinner asked his readers to "lay aside prejudice and listen to the suggestions of those experienced *in the thing*, and *then judge*," as a general policy on interpreting results. Elsewhere he emphasized the direct connection between systematic attention and improvement. *AF* 1: 62; Skinner also said that "the *systems* pursued, if described in detail, could not fail to promote …improvement." AF 1: 68.
[45] *SP* (1842) 2:186; *SP* (1845) 5: 23; and Campbell in *Congressional Globe*, 34th Cong., 1st sess., 17 April 1856, 958, 959 (as quoted in Sarah Philips, "Antebellum Agricultural Reform, Republican Ideology, and Sectional Tension," *Agricultural History* 74 [2000]: 799-822, on 817-818)
[46] *AF* (1819) 1: 278
[47] As reprinted in *SP* (1842) 2: 257
[48] In another editorial, while applauding a speech of James Garnett's, Charles Botts defined the common tenets of natural philosophy and chemical science, saying that "Philosophy is the generalization of well ascertained facts, and without the facts, there can of course be no philosophy." *SP* 1: 126. Another farmer writing from Virginia believed only in "well established principles deduced from facts." *SP* 4: 77
[49] As reprinted in *The Southern Planter*, French Professor Mohl wrote that Liebig had "not formed his conclusions on the detailed facts of vegetable phenomena, but on random observations, or vague operations on a large scale." *SP* 2: 257, 4:81, and 4: 27. See also Rossiter, *The Emergence of Agricultural Science*; William Brock, *Justus von Liebig: The Chemical Gatekeeper* (Cambridge: Cambridge University Press, 1997); and Vance Hall, *A History of the Yorkshire Agricultural Society 1837-1987: In Celebration of the 150th Anniversary of the Society* (London: Chrysalis Books, 1987).
[50] For more on the development of laboratory chemistry, see William Brock, *Justus von Liebig*; Frank James, ed., *The Development of the Laboratory* (London: Basingstoke, 1989); Frederic L. Holmes and Trevor H. Levere, eds., *Instruments and Experimentation in the History of Chemistry* (Cambridge, MA: MIT Press, 2000); and William Brock, *Norton History of Chemistry* (New York: Norton, 1993), 194-207 and 427-435.
[51] Eppes quoted in Kirby, *Poquosin*, 37. In *The Southern Planter* of the 1840s, Charles Botts argued against book farming because the use of "laboratory" had lost its attachment to nature – "The philosopher must exchange his laboratory for the open field," in *SP* (1842) 2: 186. A local leader, Dr. Ezekiel Holmes, told the Lewiston Cattle Show and Fair that "The earth is the great laboratory and the farmer is the chemist" (as quoted in Merchant 1989, 210).
[52] See the *DAB*, vol. 3, 455
[53] If framed for an audience of historians of science, I would say this too: While Liebig has since been hailed for his seminal theories in agricultural chemistry, putting the early years of scientific agriculture into a georgic context helps show that his theories were enabled and given credibility by a vibrant and pre-existing circulation of debate about the character of new agro-environmental techniques and the value of pursuing such new practices.