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REDISCOVERY OF A NATIVE AMERICAN CULTURAL LANDSCAPE: THE CHICKASAW HOMELAND AT REMOVAL

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REDISCOVERY OF A NATIVE AMERICAN CULTURAL LANDSCAPE: THE CHICKASAW HOMELAND AT REMOVAL

DISSERTATION

A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy in the College of Arts and Sciences at the University of Kentucky

By

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ABSTRACT OF DISSERTATION

REDISCOVERY OF A NATIVE AMERICAN CULTURAL LANDSCAPE:
THE CHICKASAW HOMELAND AT REMOVAL

Little information beyond generalities exists regarding the cultural landscape of the Chickasaw Indians in their ancestral homelands prior to Removal in the late 1830s. This dissertation evaluates one possible archival source for specifics of Chickasaw land use, the field notes and survey plats compiled as part of the Public Land Survey System (PLSS). The process of original survey following land cession treaty divided the ceded area up into the familiar square-mile rectangular system of townships and ranges that extends from the Mississippi Territory westwards, in the so-called public land states.

The research compiles all cultural observations made by the surveyors within a fourteen township area (totaling 504 square miles). This study area, generally located on the west bank of Town Creek between present-day Tupelo and Pontotoc MS, was chosen to cover the traditional center of Chickasaw settlement and elements of important roads such as the Natchez Trace. The resulting catalog of observations was compared to similar features on the township plats and to other cultural resource inventories to identify patterns of inscription and possible erasure of Native American cultural activities. Geographic Information Systems (GIS) technology was used to consolidate and compare these data resources.

The PLSS survey documents provide a useful but not complete resource for identifying Chickasaw cultural presence within the study area. No consistent pattern of omission or erasure of Chickasaw activities was identified. The analysis identifies several opportunities and caveats for future researchers who might extend this analysis, including technical challenges in applying GIS technology to this data.

KEYWORDS: Chickasaw, GIS, historical geography, cultural landscape, Removal

REDISCOVERY OF A NATIVE AMERICAN CULTURAL LANDSCAPE: THE CHICKASAW HOMELAND AT REMOVAL

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To my loving wife Gloria and daughter Connie, who have put up with me working on this project for far too long

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CHAPTER 1 -- INTRODUCTION

The story has often been told – in both popular and academic discourse – of the progressive conquest of the American frontier by intrepid Euro-American pioneers, starting with the coastal settlements of the early colonies and progressing with the growing reach of the nascent United States across the first great physiographic barriers of the Appalachian Mountains and westwards towards the great, rolling grasslands of the Great Plains and beyond. Whether taken more or less literally (e.g. Turner 1893) or challenged as "American historical mythology" (Slotkin 1998: 17), this story summarizes one key aspect of the country's history.

Mythic in interpretation or not, this vast, multithreaded movement westward (Meinig 1986, 1993) has left many marks upon the landscape of eastern North America. Both in official histories and in local histories and folklore the early settlement days are richly described, and sites of settlement activity marked by historic signs and plaques, and the occasional relict cabin or mill foundations -- or Baudrillardesque "historic theme park".

Yet this area of settlement was not empty and waiting. (Nor were the eastern shores of the continent, but that is another story – the implications of which were largely ignored or forgotten as the post-Revolution westward movement of Anglo-Americans increased.) North to south along the lands between the Appalachians and the Mississippi River, Native American tribes had

hunted, fished, and farmed the land for hundreds of years before the first European was encountered.

It is surprising, then, that almost none of this Native American cultural landscape has been documented or preserved in the eastern US, even in the superficial mode of historic plaques. (For the interesting but isolated counter-example of the Cherokee homelands, see Rozema 1995 and Duncan and Riggs 2003.) Most of what we modern Americans know about these peoples has been salvaged through the efforts of archaeologists -- and until recently not typically even historical archaeologists (Jennings 1941, Cegielski 2010), at that.

The usual explanations for this one-sidedness are variations on the assertion that the "Indians" didn't really possess a significant material culture. In part, this assertion echoes rationales for dispossession -- they weren't really justified in their possession because they were not "improving" the land. In part, too, this reflects a distorted ethnographic understanding that is part of our dominant culture – we think they only lived in crude huts of bark or hide, of which nothing has been preserved.

Among the five "civilized tribes" of the Southeastern United States – so called because of their advanced adoption of Euro-American material culture and practices -- none of the usual explanations seem to fit. These groups, especially the Chickasaw and Choctaw, by the time of their removal west of the Mississippi River practiced forms of agriculture, home building, and community organization that differed little from those of their Euro-American neighbors (Atkinson 2004).

Yet today a White family cabin has been preserved since original settlement in the 1840s, but a Red family cabin that was located on the same stream at the time of land cession in the 1830s has not.

Scope Of Project

This dissertation project explores one possible approach to rectifying the omission of Native American occupancy in knowledge of Native American cultural landscapes within the expanding “American Frontier”. This project evaluates the records compiled by land surveyors implementing the Public Land Survey System in newly acquired Chickasaw Indian lands as a potential resource for recovering a representation of the cultural landscape of these Native American people. The assessment involves technical considerations related to the feasibility of representing the survey data within a GIS archive, and historiographical and other considerations related to determining whether the resulting resource is suitable for the intended purpose.

The transition from Chickasaw to American occupancy has been glossed as possession of hitherto unused land; this study has the potential to contest that assessment, which will help problematize a number of tropes of the dominant American myth of national expansion.

The possibility of finding new details of Chickasaw material culture and the extent and density of settlement pattern, though not a primary outcome of the research project, has potential to remove some of the silences in the archive of

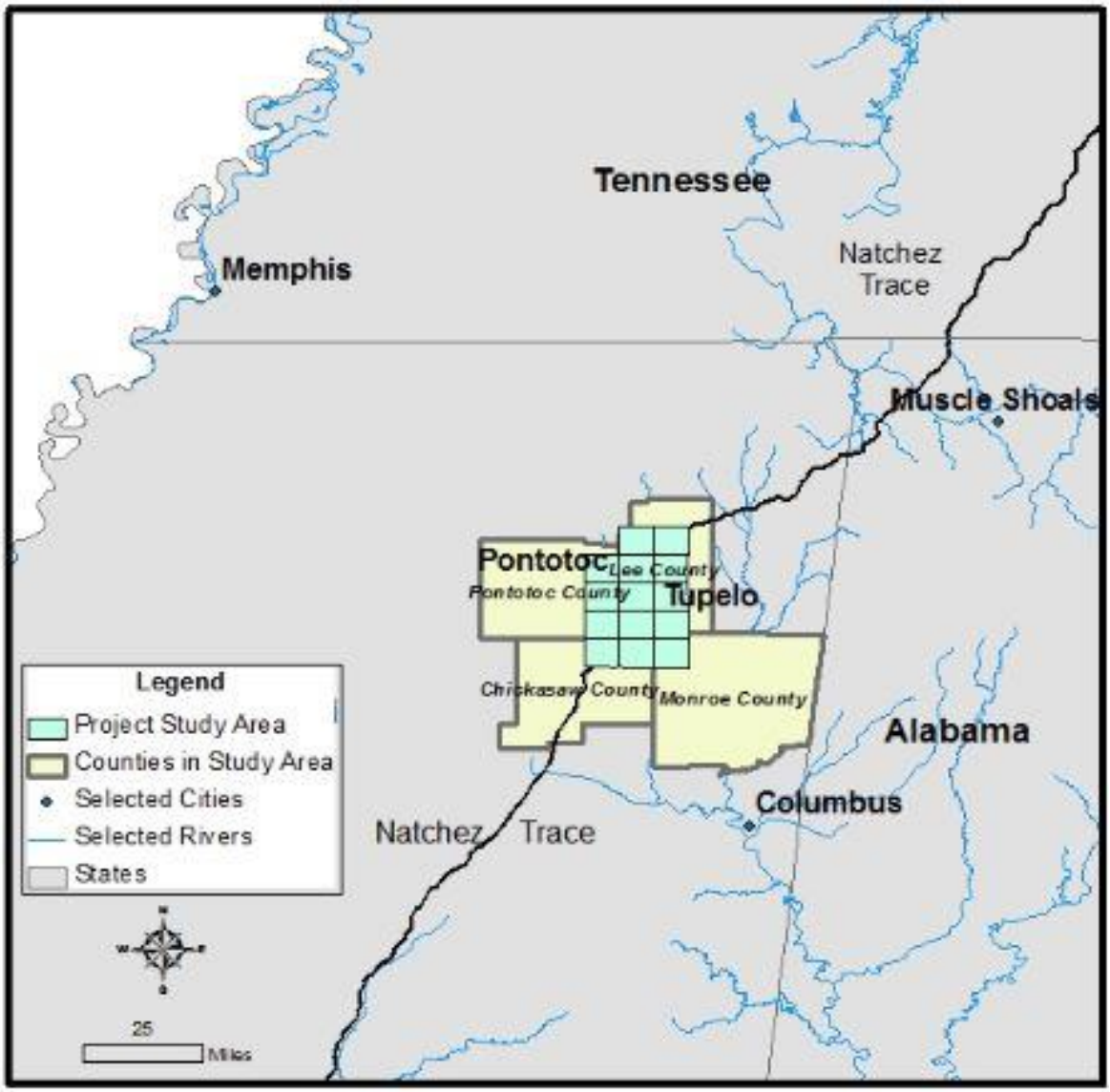
“Indian relations” of this period. This also opens up both guidance for cultural resource managers to plan archeological and related research, and provides an exemplar for extending the research to the rest of Chickasaw holdings – or to any group whose lands fell within the Public Land Survey System.

The ultimate purpose of this exploration is to improve our understanding of a critical, foundational episode in the history of the United States. James Axtell (1988: 19-21) gives three reasons for “judging the past”. First, we judge the past to appraise and evaluate actions. Second, we judge the past “to do justice to it”, by modifying “contemporary or historical judgment upon past malefactors” or by rehabilitating “the representations of those who have been unjustly punished.” Finally, we judge “to advance our own moral education, to learn” from the past.

The Chickasaw Indian heartlands in northeastern Mississippi provide a test case for addressing these gaps in knowledge. Prior to removal in 1837, the Chickasaw resided in a relatively compact area just south and west of present-day Tupelo, Mississippi, (Figure 1.1, below) within which a number of farms, missions, and other facilities were documented by contemporaries.

This area was within the bounds of the Public Land Survey System, which structured the survey and sale of the newly ceded Chickasaw lands between 1836 and 1854 (Gibson 1971: 179). This process left a detailed and meticulous set of field notes that should in principle (Fitz 1832) document the Native American cultural landscape. This material has not to date been used extensively for cultural landscape purposes, here or elsewhere.

Figure 1-1: Project Study Area



Research Questions

My contribution to historical geography through this research involves (a) a new approach to looking at a moment in the frontier experience from “beyond the ridge” as compared to the usual expansionist Euro-American perspective, (b)

during a moment of discontinuous, abrupt change, in (c) a particular location and cultural setting, while (d) bringing new methods and archival resources to bear.

This research project evaluates the work of land surveyors implementing the Public Land Survey System on newly acquired Chickasaw lands as a potential resource for recovering a representation of the cultural landscape of these Native American groups along a porous frontier between Euro-American and Native American settlements. It also utilizes historiographical criteria for evidence to assess the PLSS original survey notes and a derived archive utilizing GIS technology.

The study explores the following research questions:

1) How well do the PLSS survey documents covering the Chickasaw heartlands in Northeast Mississippi fit the theoretical demands for conducting geographic and historic research on a complex sociotechnical body of practice?
2) How well do the PLSS survey documents covering the historic Chickasaw homeland support recreation of the cultural landscape of the Native American communities?

In addition to these core problems, the study explores explanations regarding the findings. It is possible that the PLSS data presents a theoretically flawed but pragmatically useful resource. Conversely, the data could be eminently satisfactory from a theoretical perspective, yet not contain sufficient detail for the pragmatic purpose of cultural landscape reconstruction. The supplemental concerns include:

- The suitability of the field notes and survey plats produced by the survey process for use in creation of a research archive for historical geography research on the cultural landscape.

- The completeness and coherence of the reconstructed landscape, in terms of internal consistency as a settlement system and in comparison to indicators of cultural activity such as cultural resource inventories and contemporary accounts.
- The processes of inscription and suppression embodied within the survey notes and plats as documents produced within a discursive formation supporting the “land office business”.
- The extent to which we can gain insight into Removal era settlement patterns and landscape practices of the Chickasaw Indians and their Euro-American neighbors, through utilization of this new data resource and approach.

The study utilizes geographic information systems (GIS) and related database management technologies to gather, organize, and analyze the contents of the survey data. This technology was also used to collect and compare other data resources such as contemporary maps, archeological and cultural resource management research, and Eurocentric early histories.

The Chickasaw Nation and its staff have been especially helpful in providing copies of cultural resource data, including the Geospatial Information and the Historic Preservation divisions of tribal government. Important data sets included GIS feature class files of archeological sites identified as containing evidence of Chickasaw occupancy, scanned and georeferenced copies of PLSS township plats, and lists of Chickasaw land patent holders.

The completed research provides an expanded understanding of Chickasaw and more generally Native American cultural landscapes of the Removal period. It also identifies methodological issues in working with the survey data within a GIS archive, and of interpreting the resulting body of data.

Further, it provides insight into the completeness, accuracy, and internal consistency of the survey documentation that helps correct widely held misunderstandings about the documentation process.

Overview Of Research Design

The understanding of Chickasaw cultural landscape derived from the survey data using the GIS archive was analyzed in three steps.

The first step was to evaluate the understanding of the landscape for internal consistency. This involved looking for connectivity among linear features such as trails, and continuity of features across survey-imposed boundaries. The expectation was that major trails do not have gaps in them, nor do they suddenly shift to one side or another without apparent reason. One would also assume that fields and other activities do not stop at arbitrarily imposed boundaries.

The second step was to check the completeness and accuracy of the mapping through cross-referencing the derived picture of the landscape against other representations, such as the archeological site inventories. If it is known that a concentration of Chickasaws was living in a particular location, but no indication is found in the survey data, one must question the completeness of the data. The methods of critical cartography help raise such doubts and subsequently to categorize the findings.

The third step was to search for patterns in the presences and the absences in the survey material. If one could identify such patterns, the methods

of critical discourse analysis may help interpret these patterns within the framework of discourse within the community from which the surveyors were drawn. In the event, while the insights of critical discourse analysis sensitized me to possible differential reference to Native American versus other ethnic groups by the PLSS surveyors, no evidence of such patterns was found.

Plan Of Approach

The scale of Chickasaw settlement precludes a complete review of possible elements of cultural landscape. One must constantly remember that "absence of evidence is not evidence of absence." The lack of recorded Chickasaw land use activity within a surveyed township may simply and correctly indicate that Chickasaw utilization of that portion of their territory was relatively minimal. To avoid this problem within the limited scope of this project, the selection of the study area must be guided by an appreciation of Chickasaw settlement patterns, especially during the decades leading up to their final land cessions.

Locations of Known Chickasaw Concentration

The Chickasaw Indians ceded their remaining homelands in Northeast Mississippi with the Treaty of Pontotoc in 1832 (Royce 1889, Kappler 1979) and were removed to the Indian Territory beginning in 1837 (Gibson 1971, Paige et.al. 2010). This dispossession left a voluminous set of contemporary descriptive information about the land being transferred and how the Chickasaw

utilized it, possibly including resource utilization and spatial distribution at the moment of dispossession. An attempt to recover this cultural landscape -- as opposed to what Sauer (1925) termed a “natural landscape”, a human-neutral landscape -- from the survey field notes and plat drawings produced by the U.S. General Land Office involves both important “historic” research and a strongly localized spatial element.

The Chickasaw people had long been resident in the ridges and valleys of the upper Black Belt physiographic region of northeast Mississippi (Atkinson 2004). The tentative identification of this people with the Chicaha province encountered by de Soto in 1534 may mark the Chickasaw emergence into Euro-American historical record. There has been a highly tentative identification of the village of Chicaha with the Lyons Bluff archaeological site, 22OK500, on Line Creek in Oktibbeha County MS (Peacock and Hogue 2005; Bierley 2007), which lies at the southern border of the Chickasaw territory at Removal. After de Soto, the Chickasaw disappeared from history until around 1700 when French and English colonial forces began intruding into the region. Despite some dispute as to relative timing of specific sites, a consensus has emerged (Morgan 1996; Johnson 2000; Atkinson 2004; Cegielski 2010) that the Chickasaw slowly moved from a southerly location around Line Creek northwards up the Black Prairie physiographic region towards present-day Tupelo. Their re-emergence in the Euro-American historical record around 1700 suggests that the Chickasaw lived

in a relatively compact settlement area generally between Tupelo and Pontotoc, Mississippi.

Until the 1790s a relatively compact town site plan was generally utilized for mutual defense. Around 1794 occurred a significant change in Chickasaw settlement patterns. "'Setting out' [involved] establishing discrete family farmsteads outside the old towns.... Initially stock raising seems to have been the primary reason for 'setting out'" (Atkinson 2004: 183).

By Removal in the 1840s, the Chickasaw exhibited four settlement structures that might be expected to be reflected in contemporary sources or present-day cultural resource management inventories. Several relatively compact village locations were still inhabited at Removal. The "old towns" or "old fields" represented recently abandoned locations of relatively dense, continuous occupation for decades if not centuries. The farmsteads created through "setting out" were somewhat comparable to the farmsteads and agricultural exploitation sites of contemporary Euro-Americans. In addition, the Chickasaw possessed recently-constructed specialist sites associated with the "middle ground" (White 1991) of frontier cultural interactions such as missions, the Chickasaw Council House, and stands and other economic activity along the Natchez Trace.

The general history of the removal of the "Five Civilized Tribes" has been widely told (Foreman 1932, 1934; DeRosier 1972). Although not as thoroughly documented as other tribes such as the Cherokee, the Chickasaw portion of this tale has been presented by Gibson (1971) and others. James R. Atkinson adds

to our understanding of these processes with a political history (2004) that details the machinations of various factions involved in the decision by the Chickasaw to acquiesce to relinquishing their rights in Mississippi and migrate west. A recent study (Paige et.al. 2010) sheds new light on the mechanics of the actual removal process, as well as expanding on Atkinson's discussion of events leading up to the final treaty cession.

The Chickasaw lands were among the last in the "old Southwest" to come onto the market (Young 1961). The Choctaw had just relinquished their last land holdings, and so the Chickasaw lands did not generate quite the excitement as had earlier sales in the region. Yet there was sufficient excitement (Silver 1944) to boost the growth of the newly formed American town of Pontotoc, site of the Land Office, and to lend urgency to the survey activity.

Selection of Study Area

The volume of data within the field notes and survey plats for even one township can be challenging for the researcher. The approach initially taken for this study was to compile every field note entry for eventual loading into a geospatial database, though over the course of working with the resulting data this was not followed for the entire project study area. (See an extended discussion in Appendix A.) This approach meant the level of effort for compilation is far greater than a more specialized study utilizing only e.g. witness trees. This level of effort constrained the spatial extent of the project. An additional constraint was that the field notes are generally only available in hard

copy, to which access is restricted, forcing the researcher to pay for digital copies to be made prior to any analysis.

It is important for assessing internal consistency of recorded data that the study area consist of contiguous townships. The consistency of trail recordation, for example, is best assessed across multiple sets of township data, since townships might be surveyed at different times by different survey parties.

At the same time, it is important to identify an area known to have been intensively utilized by the Chickasaw at the time of removal. This is challenging, due to the "setting out" dispersion of settlement in the forty years before final land cession. Chickasaw historic archeology has seen an upsurge in recent years (summarized in Johnson 2000, Atkinson 2004, Cegielski 2010). This prior work has greatly added to the inventory of sites identified as containing Chickasaw occupation materials, but Cegielski (2010: 48) found it difficult to isolate late period occupation using the archeological record. Many aspects of Chickasaw material culture had become heavily Americanized and indistinguishable in the archeological record from white occupation. Only grave goods still show identifiable distinguishing characteristics, including large numbers of glass beads and occasional status items such as Presidential peace medals presented to Chickasaw notables (Atkinson 2000).

James Atkinson (2004) provided a detailed review of historic and archaeological work that gave some guidance for study area selection. His discussion of late period settlement suggested the area along the Natchez Trace

from the Old Fields site in present-day Tupelo south towards the Chickasaw Agency had a high probability of holding recognizable Chickasaw land use elements at the time of survey. (The actual location of the Chickasaw Agency has been debated. Atkinson (1985b, 2004: 184) summarizes the alternative archeological sites and gives a general location “about one mile southeast of present-day Houlka”, which would put it roughly within T11S R3E.)

The study area selected on the basis of these considerations consists of fourteen townships of the Chickasaw Survey totaling 504 square miles, (see Figure 1-1, above) including:

	T08S R05E	T08S R06E
T09S R04E	T09S R05E	T09S R06E
T10S R04E	T10S R05E	T10S R06E
T11S R04E	T11S R05E	T11S R06E
T12S R04E	T12S R05E	T12S R06E

The northwest corner of this otherwise rectangular study area was omitted because it was farthest from the two centers of known Chickasaw residence at the traditional villages or around the Chickasaw Mission. It was therefore considered less likely to have contained any density of Chickasaw occupation that would have been available for recordation by the surveyors.

Utilization of PLSS Survey Data

This survey material clearly has the potential to tell a great deal about the natural and cultural elements of the landscape being surveyed. (The concern at the start of research, of course, was to what extent this potential was realized for this particular purpose.) Practicing surveyors working in parts of the country for

which it was available have depended on the material in the PLSS source documents as part of their craft since the land was initially surveyed. (This technical activity is largely ignored as not relevant to this research project.) Researchers have utilized the PLSS source data in various ways, beginning with research on historic land cover in the 1950s.

Wang (2005) provides a useful summary of research utilizing what he generalizes as “Presettlement Land Survey Records”, with a critique based on Geographic Information Science that proved helpful in designing portions of this research. His broader North American perspective is helpful in reminding the researcher that the PLSS data is only one type of potentially available survey data. Wang (2005: 569) classifies this data into three types: (1) irregular metes and bounds surveys, (2) regular private land surveys, and (3) regular public land surveys such as the PLSS. (It is interesting to note that his extensive literature review fails to mention any attempts to identify cultural content beyond some reference to “anthropogenic disturbances” of vegetative land cover. It is also worth noting Wang’s dismissive attitude toward Native American settlement, exemplified in the term “presettlement”.)

Pattison (1956: 13) notes that:

> “An idea of the potentialities of the survey records can be gained from an enumeration of some of the kinds of information already derived from them, as follows: (1) Archeological sites: the government surveyors occasionally encountered and noted such features as prehistoric mounds which have been reduced or obscured by occupance.... (2) Indian trails: the surveyors were inconsistent in noting the intersections of their lines with trails, yet several researchers have used the records to good effect for

> reconstruction purposes.... (3) Pioneer trails.... (4) Features of prior settlement: these were recorded not only where squatters had illegally settled in advance of the surveys, but where surveys closed in on sites of long-established French, Spanish, and Mexican settlement.... (5) The surveyors regularly noted their crossings of streams, and they "meandered" the edges of navigable waters.... (6) Vegetation: by far the greatest attention has been given this subject by researchers, largely in the form of attempts at forest reconstruction. "

Schulte and Mladenoff (2001: 8-9) note several cautions in using the PLSS data, based primarily upon experience in vegetative reconstruction. "The purpose and scale of investigation should be considered first; quantitative hypothesis testing requires a different set of techniques than general, descriptive work." They recommend normalizing the raw data through various classification techniques, to damp out any biases in e.g. witness tree selection. For reconstruction studies, they recommend working at broader spatial scales, especially if one can incorporate work of more than one surveyor. They also recommend calibration of results through cross-reference to other sources whenever possible.

In summary, the density of data collection and the relatively precise tie of the locations to a consistent locational framework provides great potential for using this survey data in geospatial research, provided due caution is taken in working with the archive records. Ultimately, however, it is not the locational accuracy or the (perhaps spurious) legitimacy of the "surveyed" data that makes this underutilized resource so valuable – instead, it is the consistent cross-section of area details across large tracts of land, recorded in the midst of a

dramatic shift from predominantly Native American to predominantly Euro-American occupancy.

Efforts to utilize the PLSS survey source data for research purposes can be grouped into three broad categories. The conceptually simplest approach has examined available information describing the vegetation covering the land being surveyed. A more ecologically aware approach has examined patterns of physical landscape, from terrain through ecosystem. A small but growing body of work has emphasized aspects of human impacts on the land being surveyed, from straightforward searches for mention of known sites to a thus far limited number of examinations of what this project refers to as cultural landscapes.

Examination of Vegetation and Land Cover

The earliest systematic examination of PLSS source data was for recovery of historic vegetation information, usually referred to in the literature as "presettlement" vegetation (which usage highlights the persistence and ubiquity of the idea that Native Americans hadn't really settled their lands). H. J. Lutz (1930) apparently originated this approach by using land surveys for timber tracts, though his study area in Pennsylvania was not covered by PLSS surveys. Beginning with Bourdo's pioneering efforts using PLSS data (1956, see also Pattison 1956), the research emphasis has been on reconstructing land cover at a site (Peacock and Patrick 1997), county (Rankin and Davis 1971, Anderson and Anderson 1975), or occasionally a state level (Comer and Albert 1995, Miller 1996, Anderson 1997). These studies extract the descriptions and locations of

witness trees for corners and similar vegetation notes, and use spatial statistics such as nearest-neighbor to interpolate vegetative land cover between the points recorded by the surveyors.

The extensive reliance on recordation of witness trees -- also called "bearing trees" in some sources -- creates some challenges in interpretation. (Gideon Fitz, drafting instructions for surveyors within this study area in 1832, uses the term "reference trees", though the field notes within the study area use the more common term "bearing trees" for all trees recorded.) "At these survey corners, two to four nearby trees were blazed as witness trees. Witness trees to which the bearing and distance from the post were noted were known as bearing trees. Surveyors also recorded trees that fell along the survey lines as line trees" (Wang 2005: 574). ("Line trees", noted in records from slightly later than the Mississippi surveys, are not found in the sources used for this project.)

Bragg (2003) provides a succinct summary of possible "challenges with [witness tree] interpretation related to surveyor bias, scale incompatibility, and species clarity." Bragg was especially critical of the uncertainties related to surveyor species delineations, including the timing of most survey work (November to March, during the dormant season), and the surveyors' lack of formal taxonomic vocabulary. Another concern is that the common names of species used by surveyors may have become ambiguous or have shifted usage in the centuries since the notes were created.

Other researchers have echoed these concerns:

> "Despite their enormous potential value, these data have several limitations. Because the surveyors were not botanists, inconsistent classifications of forest types and wetlands were made. They also found it difficult (as it is for us) to map boundaries separating forest and prairie when vegetation types merged. In addition, the national surveying system was not standardized until 1855, and several sets of instructions had been followed during the Illinois Survey. In some instances surveying teams fraudulently manufactured plat maps and field notes without going into the field. Nevertheless, these maps provide the best available data for describing the vegetation and the landscape prior to the impact of white settlers. We were able to use the GIS to test for surveyor bias in the data and to compensate to an extent for that bias. The surveyors had walked along the section lines, recording such features as water bodies or prairie patches that fell within their view. Small landscape features that existed entirely or largely in the interior of a section, however, were likely to be missed or underestimated." (Iverson and Risser 1987: 184)

The researcher must also keep in mind that the exact classification of trees recorded in the field notes was relatively unimportant to the surveyors and to the primary users of their notes. "Witness" trees were just that – they witnessed to the location of the corner post set by the survey parts, which was the official marker of the corner.

The field notes record selected trees located along the survey line, which were blazed or otherwise marked to help identify the boundary on the ground. At the time and survey district covered by this project, Fitz gave detailed instructions for marking these trees:

> "The proper numbers of section, Township and Range, are to be marked on trees, if trees are found standing within 500 links of such corners, and for quarter section corners, if within 300 links.... At each of the interior section corners, one of the trees only need be marked with the number of the Township and Range. The letters T and R must be marked on the left of the respective numbers, and the letters E and W on the right to designate the Range East, or West, of the Basis Meridian; always marking in one uniform manner, that is, Range first, then Township underneath, and the section number under that, as the law directs. The quarter section

reference trees, must be one on each side of the line, if practicable, and marked as the stake, thus ¼. On Range lines, the number of Range and Township must be marked at each section corner, on two trees, one on each side of the line, following the same rule on the Township lines which run East and West. Red oil paint is required to be traced in the grooves of all the letters and figures on the trees, but may be omitted on the posts, on account of their perishable nature, except in prairies where there are not trees to mark....

At the Township and section corners, as well as at the quarter section corners and fractional section corners, on water courses or elsewhere, the distance and course from the corner, must be taken to two of the reference trees, if practicable and noted in the field-book, with the name and diameter of such trees. The bearings and distances to two trees will do, because that number is required to fill the form prescribed for the descriptive notes, and may be sufficient to perpetuate the corner....

"Trees on the Township and Range lines are to have two chops below the blaze, and those standing in the section lines in the interior of the Townships are to have one chop under each blaze." (Fitz 1832/1992: 14 - 16)

A potential buyer (or a later surveyor) could for some time find the witness trees in the field based on the blaze on their side, then take a reciprocal bearing from the tree back to where the corner should be. Survey tree survivability has been studied by Cadastral Survey Training Staff (White n.d.) of the Interior Department. Drahn and Stefan (1988) provided techniques for documenting and recovering aged trees, which could last for decades after initial survey. Initial surveys used a hardwood post to monument the corner where suitable timber was available, but these were subject to damage and decay. Further, there was always a risk of tampering or destruction.

"The posts ... should be all hewn square from the top about a foot down. The Township corner posts should not be less than 5 inches square, the section posts about 3 to 4 inches square, and the quarter section posts hewn on two sides only, made smaller than the section corner posts. ... The

> posts should be about two and a half feet above the ground.... In prairies or other places, where there are not trees convenient to mark, then all the necessary numbers of sections, townships and ranges must be marked on the posts. The quarter section posts must be marked thus ¼ the letter S for section may be omitted on all the posts and trees, as it is sometimes mistaken for the figure 8, or 3....” (Fitz 1832/1992: 14)

For this intended purpose of helping locate the corner, exact species identification was not all that important. The searcher would locate the vicinity of the corner, look in the general direction and distance that should lead to the witness tree, and then inspect nearby trees for the marking. It would not matter if the searcher thought it was a black oak instead of a post oak as indicated by the surveyor.

In summary (and more generally applicable to any use of PLSS survey data), “[t]hough these concerns may limit interpretation of GLO records, the survey notes still represent the best available quasi-quantitative information on presettlement vegetation conditions” (Bragg 2004: 58).

Patterns of Physical Landscape

Most studies of vegetation have focused on how particular types of vegetation -- most commonly, trees, but sometimes even individual species like oak (Bragg 2004) -- are distributed across the survey area. In contrast, some researchers have used the same PLSS survey data to examine larger-scale landscape components. (One could argue that this kind of study is not that much different from the vegetation-oriented studies already mentioned. The difference

of focus away from vegetative species and towards more holistic, regional topics does seem to make these sufficiently different to justify separate treatment.)

Iverson and Risser (1987) used PLSS data for examining long term vegetation change by comparing remotely sensed land cover data to historic vegetation data from the Illinois state-level land cover reconstruction (documented in P. Anderson 1975, R. C. Anderson 1991, and updated in Bugram and Patterson 1996). The Iverson and Risser article is exemplary for its description of approach and issues involved in mixing data sets from multiple sources using GIS technology. Their concerns have not been resolved by the subsequent advances in GIS tools over the intervening decades.

Similar state level reconstruction projects have been completed for Iowa and Minnesota. Miller (1996) summarizes the history of engagement with PLSS data for Iowa, as background to his statewide vegetation determination using GIS technology to compile and analyze raw PLSS data. The Minnesota project resulted in a statewide historic vegetation map, but also an innovative, searchable database of bearing tree data (Almendinger 1996) capable of supporting further research.

Recent years have seen application of this data resource to an increasing variety of environmental studies. Useful references include:

- Yarnell (1998) on the reconstruction of composition and spatial variation of forests of the Southern Appalachians

- Gupta (2000) on delineation of historic fluvial vegetation and landforms in riverine estuaries in Oregon, in support of wetlands restoration efforts. His work explicitly discusses data collection and management protocols.
- Harlan (2001) on integrating multiple data sources to interpret the notes compiled by the Lewis & Clark expedition along the Missouri portion of their route. His intent is "to depict the land much the same as was experienced by the Lewis and Clark Expedition members" (2001: 1).
- Collins et. al. (2002) on impacts of changes in woody vegetation in rivers flowing into Puget Sound, and the resulting changes to stream morphology, flow dynamics, and habitat abundance.
- Remo (2008) on integrating survey and historic engineering project data to assess changes to river flows on the Mississippi River. The research is to explore "the use of archival hydrologic and geospatial [data] to establish historic reference conditions in order to quantify and assess the causes change along rivers" (2008: iv).
- Fritschle (2008) on ecotone reconstruction in Redwood National Park, to identify small prairies known to have existed in the park area. This study goes beyond the witness tree data in the PLSS survey data to

explore other micro-scale entries such as entrance into and exit from different ecotones along the survey boundaries.

Within the study area for this project, PLSS data has been used on both sides of the debate about the importance of particular ecological areas for protohistoric Chickasaw settlement patterns. (This will be explored in a more ethnographic perspective in Chapter 4; this brief discussion is more focused on the research methodologies used.) Jay K. Johnson (Johnson et. al. 1989; Johnson 1990, 2000) has hypothesized on the basis of archeological site survey in the upper Black Prairie physiographic region in Lee and Chickasaw Counties MS, that protohistoric Chickasaw were establishing settlements within cedar glades within the uplands. These cedar glades are areas of eroded topsoil hosting clusters of Eastern red cedar trees. Johnson hypothesized that this selection was due to an inferred preference by deer for these cedar glades for winter browse. Peacock and Miller (1990) challenged this rationale on several grounds, from a different understanding of deer behavior through concerns that cedar glades might be a post-removal response to Euro-American intensive agriculture. One important part of their argument against cedar glades is the lack of cedars in the witness tree data for the area, and in general the lack of mention of the glade landscape in the PLSS data.

Johnson's response (1990: 60 - 61) brings to this local dispute much of the previously referenced discussion of surveyor bias. Officially, at least,

surveyors used whatever trees were available – though certain tree species required special treatment.

> "It is known that marks on the bark of trees are more durable than those made on the wood. ... All trees therefore that have bark smooth enough to mark on, must be marked on the bark. If pine trees are cut to the wood, the turpentine will soon obscure the marks, which will soon be destroyed by fire. They should therefore be marked on the bark only, scraping off the scales to get a smooth surface. On old oaks and hickory trees, the bark must be removed, and marks made on the wood, and the place should be made so wide as to prevent it's growing over in many years." (Fitz 1833/1992: 16 - 17)

Examination of Land Use

Except for such contemporary cartographic exercises as Lusher's Map of 1835, little has been done with this survey material to represent the cultural landscape found during survey. More commonly, researchers have dipped into the data to research specific sites already known from other sources (Atkinson 1985a, 1985b, 1987; Paige et.al. 2010).

Ward (1987) evaluated the PLSS data for a small area in Clay County MS where he had conducted an archaeological survey. He considered the PLSS data compilation "a necessary first step in the interpretation of the area's paleoecology [sic], one that can be taken without excavation" (1987: 71). There is no discussion of method in the brief notice of results, but presumably the data was compiled manually into the vicinity map included in the article.

Peacock and Patrick (1997) did not use PLSS data directly in their comparative study of archeological site survey and "land records", though they mention reviewing this data set. Instead they used a derivative data set, the

"acquisition folder" created when the Tombigbee and other USDA Forest Service ranger districts acquired individual parcels for incorporation into their units of the National Forest. These files include an appraisal of the land with descriptions of improvements and a tract map which sometimes shows the locations of structures, cropland, pastures, fences, and other cultural features" (1997: 7-8). Their results do point out the benefits of using both data types in combination.

(I have been able to identify only one publication directly relevant to my work. In the 1980s, Kathryn E. Gourley used GLO maps and notes to help document Native American sites in Iowa. See *Locations of Sauk, Mesquakie, and Associated Euro-American Sites 1832 to 1845: an Ethnohistoric Approach*, MA thesis, Department of Anthropology, Iowa State University, Ames. 1990. Unfortunately, I have been unable to acquire a copy for this study).

These studies seldom make the PLSS data the central focus of the research effort. More typically, the PLSS data is brought in to confirm or supplement data derived by other means – not always successfully:

> "[C]opies of the original 1833-1834 land survey maps were consulted. Unfortunately, there are very few cultural features shown on these maps. A few fields and roads are depicted, but with the exception of the Robinson Road, which ran through one of the survey quadrats (Section 33, Township 16N, Range 13E), no improvements or features of any kind are shown in the quarter-sections examined in this study. Field investigations suggest that the location of Robinson Road as shown on the original survey maps is approximate at best." (Peacock and Patrick 1997: 11)

A few recent studies have explored use of GIS technology for managing and analyzing historic land use, especially Morgan (1994) and Cegielski (2010). These have made only limited incorporation of land survey data.

Approach to Interpreting Materials

A researcher obviously could extract from the survey documents all data about cultural features noted, just as described for vegetation and other purposes. This data can be combined through GIS data management technology and used to reconstruct a representation of some aspects of the cultural landscape, much as Henry Lusher did manually in 1835.

It is highly problematic to simply trust these cultural observations. Brian Harley (2001) has pointed out the many possible distortions (conscious or otherwise) that can be found in a map. Harley's concerns must apply not only to the reconstructed landscape such a project of reconstruction might produce, but more critically to the observations selected by the surveyors for inclusion in the field notes or plats, a problem noted in another context by Kragh (1987: 42). For example, a surveyor convinced that the Chickasaw had no real claim to their lands because they had never "improved" it would be far less likely to consider an area an "old field" than another surveyor who did not have this bias.

One methodology that is available to assess the corpus of survey documentation is based on critical discourse analysis. Discourse analysis (Jaworski and Coupland 1999; Schiffrin et.al. 2003) is the investigation of various

forms of human communicative action with an objective of improved understanding of the contributions made to communication by choices of medium, style, and phraseology considered in addition to the traditional emphasis on semantics. Critical discourse analysis (Chouliaraki and Fairclough 1999) involves bringing the insights of critical social theory to bear on discourse. Techniques for critical discourse analysis are described in Fairclough (1995, 2003). The underlying theory is covered in van Dijk (1977).

A recently defined approach, critical cartography, combines the insights of Brian Harley with those of discourse analysts. "'[C]ritique' is not a simplistic rejection of concepts or practices, nor do 'critical cartographers' seek to invalidate maps. Instead, critique is characterized by a careful interrogation of taken-for-granted categories and assumptions with the hopes of better understanding the inherent situatedness of maps or any other form of knowledge" (Harris and Harrover 2006: 2). Crampton (2001) explores the impacts of power on structure and contents of maps. Denis Wood (1992, Wood and Krygier 2005) provides pragmatic examples of self-reflective cartographic practice as well as examples of critique.

These approaches were used to structure the data gathering phase of this research project. As noted, they sensitized the researcher to the possibilities of inclusion, distortion, or erasure of Native American land use. In the event, the anticipated distortions were not identified in the PLSS source documents within the project study area.

Concerns With Survey Data As Historical Record

The construction of the proposed GIS archive derived from the PLSS original survey notes and plats is an important starting point for the research being proposed, but this alone will not be sufficient to assess the PLSS notes as a data source for reconstructing a cultural landscape. While the archive is potentially important as a foundation for subsequent research, by itself it is little more than compilation. "[M]ost modern historians [regard] the accurate revelation of facts as worthless in itself." In this approach accuracy "is a necessary condition of [the historian's work], but not his essential function" (Kragh 1987: 43).

> "[H]istorians ... [wish] to discover not only what happened but how and why and what these things meant and mean.... So it is never really a matter of the facts per se but the weight, position, combination and significance they carry vis-à-vis each other in the construction of explanations that is at issue. This is the inevitable interpretive dimension, the problematic, as historians transform the events of the past into patterns of meaning...." (Jenkins 1991: 33)

The discipline of history includes a specialized study area that can provide guidance in assessing whether a set of historical sources is adequate to the intended research purpose of "the construction of explanations". A recurring theme within historiography is the nature of evidence – what data resources do historians have (potentially) available for their research, what cautions must be observed in their use, and how should the evidence be assessed.

Two historiographers have recently outlined the various approaches to evidence in a manner that can guide assessment of the survey-derived archive data to be generated in this research. Helge Kragh (1987) has summarized his extensive applied experience in the history of science to identify problems of historiography within this specialist field, which provides a wide range of "inscriptions" (to borrow a term from Actor-Network Theory) but relatively little traditional historical evidence. From a more comparative perspective, Alun Munslow (2005) has reviewed different theoretic approaches to historiography along several dimensions, including their approach to evidence. The results of these two efforts provide a framework for assessing the relationship of facts to evidence for the historian's particular purposes. This framework can provide a structure for assessing the technical merits of the PLSS data, within the specifics of the research purpose.

Elaborating an Evidential Framework

This evidential framework begins with a distinction between "the past" and "history" (Munslow 2005). As Kragh puts it:

> "... a distinction has to be made between 'facts of the past' and 'historical facts'. While the former include everything that actually happened in the past, the latter are the data accepted by the historian as being of such reliability and interest that they appear in historical literature. Only a few of the occurrences of the past achieve 'historical' status. This status is assigned to them by the historian.... Since historical facts are the product of an evaluation and interpretation, they are relative to the interests of the historian. There is no generally accepted criterion for when an occurrence has historical status...." (1987: 42)

Using Munslow as a starting point, we can define a framework and explore its implications for assessing evidence, including:

- **Facts of the Past** – Something happened at a particular time and place, whether we can know anything about it or not.
- **Relics & Traces** -- A fact of the past may leave some trace, embodied in relics such as documents compiled by actors/witnesses, in travelers' tales and other stories, in changes to artifacts, or in landscape. A trace must be interpreted in order to recover information about the fact(s) of the past that it preserves (Kragh 1987: 121).
- **Sources** – Sources are selections and interpretations of facts of the past by some compiler, who has his/her own biases, selection criteria, limited perspective, etc. The result is that "[the] evidence available to the historian usually is not 'fact' but testimony on the facts" (Shafer 1969: 5). Sources are often treated as a separate category from relics because of the slippery distinction between "primary" and "secondary". Sources may be precompiled into an archive, or assembled ad hoc by the researcher from multiple locations.
- **Evidence** -- A body of evidence is selected and assembled by the researcher from among the relics, traces, and sources known to be available, based on research question and other selection criteria. The researcher must work through the available materials, "carving

through the archive" (Munslow 2005: 43). Each source is evaluated, including identifying "absences, gaps, silences" left by the original author and/or compiler of the archive collection (Munslow 2005: 73).

- **Historical Facts** – The researcher structures his/her understanding of evidence, within the context of other research, general community understandings, etc. Interpretation of sources results in "historical facts" (Kragh 1987: 42-43). "[H]istorical facts are really only events under a description" (Munslow 2005: 73).

- **Representation** – The researcher communicates his/her interpretation and selected evidence to his/her target audience(s), through narrative and/or other media. A key professional practice is determining "how facts are arranged" to tell a story (Munslow 2005: 109).

Implications of Using the Framework

This framework is intended to be broadly applicable to a wide range of approaches. A recent overview recognized 35 distinct approaches to history (Anonymous 2010). Since most of these approaches can be applied to a broad swath of the human past, the benefits of such flexibility are obvious.

The flexibility of the framework can help resolve several issues that can arise in conducting historical research, especially in transcultural contexts.

Inconsistencies

As analysis proceeds, it is likely that inconsistencies will begin to appear in the evidence, even from within a single source created by a single compiler. Our framework can guide the exploration of such inconsistencies.

Kragh (1987: 97) provides an analysis approach that relies on the fact that each source (even a primary source) is already a compilation made by one or more individuals, with their inherent situatedness and bias. Initially one takes the inconsistent source as an accurate representation of the compiler's criteria and intent. One then validates this initial hypothesis through evaluating different interpretations. One then assesses the larger context within which the source is placed in order to explicate the apparent contradictions.

The framework emphasizes keeping the distinction between source and trace clear, and assessing the source in a manner that recognizes that "[h]uman beings participate in history both as actors and as narrators.... In vernacular use, history means both the facts of the matter and a narrative of those facts, both 'what happened' and 'that which is said to have happened'. The first meaning places the emphasis on the sociohistorical process, the second on our knowledge of that process or on a story about that process" (Trouillot 1995: 2).

Silencing within Sources and Archives

Trouillot (1995: 48) reminds us that every source is at best a partial and distorted representation of the facts of the past:

> "... the presences and absences embodied in sources (artifacts and bodies that turn an event into fact) or archives (facts collected, thematized, and processed as documents and monuments) are neither neutral nor natural. They are created. As such, they are not mere presences and absences, but mentions or silences of various kinds and degrees. By silence, I mean an active and transitive process: one 'silences' a fact or an individual as a silencer silences a gun. One engages in the practice of silencing."

With a few terminological modifications, this description fits neatly into our evidential framework. The inconsistencies within the evidence may come about through the partiality of the creation or survival of traces. As Trouillot reminds us, "... because historical traces are inherently uneven, sources are not created equal.... Similarly, sources do not encapsulate the whole range of significance of the occurrences to which they testify" (1995: 49).

The uneven power of actors to create traces of the facts of the past, and to have those preserved, can lie in several dimensions. The most obvious is when the power of one set of actors blocks another set of actors from effective narration, for example when the dominant culture does not recognize the narrative products of other cultures – such as Native American oral traditions (Ortiz 1988: 15). Power differentials may be even more evident in the selection of sources to place in the archive, conceived as repository rather than working storage. "Archives assemble. Their assembly work is not limited to a more or less passive act of collecting. Rather it is an active act of production that prepares facts for historical intelligibility" (Trouillot 1995: 52).

Forced Interpretations and the Unthinkable

It is not axiomatic that those whose work makes it into an archive are deliberately misleading or inaccurate. "When reality does not coincide with deeply held beliefs, human beings tend to phrase interpretations that force reality within the scope of these beliefs. They devise formulas to repress the unthinkable and to bring it back within the realm of accepted discourse" (Trouillot 1995: 72).

This characteristic of the sources, whether individual documents or an archive holding a selected set of multiple sources, opens up additional opportunities for research characterized by Stoler (2002: 88 - 89) as "a politics of knowledge" that includes "a further rejection of the categories and cultural distinctions on which imperial rule was once invested and on which post-colonial state practices have continued to be based." In this approach the archive itself becomes an object of study, rather than (or perhaps in addition to) an opportunity for "extractive enterprise" (2002: 90).

The PLSS survey documents, and the digital GIS archive derived from them, lack the temporal depth and complexity of colonial administrative archive such as Stoler has studied. However, the same priorities apply to research in these archives. She asserts the importance of "identifying the conditions of possibility that shaped what could be written, what warranted repetition, what competencies were rewarded in archival writing, what stories could not be told, and what could not be said" (2002: 91). The contents of the archive reflect "the

structures of sentiment to which colonial bureaucrats subscribed, to the formulaic by which they abided, to the mix of dispassionate reason, impassioned plea, cultural script, and personal experience that made up what they chose to write … and thus place in … official view" (2002: 101).

Conclusions

This evidential framework derived from assessments of historical method provides criteria for evaluating an archive of primary evidence, such as might be derived from Public Land Survey data for the cultural landscape of a Native American tribe at time of removal. The framework has the advantage of explicitly taking into consideration the episteme of the individuals who first recorded the sources comprising it. This perspective will both help to recognize the possibility that the data appears adequate for such a reconstruction project, yet contains flaws that cast into question any results thus achieved, and will point towards possible interpretations of any systematic distortions which we can identify.

A Conceptual Toolkit For The Research

This research project attempts the reconstruction of the Chickasaw cultural landscape at the time of Removal. Implicit in this statement of the problem are two key concepts, the "cultural landscape" and the "frontier." Issues of interpretation of the cultural landscape concept intrude as soon as we start to consider just what aspects of Chickasaw culture might be available for

recordation by the American surveyors. Issues of the frontier between the Chickasaw and other groups intrude into this project because of the encroachments upon Chickasaw lands by Americans and the long history of interactions between the two groups.

Both of these concepts, as well as the underlying concept of “culture”, are problematic – all have been used differently at different times. In this section, some of the issues affecting use of these concepts are explored, and working definitions are laid out. While this exploration of these concepts may well not resolve the important challenges they carry, it will serve the purpose of making clear how they are being utilized in this research. In turn, this clarification of concepts will be useful in identifying possible traces of Chickasaw occupation that might have been available for the survey parties to note.

There is a large and growing literature regarding both concepts within cultural geography, history, ecology, and other academic disciplines. But, upon examination it seems there is a dearth of readily available, relevant methodological work upon which to build a research design. Indeed, there is relatively little prior work of any bent, empirical or otherwise, that can be directly utilized in this research context. Many otherwise exemplary studies are of limited relevance due to an ethnocentric emphasis upon the intruding culture to the exclusion of the dispossessed, a tendency towards broad brush syntheses that blur over localized circumstances, or a theoretical focus upon cultural continuity and changes over time within a continuous tradition.

This section will explore several potentially relevant bodies of literature, in search of concepts, techniques and exemplars that might provide guidance for extending insights gained in other research applications to the needs of this project. This exploration starts from the concept of culture, as a defining framework for pulling together various themes within the prior work.

The Concept of Cultural Landscape

The concept of cultural landscape invokes the elements of "culture" encountered within the "landscape". Both terms require some explication.

A Working Definition of Culture

My use of the "culture" concept is aligned with one branch of cultural anthropology, cultural materialism (Harris 1968; 1979; 1999), and encompasses a great deal of what another geographer might consider "social." I echo Marvin Harris in saying "[m]y own view is that a culture is the socially learned ways of living found in human societies and that it embraces all aspects of social life, including both thought and behavior" (Harris 1999: 19). Second, I take process to encompass spatial and temporal aspects of individual and institutional activity, with a strong structural element as one among many organizing principles.

The concept of "culture" has served as an organizing concept for the discipline of anthropology, helping distinguish it from other social sciences such as sociology. At the same time it has proven something of an embarrassment due to the difficulty of clear definition. Over half a century ago, Kroeber and

Kluckhohn (1952) compiled a survey of definitions, finding both 164 differing definitions and a broad sense of consensus within the profession around at a minimum component of the mental elements shared by bearers of “a culture”. The situation would hardly be improved today were someone brave enough to attempt an update!

My use of the concept owes much to an early attempt at definition. E. B. Tylor, one of the founders of cultural anthropology, provided an all-inclusive and widely quoted definition: “Culture, ... taken in its broad, ethnographic sense, is that complex whole which includes knowledge, belief, art, morals, law, custom, and any other capabilities and habits acquired by man as a member of society” (Tylor 1871: 1). This emphasis on complexity and holism carries through many later efforts to define and utilize the culture concept.

American cultural anthropology has swung between two extremes regarding usage of the culture concept, characterized by Eric Wolf (2001: 307-319) as a “split between materialists and mentalists.” One approach has emphasized the quasi-idealist position that culture is comprised solely of the content and framework of shared human cognitive activity. Another approach has been more holistic, including material accomplishments as part of culture. Most practitioners have taken a syncretic intermediate position, such as Walter W. Taylor (1983) in his programmatic manifesto A Study of Archaeology. (Within the American anthropological tradition, there has been significant overlap among physical, ethnographic, and archeological subdisciplines (Harris 1968). This is

less evident in English and other versions of the anthropological tradition.) Taylor's "conjunctive archaeology" proposed a continuum from idealist culture through behavior to manifestations such as material artifacts, architecture, and subsistence.

> "[C]ulture is a mental construct consisting of ideas. Under the term idea, for present purposes, are subsumed such categories as attitudes, meanings, sentiments …. These ideas are not themselves observable. They are objectified and made observable through the action-systems of the body, being activated in the form of behavior that is observable both visually and audibly. In turn, this behavior results in material objects such as axes and automobiles, and non-material manifestations such as dance patterns, styles of graphic and fictile [sic] representation, etc…. Both the behavior itself and the resulting patterns are observable, but for this very reason they are fleeting. The culture idea is not observable but endures in the [actor's] mind to be repeated again.... Both behavior and the results of behavior, if they stem from ideas, pertain to culture. They are not culture, but they are 'cultural.'" (Taylor 1983: 101 – 102)

This discussion becomes important when we start to grapple with the question of what is cultural within the landscape. But first we have to clarify what we mean by "landscape".

A Working Definition of Landscape

"Landscape" is a widely used, arguably foundational term in geographical scholarship (e.g., Meinig 1979a, 1979b; Rountree 1996). This centrality is problematic because landscape as a concept is "attractive, important, and ambiguous" (Meinig 1979a: 1). In what follows, I examine different perspectives from the myriad approaches within geographic thought where the landscape concept is utilized, which collectively propagate this irreducible ambiguity.

I am using the cultural landscape concept as an organizing principle through which the minutia of multiple (potentially available) indications of Chickasaw and other cultural impacts on the earth's surface can be assembled into an (ideally) coherent whole. This rediscovery must primarily be an empirical, etic investigation, because the meaning of these elements to those who created and maintained them is largely lost (though it might prove possible to recover some indications from archival records not yet identified, or through ethnographic work with present-day Chickasaws). Because it seems that few if any Chickasaws participated in the survey work (this intuition based on the recorded names of the survey party members as part of the affidavit of the survey party filed with each survey), the American (and possibly African American) members of the surveyor parties were unlikely to have the cultural understanding to identify the meanings Chickasaws might have attached to a particular landscape element, even if they were interested in writing those meanings down (a possible counter-example, the "Chickasaw Old Fields" shown on plat maps, can be interpreted as an element of Chickasaw nomenclature migrating into common usage in English).

It is not immediately clear just how to operationalize this cultural landscape concept, so that it can serve as the desired organizing principle. One way to identify a method for utilizing this concept is to look at how previous researchers have approached the problem.

Utilization by Geographers

The concept of cultural landscape has been identified as “play[ing] a prominent role in a diverse array of geographic research” (Rountree 1996: 127). Rountree summarized this “intellectual heritage” as a branching stream united more by an opposition to positivistic approaches to geography than by consistency of concept.

Landscape as a term has two candidate origin stories (Cosgrove 1998: 1 – 38). One thread harks back to Germanic and Middle English terms which denoted “an identifiable tract of land, an area of known dimensions like the fields and woods of a manor or parish” (1998: 16). This is the foundation of the empiricist, physically oriented tradition of the term’s usage, including both Hartshorne and Sauer. A second thread (Cosgrove 1998: 16-21; Daniels and Cosgrove 1988: 4 – 8) ties landscape to a painterly tradition originating in Renaissance Europe, where the term applied to a genre of painting that captured a representation of “the area subtended to the eye and vision of an observer” (Cosgrove 1998: 17). This is the foundation for the multiplicity of conceptions of landscape as text, discourse materialized, and other conceptions focused on the meanings of landscape.

The emergence of cultural geography as an explicit subdiscipline, primarily in America, is generally credited to the early work of Carl O. Sauer. Sauer utilized a relatively naturalistic conception of landscape derived in part from concepts of *Landschaft* in Germany, especially the work of Ratzel, and to

some extent the work on pays in France, especially the work of Vidal de la Blache. In such programmatic statements as The Morphology of Landscape (Sauer 1925), Sauer blended ideas of landscape with an idealist concept of culture derived from the anthropology of his time, especially Kroeber's "superorganic". This blending helped counterbalance the primacy of idealist concepts that had been dominant but not hegemonic within anthropology by keeping the physical elements of the landscape as part of the concept of the cultural. Sauer and the "Berkeley school" he founded treated the culture of the native peoples as of equal interest to that of the intrusive "western" group. The emphasis on physical landscape shaped by culture (Robbins 2004: 28 – 36) offers a conceptual framework for treating cultural landscape as a coherent concept incorporating impacts from both cultures.

> "The cultural landscape is fashioned from a natural landscape by a culture group. Culture is the agent, the natural area is the medium, the cultural landscape is the results. Under the influence of a given culture, itself changing through time, the landscape undergoes development.... With the introduction of a different – that is, an alien – culture a rejuvenation of the cultural landscape sets in [if the earlier cultural landscape has achieved maturity], or a new landscape is superimposed on the remnants of an older one." (Sauer 1925/1974: 343)

The constant focus upon culture by Sauer allows the intellectual freedom to recognize a comparable status of Chickasaw traditionalists and modernists, American settlers, and other parties to the land cession negotiations and transition of occupancy within my project. It contains a reminder that the material culture (embodied in this project as traces of land use) is only understandable

within the interplay of the occupying group's overall culture and the environment in which they find themselves.

Sauer initially made a strategic distinction between the natural landscape and the cultural landscape, which though subject to substantial criticism since its promulgation, has had significant influence in separating cultural geography as a distinctive subdiscipline. Sauer tempered his early programmatic insistence upon the importance of this distinction while maintaining "an inspired argument for the tradition of studying society/environment relations in geography from a historical perspective in which culture, not the environment, is the active agent" (Olwig 1996: 66).

That tradition was not without its critics. Richard Hartshorne, in his widely influential critique of the state of the discipline The Nature of Geography (1939) found the concept to be "subjective, aesthetic and not scientific" (as summarized by Rountree 1996: 134).

Hartshornian orthodoxy and the emerging positivistic geography in the subsequent decades, despite many disagreements, both found little use of the cultural landscape concept. However, two traditions within geography kept the use of the concept a part of the geographic conversation. First, "those researchers documenting human impact on the environment" (Rountree 1996) continued to apply the concept in their work, including participants in the 1955 conference on Mans Role in Changing the Face of the Earth (Thomas 1956).

Sauer continued to publish in this tradition, as did his colleagues in the so-called Berkeley School.

A second body of geographic research also found use for the cultural landscape concept. Emerging in the late 1950's and maturing during the1970s, humanistic geography "resurrected the cultural landscape concept as a major vehicle for analyzing the ties between culture and environment" (Rountree 1996: 133 – 134). Two version of cultural landscape were in use within this tradition:

> "The first emphasized **the visible and material details** of landscape, while the second stressed **the cultural perception and visual preferences** – the sentiment and emotion, some would say – of our surroundings. In the first approach landscapes were conceptualized as tangible expressions of material culture, with descriptive weight placed on documenting environmental arrangements such as house types, field patterns, and fence arrangements; these artifacts could then be placed within a larger cultural context to yield insights into social processes .... This focus differed considerably from the perception studies in which the goal was understanding how people cognized and responded to their environment." (Rowntree 1996: 134; emphasis added)

The emphasis on the "visible and material" led geographers to developments that "paralleled and interacted" (Rountree 1996: 135) with the cultural materialist tradition within anthropology, and with overlapping developments within folklore, history, and other disciplines. One output of this development is the interdisciplinary field of material culture studies, with its present-day links to historic preservation, museology, and other heritage-oriented fields. Material culture studies in other fields sometimes criticized as ignoring cultural context to narrowly focus on the artifact per se. Cultural geography runs

counter to this trend, since practitioners “look to everyday vernacular items for insight into cultural patterns and processes” (Rountree 1996: 135).

Fred Kniffen explained his understanding of the role of material artifacts in geography as the starting point for more comprehensive research:

> “The material forms constituting the landscape are the geographer’s basic lore. The cultural geographer deals primarily with the occupance pattern, the marks of man’s liming on the land. He finds his data, his evidence, in buildings, fields, towns, communication systems, and concomitant features. His procedure parallels that of the systematic botanist in discovering types and groups of related types. As a geographer he is ever cognizant of quantity and distributions …. From his organized material data the geographer draws conclusions regarding cultural patterns, processes, sequences, value systems, all directed toward explaining the landscape …. The cultural geographer employs an evidential approach that basically studies material things… Only by first considering the material forms can subjective values be discerned.” (Kniffen 1974: 256)

The second approach called out by Rountree as “new directions” can be associated with the “new cultural geography” that began in the 1970s and led to importation of many post-positivist theoretical perspectives into the discipline. One of the key themes in this tradition was a reaction against the empirical approach to landscape. A shift of emphasis towards understanding the meanings of landscape led to several important interpretations of landscape. Among the most important were:

- Landscape as a way of seeing (Cosgrove)
- Landscape as a discourse (Cosgrove)
- Landscape as discourse materialized (Schein 2003)
- Landscape as productive process “to normalize/naturalize social and cultural practice, to reproduce those practices, and to provide a means to challenge those practices” (Schein 2009: 383)
- Landscape as iconographic (Stephen Daniels)

One important contribution of these varied researches was a renewed critique of the concept of cultural landscape. “Critics [in this approach] charge that traditional landscape research is too idiosyncratic, atheoretical, politically conservative, and reliant on outmoded concepts of culture and society …. This questioning from the new-directions people ... is the only sustained critique of the landscape concept since Hartshorne, but, unlike Hartshorne, they are unwilling to dismiss the conceptual vitality of landscape in spite of these shortcomings” (Rountree 1996: 140).

Rountree (1996: 141 – 144) also identified two further emphases emerging along with these more exclusively geographic approaches. These were “landscape as ecological artifact” and “landscape as visual resource”. To be sure, important geographic work has been done that contributes to these approaches, such as Cronon’s classic study (1983) of New England ecological history. But the emphasis on these aspects of the concept has led to a new discipline of “landscape ecology”, discussed in the next section.

Utilization by Landscape Ecologists

Landscape ecology as a discipline emerged along with the larger field of ecology (Brant 1997; McGarigal 2010; Wu 2013). The term was apparently first used by the German biogeographer Carl Troll in 1939. It was initially an application of ecological theory to bounded areas of the earth’s surface, with a pragmatic emphasis on typology and classification of the ecological interactions within a location. The discipline initially tended to focus more on the built

environment, in part because the impetus for certain aspects of the location could be explicitly identified in human agency such as landscape management (guided by principles of planning and landscape architecture).

Two relatively recent offshoots from this tradition occurred in the 1980s. First, a workshop at Allerton Park in April 25–27, 1983, helped refocus the discipline. "One may argue that the workshop not only heralded the burgeoning of landscape ecology in North America, but also laid the foundation of what may be called modern landscape ecology …. the beginning of a new paradigm in landscape ecology" (Wu 2013: 1). The workshop led to "a new vision for landscape ecology—a vision that hinges fundamentally on spatial heterogeneity …. characterized by, and necessitat[ing], the consideration of the relationships among pattern, process, and scale" (2013: 2). This incorporated an increasing reliance on theoretical models of ecological interaction and upon more "natural" systems.

Concurrently with this emphasis on spatial heterogeneity, a restructuring of the practice of landscape ecology was emerging, initiated by Zev Naveh. Starting with an early review article (1984) and through his influential textbook (*Landscape Ecology: Theory and Practice*, with editions in 1984, 1990, and 1994) and later papers, Naveh emphasized the necessity of a multifunctional (2001) and increasingly transdisciplinary (2005) approach to landscape studies, including biological and cultural aspects.

The transdisciplinary landscape has been defined as “built on five dimensions” (Tress and Tress 2001: 145 – 151). These include:

> “landscape as a spatial entity;
> landscape as a mental entity;
> landscape as a temporal dimension;
> landscape as a nexus of nature and culture;
> landscape as a complex system.”

Part of this complexity gets clarified when the mental and cultural elements have been further examined. Bureaucratic grappling with issues of cultural landscape have both drawn upon these emerging trends and fed back into practice. Two important examples come from the US government and from the United Nations.

The term cultural landscape has been given official standing in a number of U.S. federal laws, regulations, and guidelines. Perhaps the most detailed federal policy statement on cultural landscapes appears in the National Park Service Cultural Resource Management Guidelines [promulgated in 1994]. There, the agency defines cultural landscapes as “complex resources that range from rural tracts to formal gardens. The natural features such as landforms, soils, and vegetation provide the framework within which the cultural landscape evolves. In its broadest sense, a cultural landscape is a reflection of human adaptation to and use of natural resources. A cultural landscape is defined by the way the land is organized and divided, settled, and used, and the types of structures that are built on it” (Stoffle et.al. 1997).

On the world stage, a “major burst of interest” in cultural landscapes took place in the early 1990s as exemplified and in part driven by the UN World Heritage Convention (Phillips 1998; Wu 2010: 1148). This defined three categories of cultural landscape:

1) “’[C]learly defined landscapes designed and created intentionally by humans’ which include mainly garden and park landscapes”
2) “’[O]rganically evolved landscapes’ resulting from successive interactions” including “relict” and “continuing” landscapes
3) “’[A]ssociative cultural landscapes’ that have powerful religious, artistic or cultural associations of the natural element”

Both of these regulatory structures make explicit a continuum (of sorts) from landscapes relatively untouched by human activity through various levels of modification to land cover to landscapes rendered distinctive and important primarily because some groups of people hold “powerful associations” with them.

Summarizing much of the advances in the new landscape ecology approach, Tress et.al. (2001: 140) say that:

> “Landscapes should be regarded as holistic and dynamic systems, which consist of the interacting geosphere, biosphere, and noosphere [the sphere of human thought]. These dimensions are of equal importance. A mutual relationship exists between people and the landscape. Not only do people influence the landscape, but landscape also influences people. This co-dependency is the most important linking factor between natural- and human-oriented sciences in landscape research. The ‘Total Human Ecosystem’ is suggested as a guiding conceptual principle for the holistic meaning of landscape.”

For purposes of this study, the new landscape ecology has two highly useful principles:

1) All landscape is cultural landscape.

Landscape ecologists, like other researchers grappling with the concept of cultural landscape, have grappled with the possibility of a natural landscape. The general consensus is that "landscapes untouched by humans no longer exist in reality" (Wu 2010: 1198). "Since there are cultural aspects to practically every landscape on earth, it follows that practically all landscapes are cultural landscapes" (Phillips 1998: 28).

Tress et.al. (2001: 140) declare that "All landscapes consist of both a natural and a cultural dimension. The perceived division between nature and culture has dominated the academic world. In the case of landscapes, this divide is counter-productive and must be overcome since all landscapes are multidimensional and multifunctional."

2) Continuum of impacts vs. natural/cultural dichotomy

Building on more biological concepts of gradient (McGarigal and Cushman 2005), landscape ecologists have increasingly adopted the idea that anthropogenic impacts upon the landscape are best approached as a continuum of landscape modification. This approach bypasses the "either/or" arguments that swirled around Sauer's early programmatic declarations, and more closely matched what Sauer and his colleagues had actually done with the cultural landscape concept. It also has the advantage of moving towards an operationalization of the landscape concept. "Humans have the ability to greatly modify their environment, which tends to increase landscape fragmentation by

generating more and smaller patches." Statistical techniques such as ecological gradient analysis gave the ability "to relate the spatial pattern of urbanization to ecological processes" (Luck and Wu 2002). Generalizing from the specifics of spatial statistical tools, we can gain additional value from a more metaphoric use of the gradient concept (without denying the validity of the statistical approach for certain types of problems). Wu considers the term to still have value precisely because of its "dialectical, rather than binary, property". "The concept of cultural landscape is useful and effective especially when it is used in the context of a landscape modification gradient. With "increased anthropogenic influences in the biosphere", he argues, landscape is a crucial concept for organizing the fragmented habitat islands typically encountered. The landscape approach provides "explicit emphasis on the configuration and function of the entire landscape mosaic that contains gradients of different kinds" (Wu 2010: 1148).

A recent overview of approaches to the cultural landscape concept within geography could equally well serve to describe current trends in landscape ecology:

> "Instead of a simplistic and mutually exclusive 'region-or-scenery' opposition, most researchers today blend these different etymological ingredients so that space, environmental modification, and human values are all touched on.... To some, a cultural landscape is simply an environment modified by human action and the research emphasis, then, is to document empirically the consequences or process of that interaction, be it subtle or overt. The landscape thus is treated as an apparently objective by-product or artifact of human habits and habitation. This is fairly close to Sauer's early intentions....
>
> "More common that this narrow ecological use of landscape is a broad, sometimes all-encompassing conceptualization that implies a larger

> degree of subjective interaction between humans and their surroundings .... This perspective encourages a variety of interests and themes accenting the arrangement of material forms in the landscape and, often of equal importance, human responses to them." (Rowntree 1996: 129)

Despite a sometimes dominant emphasis on terrain and ecology, landscape ecology gives at least lip service to "man's role in changing the earth." Recent theoretical work within landscape ecology points towards a reborn holism, and towards methodology improvement on Sauer's "morphology". Importantly, landscape ecology operationalizes the 'palimpsest' metaphor – many cultures over long period of time, each making some changes, some of which may have left traces visible to later observers.

Problems Putting the Two Concepts Together

> "[E]arth system and ecological science is bridged primarily to the theme of human–environment interaction." This theme recognizes humans as currently "integral [in] virtually every ecosystem" and hence [forming] a present-day anthropocene" while still leaving room for the "agency of nature" (Zimmerer 2010: 1084).

This somewhat optimistic summation glosses over the remaining challenges of putting the concepts of "landscape" and of "culture" together. One challenge emerges from the basic role of "landscape" in our philosophy – is landscape better utilized as an ontological category (that is, as a real thing whose characteristics we can learn about) or as an epistemological category (that is, as a way of organizing human understanding).

Landscape as Ontology

This summary history of landscape as a concept shows a shift from reference to a concrete, pregiven "thing" towards much more subjective and constructivist "understandings". To understand current usages of the concept, we need to explore its ontological claims. (Note: In what follows, I am assuming an essentially realist position toward the possibility and construction of ontological claims. I do not feel that the many debatable aspects of this "bracketing" move – in the sense introduced by phenomenologists – are affected by the choice of "landscape" as opposed to "forest" or other possible term for discussion.)

Landscape occupies an intermediate position on a conceptual scale between the relatively ontologically firm (area, terrain, tract) and the explicitly ontologically heuristic (place, *terrior*) – "between place and space" (Hirsch 1995). Physical geographers and earth scientists might use landscape as synonym for a section of terrain, utilizing both its original meaning of identifiable tract of land and one of its perspectivist meanings of "what can be observed from this location." In contrast, the cultural geographer might use landscape as a convenient abstraction, to organize and make sense of all the multitude of "what can be observed." The cultural landscape of e.g. horse farms makes salient certain aspects of the built environment tied together through a common "unifying principle" (Cosgrove 1998: 13). This may offend the more empirically minded, but it is analogous to many other heuristics not considered problematic – we find the

"transportation system" a comparatively obvious and obviously utilitarian concept, for one example.

There is then no option to appeal to the pregiven "thing" of "a landscape" in the context of this study. If we are to find use for the concept, it must be as a heuristic device for organizing multiple perspectives on what the Chickasaw were doing in this part of the world.

Landscape as Epistemology

I identify two explicitly epistemological perspectives on the landscape concept. First, we must identify which aspects of "the given", "what can be observed here", are most salient to our purposes. Meinig (1979b) defined ten perspectives the "beholding eye" could take on a particular landscape. His discussion helps ground the postmodernist assertion of indeterminacy of meaning, since each perspective will yield a more or less different meaning. Indeed, it can feed back into the framing and delineation of the "landscape" itself (Raitz 2001).

A second perspective identifies the metaphor(s) we use to think about landscape. We've already discussed several such metaphors (iconography, text). Here are a few more, taken from Karen Till's overview (2003: 347 - 349) of political geography, in which she discusses the border as a type of landscape:

- "a site of geopolitics and state power"
- "outcomes and constitutive of political processes"
- "an embodied setting of cultural practices"
- "sedimented layers of social and cultural accretions"

- “landscapes as work”
- “landscapes as everyday practice”
- “a form of geographical knowledge about how the world works”

These perspectives come together to define saliency of different observables. The painterly, visual concept of foreground vs. background (Hirsch 1995: 3) is one metaphor for this process. Another aspect of this mix of possible perspectives is to force a recognition that many early approaches to the meaning of landscape undervalued the processes that create and sustain the landscape in question (Hirsch 1995: 5).

For purposes of this study, we have to explicitly deal with the recognition that the traces of Chickasaw occupancy found by the surveyors would be more or less salient – and therefore more or less likely to be recorded – based on the culture of the surveyors. The cultural values of the displaced Chickasaws would be almost completely absent from the recordation process – not so much disregarded as simply not available for consideration.

What’s “Cultural” about the Cultural Landscape?

Many landscape ecologists, as discussed above, have come to use the concept of “impact gradient” (Wu 2010) to make evident the degree to which the cultural elements within the landscape are salient for their research purposes. This concept is bounded by two extremes:

1. A truly natural landscape encountered by early humans as they expanded. Perhaps the last one on Earth disappeared when Paleo-

Indians crossed the Bering Land Bridge into the New World. (If we generalize the discipline from “geo-graphy” to “planeto-graphy”, the Martian landscapes recently explored by our robotic landers would presumably represent a newly accessible example.)

2. A totally anthropogenic landscape now occasionally being built, such as the International Space Station.

Virtually all contemporary terrestrial landscapes fall somewhere along the gradient between these two extremes. Using the ecological interaction framework to identify impacts, even micro-landscapes or marginal landscapes such as an isolated valley in Antarctica have had some anthropogenic impacts. One of the research tasks, therefore, becomes identifying and unraveling the various types of anthropogenic actions that have collectively shaped the landscape in question. (An alternative way of thinking about the research design would be to initially select one or more types of anthropogenic actions of interest, then define the particular geographical context as a study area encompassing certain kinds and levels of impact. This leads directly back to the multiplicity of scales so important in the new landscape ecology, and inherent in the conception of “landscape as a construct” (Terenki 2001: 198).

This gradient concept begins to provide guidance for what we might consider “cultural” within the cultural landscape. In a trivial sense, everything in the landscape has been shown to be culturally impacted to some degree. More salient for this study, at least, are the explicit anthropogenic actions that might

have left traces sufficiently obvious to be identified and recorded during the survey. These anthropogenic actions are of three types:

1) Did some group of humans deliberately shape this portion of the earth's surface? (For example, is this a human path or trace?)
2) Did some group of humans inadvertently shape this portion of the earth's surface? (For instance, is this a livestock trail made by free-ranging cattle?)
3) Did some group of humans adapt to and/or exploit something already going on? (For instance, is this originally a game trail?)

Note that a secondary challenge in this specific study is the identification of which "group of humans" was involved in creating the anthropogenic action. Given the broad similarities of culture between Removal-era Chickasaw and their American neighbors, this may not be easy to determine from the available record

Material culture has been referred to as "cultural spoor" (Lewis 1975). Natural spoor (e.g. deer tracks) are relatively few in type and mostly unambiguous to identify by the tracker, if not always straightforward to interpret. It is not so straightforward in human culture. Within a cultural landscape in general, one can expect to find a mix of traces comprised of elements from both emics and etics (Harris 1968), that is elements from both the internal perspective of values/preferences, symbolism etc. of the people who created the trace and from the external perspective of the people who are recording the trace. Would an American surveyor, for example, make any distinction between the flimsy, temporary structures erected by Chickasaws for guarding planted fields in the

summer and the sturdy cabins for living through the winter, as described by Swanton (1926) and many contemporary travelers?

The specific circumstances of Chickasaw Removal would have sharply restricted the cultural elements available to be recorded. These limited possibilities would have consisted primarily of fixed or immovable “real property” or fragments of personal property left behind as a Chickasaw occupant moved out. The Chickasaw had had time to pack up much of their movable property (though not all occupants would have left their homes by the time of survey, many had already left for Indian Territory or at least begun gathering around the Chickasaw Council House in preparation for removal).

The disruption of Chickasaw occupation would have also resulted in limited access by surveyors to emic data, even had they been interested. In the field notes, therefore, we can expect to find few native names or indications of special areas. No day-to-day Chickasaw behavior would have been available to be observed, so any exploitation of non-farm biological resources such as acorn groves would not have been identified. Also, the surveyors had a limited base line of environmental knowledge to help them identify anthropogenic impacts such as the extent to which an open area might be an “old field” versus a natural opening in the savanna-like ‘Black Prairie’.

The Concept of Frontier

The historical and historical geography literature on the frontier concept (Conzen 1993; Schein 2010) focuses on three broad thematic areas. The broad literature on the expanding frontier is reviewed from broadly historical and narrower historical geographic perspectives. An emphasis on the human/nature interaction along frontiers leads into a third thematic area of the literature. (These themes are hardly mutually exclusive, but are not arbitrarily imposed. Instead the intent is to emphasize selected characteristics that help assess continuity and innovation among researches.)

Historical Studies of the Expanding US Frontier

The history of frontier expansion in the American West had in a sense been both created by and for a time fossilized by Frederick Jackson Turner (1893). Despite the "almost boundless literature" (Luconi 2005) of criticism of the institutionalized Frontier Thesis, and "... in part due to the frontier thesis's association with a strident American nationalism, Turner's influence lingered for many decades" (Furness 2005: 26). This mythologization of Turner's thesis did little justice to Turner the scholar. "On this count, many of Turner's protégés did him a disservice. Their respect for him left the 1893 thesis set in stone. Turner himself moved on" (Limerick 1987: 21).

Two definitions of frontier in Turner proved important for shaping the periodization of Western history (Furness 2005: 25). One definition stressed the frontier as "a largely uninhabited region (of course, erasing an indigenous

presence)". A contrasting emphasis could also be found, on the frontier as "a process of encounter". This dichotomy between place and process has continued to play out in more recent historical frontier studies (Thompson 1987).

The "New Western History" was an influential reaction to this long-lasting orthodoxy. It generally attempted to replace the processual view with a place-based consideration of the American West as interesting beyond waves of settlement. It "emphasizes the diversity of historical experiences and the need to recover voices of the 'ordinary' people often ignored by nationalist, grand-level historical studies" (Furness 2005: 27). It also has been "vilified as revisionist", in that it challenges the heroic myths of the expanding frontier, through "an opening up of multiple perspectives and possibilities for new critical intellectual inquiries" (Furness 2005: 27).

More recently, a new generation of frontier studies has emerged. These once again tend towards a process orientation, and emphasize the interactions of multiple groups in a fluid and contested zone of interaction (Mitchell 1991; Unser 1992; Mitchell and Hofstra 1995; Cayton and Tuete 1998). Richard White's (1991) concept of "the middle ground" has proven especially fruitful for highlighting the lengthy period of mutual accommodation and hybridization across various cultures during extended frontier interactions such as those in the Upper Mississippi Valley region he chronicles. This mutuality avoids a one-sided focus upon "the transfer of cultures to newly settled lands" -- as Warkentin (1978: 209) characterized A. H. Clark's legacy within historical geography.

In parallel with these, and linked to Cronon's (1983) ecologically oriented history, early American historians are showing a renewed interest in the "back country" lying between the Atlantic-oriented coastal zones and the interior zones of expanding settlement (Hinderaker and Mancall 2003; White 2005). These studies update earlier studies of frontier in useful ways, especially through de-emphasizing the binary oppositions of two distinct cultures facing off across a 'Berlin Wall' type of rigid border. Some studies also attempt to undermine the taken-for-grantedness of the expansionist, ethnocentric American master narrative of Manifest Destiny – especially the ethnohistorically based but sometimes fanciful reconstructions "facing East from Indian Country" (Richter 2001; see also Hoxie 1988).

Geographic Studies of the Expanding US Frontier

It is somewhat arbitrary to draw a distinction between historical and geographical studies of a topic such as frontiers.

> "Frankly, I think that the distinctions made between geographical history and historical geography have been overdrawn and excessively canonical.... The perspective of historical geography in the first instance, focuses upon those relationships which have shaped the evolution of place and landscape; geographical history in contrast, focuses upon those relationships which have shaped human affairs in the past.... Both perspectives, of course, are useful and both are necessary for a full understanding of society and history." (Earle 1992: 6)

Following this distinction into the literature on the expanding frontier is useful, not to acknowledge disciplinary distinctiveness but to draw attention to the differing spatial emphases being utilized in the studies.

Recent historical geography (Conzen 1993; Baker 2003) has been characterized as involving a complex intertwining of themes, especially evident within the topical area of frontier studies. A strong environmental and anthropological strand deriving in American geography from Carl Sauer enriched the perspective of the "standard" area study. Another, more eclectic strand derived from the work of Andrew Hill Clark, which attempted to integrate the work of pioneering historical geographers on the study of "changing landscapes" with newer methodological approaches, around a theme of "geographic change" within a well-defined regional context. These strands overlap in practice. A third overlapping strand, smaller than the others, consists of large-scale synthetic studies, exemplified by the work of D. W. Meinig (Meinig 1978; Conzen 1993).

Most of the canonical historical geographic studies of the expanding North American frontier suffer, relative to the purpose at hand, from two shortcomings. These studies tend to be longer term, looking at a region across several centuries – 1650 through 1783 for Earle (1975), 1492 through 1800 for Meinig (1986) – which perforce emphasizes continuous change. For example, Cole Harris and John Warkentin (1974) in their magisterial study of Canada prior to Confederation downplay the impacts of abrupt change (e.g. from French to British sovereignty) in favor of continuity of local culture and economy. A further shortcoming is due to the perhaps inevitable focus upon Euro-American cultural traditions and their impacts. With few exceptions studies of the North American frontier leave out the earlier inhabitants (Ortiz 1988). An otherwise exemplary

historical geography study begins, “[This study] is concerned with the European rather than the indigenous inhabitants of Canada, partly because ... for better or for worse, the developments in this period that transformed the geography of Canada were triggered by Europeans” (Harris and Warkentin 1974: vi).

Meinig’s approach (1971, 1986, and 1993 for volumes of immediate relevance) to the frontier as a zone of interaction among competing groups provided a welcome contrast to Turnerian stories of (Whiggish) Euro-American triumphant advance. Meinig broadened the study of historical geography to include aspects of geographical context, scale, structure, tensions, as well as change and areal coverage (1986: xvi). In general, his exceedingly broad perspective restricts his contributions to providing a regional, systemic perspective and framework – albeit of an exceedingly high quality – within which a site-specific study can be emplaced. Alternatively, it is possible to conduct micro-studies of e.g. one particular valley (Mann 1995) within this historiographical framework.

One concept from this literature, however, is immediately helpful for the proposed research. A problem with the idea of “cultural landscape” – like “landscape” itself – is that it is “attractive, important, and ambiguous” (Meinig 1979a: 1) The concept of “settlement system” offers a possible means of tightening the concept, to add a framework for assessing the representations of Chickasaw cultural landscape found within the survey field documents.

Carville Earle organized his influential study of colonial Tidewater Maryland around the conceptual framework of "settlement system", defined as "a portion of the earth's surface that contains places or sites of human activity, which we can call settlements; routes that link these places via traffic; and boundaries that set territorial limits for activities, traffic and for the system itself..... A settlement system is an appendage of its society and economy; settlements, routes, and boundaries exist to serve these other human systems" (Earle 1975: 6).

Geographers might study settlement systems functionally or historically. The functional approach, typified by central place studies and other moments in the spatial science methodologies of the 1960s, examines the settlement system "at a slice in time when conditions are relatively unchanging and presumably the settlement system is in equilibrium." The historical approach "examines changes in the settlement system", especially "[t]he timing, rates, and sequence of change among activity sites, routes, traffic and boundaries" and the causes of these changes, which typically arise outside the settlement system under study. Earle notes that he is employing the historical approach (1975: 6 – 7).

Around this time, anthropology also looked at "settlement pattern" as an organizing principle. Gordon Willey, who helped introduced the concept into North American archeology, describes the ensuing decade's discussions as covering "archaeological – or ethnographic – settlement patterns" (Willey 1968: 208) This points to a fundamental weakness of the archaeological approach –

the nature of the archaeological evidence will omit most of Earle's components, except for perhaps fragmentary and ambiguous hints. In the late 1960s, ethnography was restricted almost exclusively to the "primitive" – resulting in a fundamental weakening of the settlement pattern approach due to exclusion of more complex, "fully functional" communities.

Bruce Trigger (1968) pulls together several classifications of levels, from various practitioners, to generate the following hierarchy for settlement patterns:

1) The "individual building or structure"
2) The "manner in which these structures are arranged within single communities"
3) The "manner in which these communities are distributed over the landscape"

He notes that "Each of these levels is perhaps shaped by factors that differ in quality or degree from the factors that shape other levels" (1968: 55).

Some studies combined landscape ecology and spatial analysis. As O'Brien et.al. note (1984: 7) "[b]y definition, the relations between groups of humans, such as frontier agriculturalists, and their physical and cultural environment are ecological. The processes that are shaped in part by these relations leave patterns upon the landscape, and many can be analyzed in a spatial sense."

Application of these concepts must be tempered by recognition that the public land surveys potentially offer a unique snapshot into cultural landscapes at a point of dramatic discontinuity. This is more than the "historical lumpiness"

called out by Peirce Lewis (1979: 23), because the discontinuity is so abrupt. Here we have the forcible dispossession of a culture from its homeland, in effect all at once. Further, their dispossessors recorded what they left behind within only a few seasons of the dispossession, before the ravages of time could do more than begin to erase the prior presence. We also have the advantage that many aspects of material life were common – or at least similar – for the dispossessed and the possessors. It is likely that most aspects of the Chickasaw material culture would have been recognizable to the Americans doing the survey. The Americans leaving records might have sneered at the quality of workmanship (e.g. Indian Agent Robert C. Nicholas on the Chickasaw Council House, as reported in Atkinson 2004: 214) but they knew it was a council house.

In recent decades there has been a resurgence of "new Indian history" that attempts to recast the "frontier" and the interactions of the multiple cultures facing each other within this region.

> "[B]etween ... 1992 and ... 2000, arguably no field of inquiry in American history witnessed such reversals of fortune as American Indian history.... Indian historians recast the spatial, temporal, and thematic parameters of the field, locating America's indigenous peoples at the centers of national inquiry....
>
> "[T]he hunger for narratives of American history that did not marginalize or stigmatize Native peoples fueled growing interests in the works of a generation of 'New Indian historians,' who had fought for years to put Native histories back onto the many vacant landscapes of American historiography.... these scholars attempted to rehabilitate blighted aspects of the past, various pothole-ridden avenues of inquiry deprived of adequate academic interest and funding. Often working in the overlap between anthropology and history known as 'ethnohistory,' New Indian historians helped restructure critical portions of the profession, as their labors, along with ongoing indigenous intellectual and community efforts, helped

> inaugurate alternative visions of America and its history." (Blackhawk 2005: 13 -14)

Cole Harris, for example, is credited with having had a change of heart regarding the importance of Native American history in understanding North American historical geography (Blackhawk 2011: 321 - 322). "Committed, then, to excavating the spatial transformations of British Columbia, Harris's findings challenge the ideological formations of North American history, lodging colonialism and the spatial practices of resettlement at the center of the western Canadian past. Viewing immigrants, in particular, as 'occupiers of spaces that recently belonged to others,' Harris has framed the subsequent human history of the twentieth and now twenty-first century as inescapably shaped by the dialectics of dispossession and indigenous resistance" (Blackhawk 2011: 322).

Environmental Studies of the Expanding US Frontier

The environmental approach to frontier studies reflected the interweaving of the several approaches in practice. The most distinctive environmental approach grew out of the work of Carl O. Sauer, who integrated theoretical components of cultural anthropology (especially the central reliance upon culture as an organizing principle for ways of life and the cultural ecology work of scholars like Julian Stewart). Sauer reads as dated today because of his extensive use of now-outmoded concepts of cultural anthropology (e.g. "cultural hearth") acquired through his long association with A. L. Kroeber. Yet his impact upon geography and anthropology continues to be felt, including recent work in

ecologically-oriented historical geography (exemplified by Cronon 1983 and others) and political ecology (Robbins 2004).

Sauer and the “Berkeley school” he founded treated the culture of the native peoples as of equal interest to that of the intrusive “western” group. The emphasis on physical landscape shaped by culture (Robbins 2004: 28 – 36) offers a conceptual framework for treating cultural landscape as a coherent concept incorporating impacts from both cultures.

The willingness to attempt understanding of the native cultural practices has become a keystone concept for one recent strand of ecological historical geography. One reason advanced for the Euro-American tendency to discount all Native American land use practices was the differing subsistence strategies of the two cultures. William Cronon (1983) examined this prejudice through a broadly economic assessment in the New England region. His research showed the pattern of systematic exploitation of landscape resources by New England natives, and how intrusive European patterns disrupted these subsistence patterns and led almost inevitably to conflict. A comparable but more multicultural perspective in the South Atlantic region of eastern North America was produced by Timothy Silver (1990), who documented the lack of appreciation of southern Native American agricultural practices in terms strongly reminiscent of how the evolving Tidewater planter practices documented by Earle (1975) were disparaged by European and New Englander visitors.

This ecologically oriented, landscape based approach has also been adopted in a number of related fields. One interesting example is the attempt to reconstruct the cultural landscape around the great pre-Contact native settlement at present-day Cahokia, Illinois. This approach:

> "... considers culture, landform, and design in a dynamic context, providing a look at the Cahokia landscape that is both material and cultural.
>
> "When dealing with prehistoric settlements, geographers have tended to focus on land use and thus consider all economically used lands. Archaeologists, on the other hand, have traditionally concentrated on the site, the place of habitation, and the activities that go on there. This study of landscape and landscape change at Cahokia goes beyond the investigation of a single community's occupancy to consider the dynamic functioning of a continuous succession of living settlements and their economically utilized lands through time." (Dalan et. al. 2003: 47)

Implications for This Research

This review of differing uses to which concepts of "cultural landscape" and "frontier" have been put by researchers has exposed some significant limitations on possibly unreflective expectations. These limitations are reinforced by the lack of insight into Chickasaw cultural practices on the part of the surveyors.

The resulting expectations of what is possible to discover about Chickasaw cultural landscape in the PLSS survey documents still allows for a worthwhile research project. First, we can expect to find some notice of such ontological features as traces of occupancy or modification of "natural" vegetation and land forms (though we may not be able to determine which cultural group created the traces). Further, we have instructions given to the surveyors

(discussed in detail later in this study) that indicate what the surveyors were prepared to consider important enough to notice and record (though again we must be cautious in our inferences, since there is no evidence that the surveyors would have had access to what the Chickasaw would have thought important.)

CHAPTER 2 -- METHODOLOGY

This chapter describes the methodology used in this study. The first broad element of methodology involved creating effective methods for working with the many pages of field notes and plats created by the General Land Office surveyors and staff as part of extending the Public Land Survey System to the project study area. The second element of methodology involved utilizing geographic information systems (GIS) technology to compile the details from the PLSS source documents into a digital archive for analysis. The third element of methodology involved working with comparable cultural inventories and other data sets to evaluate the contents of the digital archive.

Working With PLSS Source Documents

The primary data for this study came from a version of the original field notes and derived survey plats that were created as part of the initial survey of the recently ceded Chickasaw heartlands in what are now western Lee and eastern Pontotoc counties, Mississippi. This data was collected during the survey of these lands into the sections of the Public Land Survey System (PLSS). Because of its historic and legal importance, versions of this material has been preserved in local, state and Federal archives.

Details vary from state to state, but in general two copies of the PLSS field notes and township plats were created at the time of survey, including the

Chickasaw Survey covering the project study area. One set was filed with the US General Land Office in Washington D.C., and made its way into the National Archives when no longer utilized by the Federal bureaucracy for day-to-day operations. A second set was created for each active Land Office for use in the disposition of the sections of public land resulting from survey. This set might have moved from time to time as the inventory of land offices evolved over time, but ultimately would have been broken up and placed in the possession of the several counties as they were formed by territories and later states, where they became the basis for ongoing land title administration. For some states a third set was created and provided to state government. (A researcher needs to be cognizant of the provenience of the record set being utilized. The GLO set, for example, will seldom if ever show any details beyond what was initially recorded by the PLSS survey. The Land Office set, in contrast, may contain annotations indicating additional details of the landscape or of ongoing land titles – or, in the case of the Pontotoc Land Office, land patents granted to individual Chickasaws.)

Field Notes

The Federal set of field notes are cataloged by the US National Archives and Records Administration in Microfilm Series T1240A (Field Notes From Selected General Land Office Township Surveys, Rolls 1-200) and Microfilm Series T1240B (Field Notes From Selected General Land Office Township Surveys, Rolls 201-280), Record Group 49. Field notes are preserved at the township and the section level, and describe features observed along the

boundaries during survey. Regrettably, the National Archives no longer offers copies of this microfilm.

The Public Lands Division of the Mississippi Secretary of State's Office has been designated the official custodian of this Federal data for the State of Mississippi (Johnson 2009). At present they report having:

- **Original field notes** for “most of the state”, except the Chickasaw survey (where holdings have some omissions).
- **Transcriptions of original field notes** in 11x17 in. hard copy for “almost all” of the state. The provenance of this data is unclear, but it is “supposed to be” a verbatim transcription of the field notes. (Within the project study area, transcriptions were available only for two township boundary surveys and the interior section line surveys for one township.) The originals of the transcriptions appear to be typed carbon copies or possibly poor quality typed originals such as might have been created using typewriter technology available during the WPA era of the 1930s, when I suspect the transcripts were created. This research used scanned copies, so judging the quality of the original is difficult. (Note that the typescript was not readable by OCR technology, and the contents had to be manually transcribed.)

The Secretary of State’s Office for Mississippi is in process of scanning both the original field notes and any existing transcripts. This is an unfunded

work in progress, which has been completed for “some areas”, but only partially in the Chickasaw Survey.

Scanned copies of township and interior section survey field notes covering the project study area were purchased from the Mississippi Secretary of State’s Office for this research. Preference was given to the transcriptions where these existed. None of the transcriptions and only a few of the original field notes had been scanned within the project study area, so Secretary of State staff had to create the individual scans – a process that took some months to complete, as the work was performed during slack periods at their office. The practice of that office is to scan each page of the field notes into a separate document image file, in single-page Adobe PDF format. Therefore the notes for a single section are scattered among multiple pages, just as in the originals.

(Any extension of this research effort must factor in the time and costs necessary to acquire copies of the appropriate pages. The originals are reported to be too fragile to allow extended personal inspection by the researcher or personal scanning. This is validated by the damage to some pages evident in the scanned image.)

The U.S. Bureau of Land Management is in process of building a searchable online database of PLSS data. Township plats and some township level field notes, created during process of laying out the larger township perimeters within which sections were subsequently delineated, are currently available for download from http://www.glorecords.blm.gov maintained by the

Bureau of Land Management, General Land Office Records. Interior section survey field notes are at present only available for one or two townships within the project study area. (The original entry patents are also being added to this data, in a summary database record format and as scanned patent documents. No background data from the applicant case files are at present being added.) Any future researcher should consult this valuable resource when planning their activities, as BLM intends to expand the data contents as resources allow.

Township Plats

The Federal township survey plats are cataloged in Microfilm Series T1234 (Township Plats of Selected States), Record Group 49, by the National Archives and Records Administration. Scanned true-color images of the plats are also individually downloadable from http://www.glorecords.blm.gov Bureau of Land Management, General Land Office Records. A plat was drafted for each township by the Surveyor's office based on the field notes when these were turned in by the deputy surveyors for approval. Each plat typically shows the 36 sections comprising the standard township. One or more plats may exist for a township, reflecting possible resurveys made at a later date to correct errors or clarify ambiguous delineations.

Two versions of the township plats were used for this research:

1. Color, high-resolution scans were downloaded from the BLM Web site, in Mr.Sid format. This proprietary raster format is widely used in GIS

databases. It stores data at multiple resolutions within a single *.SID file, which supports rapid zoom between the minimum viewable scale and single pixels. These preserve all the color shading of the original plat, but unfortunately this includes the yellowing and fading of the original that has occurred over the last 180 years. The images available from BLM are not georeferenced to reflect their location on the Earth's surface, and so cannot be directly utilized in a GIS.

2. The Chickasaw Nation provided a set of scanned images of these plats for the project study area. The plats had been collared, which cropped the scanned image to only the cartographic portion of the map without the title, certification, or other data on the remainder of the plat sheet. They had also been georeferenced, which converts the locations on the plats from "dumb" map page coordinates to real-world geospatial coordinates. The results of these two steps allow the individual images to be added to a GIS data repository for map overlay, so that for example vector stream features from another source can be overlain onto the scan for comparison. (The scans were apparently made at different times for different purposes, so they did not all have the same format or map projection. GIS technology made reconciling these with other data contents relatively straightforward, but the variations prevented ready consolidation into a composite raster image catalog. Instead each plat was managed individually as a separate data layer.)

Assembling Images of the Source Documents

These two sets of data were acquired in multiple small increments over some months. Plats from the GLO Web site were individually selected and manually downloaded to a computer operating system folder, as the researcher had time for the effort. BLM has built an excellent Web interface into the underlying PLSS database -- albeit with some minor quirks that made assembling all relevant plats for the study area more challenging than expected. The user selects a state and county of interest, then selects an individual plat from a list ordered by township and township side. (As discussed later in this chapter, most researchers think of the polygonal area designated as a PLSS township or section as the “unit of work” but research on the survey effort requires shifting to a focus on the linear sides of those polygons. It took at least three surveys to complete the boundaries of a township – within the project study area these would be for the North, the East, and the West/South.) The plats are indexed by boundary side, so there are typically several selections on the Web page that lead to the same raster plat image. It took several inspections to verify this was the structure of the database, since in some circumstances a single township could have had multiple replattings.)

Building A Digital Archive

Applying GIS as the fundamental data management technology for this research raised several challenges, including those of geospatial data design

and of research approach. This is to be expected. "As a kind of computer software designed to facilitate the mapping of very large quantitative datasets, GIS has been embraced most readily by social science historians. It is a superb tool for mapping and geographically analyzing census data, social surveys, and other kinds of systematically collected information linked to known geographical units and locations…. The precision that makes GIS so useful in many kinds of scientific and statistical analysis, however, can make it an awkward instrument for historical research when sources cannot easily be reduced to entries in a tabular database" (Knowles 2008: 2).

One set of challenges was due to the incremental delivery of plats and scanned notes. These problems were overcome by systematic inventory control. Spreadsheets were created using Microsoft Excel to log each image as it was acquired. (The layouts of the spreadsheets used in this research are provided in Appendix A, below.) These inventories were especially important in later stages because both BLM and Mississippi Secretary of State's Office shifted file naming conventions over time as they created the raster images from the hard copy originals. None of the naming conventions were very helpful in selecting the images for a particular portion of the study area for later processing, so attributes were added to the inventories to clearly identify which portion of the PLSS grid a file described. (These inventories were originally designed to be imported into a relational database management system or into tables within a GIS archive. It proved unnecessary in order to complete this particular project, but would be a

useful means of verifying provenance -- what a GIS specialist would refer to as “lineage” – for a permanent research archive.)

Utilization of Observations from PLSS Field Notes

The process for extracting observations from the PLSS field notes was initially expected to generate a “complete” capture of data. The intent was that any investigation that utilized a particular page from the notes would not require a return to the original source – everything was to be captured in one pass. In part, this design anticipated receiving images that would be machine readable using optical character recognition (OCR) software that could convert the text on the scanned image into a word processing file. The poor quality of the scans received precluded this approach – indeed, in some instances even manual transcription proved problematic. The rationale for this effort was that the raw data could be processed into a GIS archive in toto, supporting multiple future queries. Although it later turned out to be infeasible to complete this level of transcription with the resources available, the data capture design to support the requirement continued to be used.

Field notes were transcribed into MS Excel spreadsheets, which were designed to match the standard format of field notes for the project study area. The decision was made to transcribe the notes literally, with the minor exception of segmenting the somewhat freeform notes into consistent “entries”. That is, one row in the spreadsheet might correspond to one or several rows in the notes; this was most common with section summaries and similar data. The literalness

of transcription extended to matching variations in spelling, abbreviation and format – the concern was that discourse analysis might be required to identify differential treatment of Chickasaw versus White cultural entries, so other patterns of inscription might be useful. (This turns out to create additional issues with utilizing the "raw" transcription, as discussed below.)

Columns were added to the spreadsheet to support data processing and other needs. One column created a unique "dataless" identification number for each transcribed entry. ("Dataless" is a term of art from computer database design, and simply means that there is no meaning encoded into the value except identity. This is normally achieved by using a sequential number. This approach allows maximum flexibility for reorganizing the data for future analysis.) A second column stored the PDF file name that was the source of the entry. A third column stored the entry sequence on the page of notes. Another pair of columns stored the original book and page numbers assigned to the field notes by the GLO when they were received for initial storage. Together, all of these supplemental columns allow the user to trace back to the source from which the entry was recorded, to for example check the compiler's accuracy or ability to read the often-challenging handwriting of the original clerk. An additional "Comments" column was used by the compiler to note any issues with transcription.

This format for data capture could be imported into the GIS and used to generate graphical feature records by GIS operations (described in greater

technical detail in Appendix A). For example, the location of bearing trees at a section corner could be automatically mapped by identifying the corner to which they refer and calculating a position for the tree record using the bearing and distance recorded by the surveyor. After some initial tests that demonstrated the challenges to be overcome in this process, data collection was curtailed. First, remaining PLSS units were reviewed, but only cultural elements were transcribed into spreadsheets. Second, the transcribed data was pre-selected within spreadsheets before being imported into the GIS.

Utilization of Scanned Plats

The availability from the Chickasaw Nation of georeferenced raster scans of township plats greatly simplified working with the plat data, which became increasingly important as data analysis progressed. The research proposal originally contemplated significant pre-processing of the BLM color scanned plats -- including collaring them to size, georeferencing them to township corners, and building a mosaic of individual plats to form the appearance of a unified cartographic representation across the study area. Although the Chickasaw plats were much less visually appealing, they had already been collared and georeferenced. Accordingly, the BLM plats were cataloged but not further processed, which made them available for visual inspection but did not make them an integral part of the GIS archive.

Many of the individual scanned plats from the Chickasaw Nation were actually delivered in several variations. The most suitable versions for each

township in the study area were identified by inspection and copied into the GIS archive as individual raster images. These were preserved without modification, except for standardizing the file naming conventions and (for one or two images) reprojecting the data to match the reference projection for the GIS archive.

The format of the Chickasaw plats – basically black and white images with much of the yellowing from the originals having been suppressed – encouraged experimentation with capturing more of this data than originally contemplated. The ESRI GIS technology includes a raster-to-vector conversion mechanism. Several experiments were attempted on the Chickasaw plats to capture trails, land cover information such as swamps, and other data into vector data. (The "dumb" raster plats contain no interpretative information about the contents of the plat map, only indications of whether or not the particular portion of the image is light or dark. Vectorization – whether manual or automated – uses these digital "marks" to guide the creation of a vector equivalent. Raster-to-vector data conversion is sometimes referred to as "automated digitizing". The vector graphic element becomes a record in the GIS database, with opportunity to describe the real-world thing it represents with one or more tabular attributes – which in GIS terminology makes it "smart".)

Unfortunately, due in part to the condition of the original plats and in part to the cartographic conventions used by the draftsmen to create the original plat, automated vectorization was a failure. Even the best possible outcome would have required significant post-processing, to for example tag selected linear

features as a trail instead of a stream. The actual results were far less usable. Frequently the attempt to vectorize a plat would overload and crash the computer due to the large number of intermediate records created. If the operation completed, the results were again all but unusable. The single biggest problem was the use of dashed lines and stippling by the draftsman – to the computer each dark section of a dashed line produces a separate vector feature separated by a gap from its "neighbors" on either side. (Frustratingly, it is trivial to display a vector linear feature from a GIS using a dashed line, but almost impossible to automatically get the computer to bridge the gaps in dashed input. This is an example of why GIS professionals insist that a map must be simply a report from the underlying database.)

In the end, the Chickasaw plats were put to a different use. They were displayed one at a time in the mapping display and the GIS interactive toolkit was used to manually create the desired vector record, in what is referred to as "heads-up digitizing". The operator manually traced the segments of e.g. trails using the mouse cursor, and manually saved the records into GIS feature classes of the appropriate type (for example, "Trails_frmPlat"). The scanned plats were also used as backdrops for visual inspection of data from other sources later in the analysis phase of the project. (Because they were georeferenced, the Chickasaw scans more-or-less aligned with the other mapped data. The BLM scanned plats could be brought up in a separate window to help the operator interpret the other data but could not be overlain with the GIS data.)

Utilization of Base Map Data

The vector data derived from the PLSS source documents was of limited use without some base map data of comparable scale to provide context and a starting point for working with relative location data such as that for features transcribed from field notes. (For example, knowing that an “Indian cabbin” was located 20 chains due south of the NW corner of a township is useless for mapping purposes until you know which PLSS corner is meant and where it is located.)

The State of Mississippi, like most states, has established a centralized clearinghouse for geospatial data, the Mississippi Automated Resource Information System (MARIS), http://www.maris.state.ms.us/ . This source contained a series of regional data resources at nominal scales between 1:2,000,000 and 1:100,000. MARIS also made available for download several PLSS data sets at a scale of 1:24,000, derived originally from USGS 7.5-minute quadrangles. The data was provided in Esri shapefile format, and therefore was easily loadable into the geodatabase used for creating the project archive. Files for section and township polygons were acquired, as was a point file for section corners and arc files for section and township sides. (The source data contained numerous extraneous data columns, relic traces of an earlier incarnation as Esri coverages. These were either ignored or deleted during processing.)

The 1:24000 framework for PLSS elements was the highest-resolution framework data that could be located. The field note data was presumably

capable of being mapped at very high resolution, given a known-good point of beginning, because of the care with which it had been surveyed. Data derived from survey plats would have been close to the same source scale as the 1:24,000 quadrangles (the theoretical 2 in./mi. plat scale is equivalent to 1:31,680), but this could not be depended on because (a) I was unable to access the paper plat originals to determine the true scale used by the draftsman and (b) the scanned plats I was utilizing had been subject to undocumented pre-processing. For purposes of the intended research, minor inconsistencies could be disregarded.

Initially the PLSS framework data appeared perfect for the intended purpose. However, when it was matched up with the cultural observation data to generate new features, a number of problems were encountered. Subsequent investigation discovered several problems with the source data that were not obvious until zooming in to a small spatial extent. First, boundary line files included numerous topology problems that frustrated efforts to utilize them as a starting point for placing observations. Boundaries of adjacent sections appeared to have been digitized individually, and the two arc features were not coincident (which means that each section was a complete polygon with no shared edges, and the vectors representing the common edges did not always line up). Also, some boundary lines included “jiggles” indicating poor digitizing technique and inadequate quality control. These frustrated efforts to tie section line features to section corners, or to their polygon. A related issue was identified

in examining section corners. Even in areas of uniform rectangular sections, not all corners had four section corner points. Upon inspection, a square section polygon might have anywhere from 2 to 6 “corners”!

These problems were discovered only after GIS scripts were written to generate derived PLSS corners from the MARIS source data. The scripts executed as intended but the results were frequently nonsensical when project data was added. For example, the text record documenting that “Indian cabbin” that was located 20 chains due south of the NW corner of Township XYZ was supposed to match up to a point vector record identified as “the NW corner of Township XYZ” – but the derived set of point vectors might have zero, one, or several candidate points with that attribute!

These problems were resolved by manually selecting a section corner as the anchor point, or point of beginning, for creating new features based on observations from the field notes. A single corner point was arbitrarily selected from among the possible choices. (Each observation was defined as offset some distance along a township or section line. The boundary line lies between two adjacent polygons. For example the observation might lie southwards between Section 1 and Section 2. Therefore, when using section corners as the point of beginning either the northwest corner of Section 1 or the northeast corner of Section 2 could be selected. In principle each should have the same X,Y coordinates and therefore produce the same answer.) Problem corners were

identified manually by checking the rejects after each run against the observations, and manually editing the corner file to fix the problem.

Another problem lay in the multiple representations of the PLSS polygon in the base map data and in the transcribed data, leading to numerous variant attributes. This was resolved by using text processing and SQL queries to calculate and load a standardized PLSS label into every relevant data set. These were structured so as to allow relational joins by attribute among the various data sets in the GIS (specifics of the field encoding are given in Appendix A). The labels included:

1. Townships were labeled as “TnnnSRnnnE, Chickasaw”. This reads, left to right, the township number, the township direction (always “south” in the study area), the range number, the range direction (always “east” in the study area), and the survey baseline (always “Chickasaw” in the study area).
2. Sections were labeled as “Section nn, TnnnSRnnnE, Chickasaw”. This reads as the section number plus the township label within which the section lies.
3. Section corners were labeled as “Direction corner of Section nn, TnnnSRnnnE, Chickasaw”. Direction was one of “Northwest”, “Southwest”, “Northeast”, or “Southeast”.

This rather lengthy labeling format was chosen because it was human-readable, unambiguous, and potentially extensible to most other areas of the PLSS.

Another data issue had unanticipated consequences, and led to a significant shift in approach to the GIS data archive. As noted, the contents of the field notes were transcribed literally. The resulting file contained far more variability than expected, which defeated efforts to automate the repackaging of the field note entries into usable GIS data sets. This research was completed by manually extracting the cultural references into a separate Excel spreadsheet and manually reformatting and recoding different attributes to make the results usable within the GIS environment. The “transcribe everything” process was abandoned after about 25% of the study area was completed; this was sufficient to demonstrate that the cultural entries could stand on their own for purposes of this project.

Another data issue had more to do with how to conceptualize the PLSS than with the quality or format of the data itself. First, at the level of individual observations the relevant PLSS element is the “boundary line”; as mentioned earlier in this chapter, most researchers focus instead on the polygonal “area”. In contrast, the surveyors were not thinking about the section but instead of the survey line they were running. Second, and as a result of the sequence of surveying the section lines, there is no single Point of Beginning from which all subsequent entries in the survey are displaced by bearing and distance. Instead

there are multiple beginnings, not always in a consistent sequence. The data must be manually parsed and each of the multiple beginnings identified before the observation can be plotted using bearing and distance.

Working With Comparable Cultural Inventories

Building a clean and consistent representation of the PLSS polygons and corners made bringing other cultural inventories into the GIS archive relatively straightforward. The Chickasaw Nation provided several GIS data sets compiled by other researchers (discussed in detail in later chapters). These were already constructed as point vector GIS data, so they only required reprojecting to match up with the other data in the archive. These were compared to the observations of human impacts identified in the PLSS source data by visual inspection and by use of GIS analysis functions such as “Near”. The interpretation of the results could not be fully automated, but had to be supplemented by visual inspection of the data with and without the associated plat as a background. Problems with automated interpretation included:

- One data set might represent the “same” element as a simple point while another might use a polygon.
- An area of complex human activity such as a farm or village might be compressed to a single point in an inventory. Even when the archaeological survey record identified approximate spatial extent of a site, the inventory typically represented location by a single centroid point.
- Two data sets might have nearby or overlapping graphic representations, but it would be very unlikely that their graphic representations would closely match.

CHAPTER 3 -- CONTEXT OF THE SURVEY

This chapter discusses the context within which the survey documentation was developed. It summarizes the shifting web work of sovereignty within which Chickasaws lost and Americans gained the legal right to decide the disposition of the former Chickasaw homeland. The sociotechnical process of commoditizing the newly acquired land and marketing it to American citizens is also reviewed. Commoditization refers “to the way that goods that used to be distinguishable in terms of attributes end up becoming mere commodities in the eyes of the market (Rushkoff 2005).” The legal underpinnings of the land survey process systematically deprecated any appreciation of Native American “improvements”, which may have consciously or otherwise biased the surveyor deciding what to record.

Shifts Of Sovereignty Claims Over The Area

One of the most enduring and most widely accepted themes in American history has been the image of the sturdy settler, moving ever westward beyond the limits of white settlement in search of land to farm. The earliest instance of this mythic treatment is found in the treatment of the surge of settlement beyond the fall line and coastal settlements into and beyond the eastern continental mountainous ranges today collectively referred to as the Appalachians (Turner 1893; Slotkin 1973).

In contrast to the myth, land was not always readily available for settlers, even from early stages of Euro-American settlement. This led to a "land hunger" among both those who sought a place of their own for settlement and among those who sought new ground for capitalist investment or speculation. Over time, this contributed to pressure to eradicate Native American claims to land and to open up greater and greater reaches of the continent to Euro-American settlement.

Through most of this colonial and early national period, the Euro-American settler was hemmed in by various limits to settlement. As each portion of land opened for new settlement, the perennial pattern of land speculation and rapid take-up of the best land quickly returned the community to a chronic scarcity of land. Exacerbating this scarcity was the irritation that – if only obstacles of sovereignty or dangerous savages were removed – infinite expanses of prime virgin land were widely believed to be available just to the west (Dunaway 1996).

In the late Colonial period, the area of potential settlement was effectively held by two fundamentally incompatible polities. In the east, a series of British colonies held the coastal zone along the Atlantic though not having exclusive control. The Spanish along the Gulf and southernmost Atlantic coast and the French along the Mississippi River and in the Great Lakes area were at most a marginal influence as economic competitors beyond the margins of British settlement. The real continental challenge to British sovereignty lay to the west, where various groups of Native American tribal groups still held their lands.

(Meinig 1986 provides an excellent geographical overview of the relevant colonial geopolitics, which can effectively supplement more focused studies like Cronon 1983 or Sheehan 1980.)

Thus the potential settler might well chafe at the administrative controls of the colonial or later Federal government, but before these could be released the barriers of disputed sovereignty with Native Americans had to be overcome in many of the enticing new lands.

One reason advanced for the Euro-American tendency to discount all Native American land use practices is the differing subsistence strategies of the two cultures. (See Cronon 1983 for a broadly economic assessment in the New England area, and a comparable but more multicultural perspective in the South Atlantic in Silver 1990.) European settlement and subsistence patterns were "land intensive", with a pattern of close-in fields dedicated to intensive agriculture of mixed livestock, grain, and vegetable raising. Outlying fields were used for hay and field crops requiring limited management. Foraging livestock, especially swine, might be allowed to range freely through the open land, since Europeans habitually enclosed their crops. Ronda (1974) notes that a perennial problem in Indian-White legal relations at Plymouth was the damages caused by livestock of the whites to unfenced native agricultural plots.

The upshot of all these attitudes was the systematic denigration of Native American title to land, in a moral or legal sense. The long history of land title extinction through purchase, treaty cessions, military expedition, legal

maneuverings, or simple dismissal is grounded in such underlying attitudes – though clearly responsive to more economic pressures for opening land for settlement.

Physical Limits

One important limitation on unfettered expansion to claim land that was already available for settlement lies in the terrain characteristics that limited and channeled settlers in certain directions. (Meinig 1986 provides an excellent geographical overview of these physical conditions along with political constraints at different stages of expansion. See 1986: 284ff for an assessment of conditions at the birth of the nation. See also Meinig 1993 for a comparable discussion at the end of our period.)

The Appalachian mountain complex formed a major barrier for westward travel. It is formed by a complex set of ridges and valleys generally trending southwest - northeast. The impact of its complex geography is captured in John Alexander William's (2002) phrase "the ocean of mountains". In cross-section, there are four major provinces, each of which repeatedly appears in settlement history of the region. The easternmost ridge system, called by many names in different parts of the country but in the south usually called the Blue Ridge Mountains, forms the first major barrier blocking expansion inland. Beyond it lies the great valley, named after the Tennessee or the Shenandoah rivers in the south. The western edge of the valley is formed by the main bulk of the

mountains. Beyond these in the south lies the broken uplands called in the south the Cumberland Plateau.

Traffic west was thus funneled into a few natural gaps in this barrier. Though the Appalachian system was hardly impassable for small parties on foot or horseback, such narrow routes could not support extensive commercial or immigrant traffic. This more intensive traffic had to seek out gaps such as the Cumberland Gap in southern Kentucky, to navigate complex transport systems such as that which ran west from Maryland over the mountains to the upper Ohio, or to bypass the barrier northwards up the Hudson and overland to the Great Lakes or southwards into Cherokee and Creek country in central Georgia. As Meinig notes, most of the traffic in early settlement exhibits a southwestwardly flow that has folk from Pennsylvania or Maryland settling backwoods Virginia and the Carolinas by moving along the great valley between the ridges.

Administrative Fiat

Perhaps the most frustrating barriers to the potential settler were administrative. Meinig (1986) describes the complex competitions among colonies for control over the interior, which continued even after cession of most of these claims to the infant United States. The resulting welter of land claims led to titles being granted by multiple jurisdictions under different systems of land dispersion, and led to many opportunities for fraud and rampant speculation.

The barriers could also be prohibitions on land acquisition. The colonies held they alone had the right to negotiate land sessions with Native Americans, which frustrated maneuverings of land speculators who felt blocked by the politics of land sales within the colonial administrations. Aron (1996) documents the example of the land acquisition maneuverings by the Transylvania Company, which got Daniel Boone involved in the land development business. Once these land claims were ceded by former colonies to the infant United States, in principle settlers and speculators were barred from access to a region before the Federal government was ready to grant such access.

In practice, of course, such controls were tenuous at best. The suppression of the Transylvania Company titles by Virginia is a contrary example, but is due to the proprietor losing out in political competition among speculators (Aron 1996). The region was soon "officially" opened and available. In Georgia, in contrast, the colony and later state governments did little to slow down Anglo encroachment into lands held by the Cherokee or Creeks, and in some circumstances actively colluded in such encroachments as a means of encouraging further treaty cessions. (See Meinig 1986, 1993 for an overview of this process. Dunaway 1995, 1996: 23-86 describes this for the Cherokee. Robertson 2005 examines in detail the court battles leading to Creek dispossession.)

The most effective controls on land settlement by the states lay in the reservation of tracts of western land for specific uses, the most important of

which were the military lands set aside to redeem payments to soldiers in the Revolutionary army made in lieu of wages. Such land grants did not require actual settlement by the veteran, and speculators for the most part quickly bought these up (Burke 1997).

Shifting Rationales For Dispossessing Natives

This section explores how conceptions of "nature", "the savage", and “wilderness" played into US policies for Native American dispossession and removal from their lands. These concepts underpin much contemporary and modern explanation of Euro-American treatment of the groups they encountered. “American historians since the days of the Puritans have tried to rationalize Europeans’ taking of Indian lands and lives, and all Indian peoples have endured the many traumas of contact and colonization... Reconciling the dispossession of millions with the making of America remains a sobering challenge” (Blackhawk 2006: 3).

This dispossession was the result of two independent though overlapping processes. On the one hand, European and Euro-American legal and bureaucratic interactions with Native American peoples were placed within the context of the “law of discovery” and the European intruders’ assertion to themselves that European discovery of “vacant land” gave automatic sovereignty to the “discoverer”. In this legalistic mode, natives had a limited right of tenancy, but not fee simple possession. (Robertson 2005) In the court of public opinion,

however, there was less concern with legalities and more with rationales based on “savagery” or “vacancy”, which forms the topic of this section. The two streams of argument could and did support one another, as in the “natives as still part of nature” arguments used before the Supreme Court in Johnson v. M’Intosh (21 US [18 Wheat.] 543; 1823) that laid the foundations for Worchester v. Georgia and Removal. “Indian title is a mere occupancy for the purpose of hunting. It is not like our tenures; they have no idea of a title to the soil itself, it is overrun by them, rather than inhabited. It is not a true and legal possession.” (Quoted in Robertson 2005: 67)

The role of concepts of “nature” has increasingly been examined by researchers in a number of disciplines. A key theme in these examinations has been the conceptual dichotomy of nature/culture. (Descola and Pálsson 1966; Haila 2000) It appears probable that recent explorations of these themes can guide the researcher on Indian-White relations towards a reassessment of the “conquest ideologies” (Cronon 1983: 234) of colonists and bureaucrats. It is important for this project to better understand the notions about Indians held by the general public, the politicians and the bureaucrats that shaped American policies such as Removal. These notions can be expected (van Dijk 1977; Fairclough 1995, 2003) to have impacts upon the ability of surveyors to recognize the extent of Chickasaw utilization of their lands, and possibly upon the descriptive language used to record such features within the PLSS survey sources.

As such, the emphasis is not on a detailed examination of primary sources; instead this exploration will rely on several excellent syntheses of these relationships. The approach will be to compare the findings of scholars such as Cronon (and the primary sources as cited in their studies) with the picture of the nature/culture conceptualizations emerging from recent philosophical and anthropological analyses.

For this assessment, the locus of interaction will generally include the Appalachian West from the late colonial period through c. 1830. This spatiotemporal range was chosen for several reasons. First, it is spatially broad enough to incorporate disparate environments and exploitative strategies on the part of both Native American and Euro-American societies. Second, it includes sufficient temporal depth to allow us to examine the evolution of relations among these societies, from initial colonial establishment through the initial stages of vigorous growth by the new United States.

In practice, this range means that the middle of the Atlantic Seaboard is included in this exploration, but not Florida or the area north of the St. Lawrence Valley. Temporally, it also stops short of the Removal era, since these major dislocations profoundly changed perspectives held by all parties.

This exploration seeks to assess:

- Uses of Enlightenment concepts of nature/culture, etc. to denigrate Native American claims to equality and sovereignty.

- Claims that Native American lands were "undeveloped" wilderness as justification for dispossession, to allow productive use.
- How these perceptions mesh with recent reconceptions of nature, and how these reconceptions provide insight for interpretation of the beliefs and practices of Euro-Americans of this era.

Euro-American Concepts of "The Indian"

The high-level perspective taken by this exploration shows a broad consistency in Euro-American concepts of "the Indian", including a progression through time. (For consistency with the large literature being summarized in this study – including Prucha 1977a, 1977b, 1982; Sutton 1975; and Blackhawk 2011 – I will follow customary usage and refer in quotations and paraphrases to the various Native American groups interacting with the newcomers, individually and collectively, as "Indians". This usage acknowledges the weight of tradition and is not a repudiation of preferred labeling by any surviving groups of these peoples (Blackhawk 2006: 301 – 302, Footnote 4; 2007a: 1166). Likewise, I will adopt the more recent neologism of "Euro-Americans" to describe predominantly Caucasian societies of European origin.)

One of the reasons for changing perceptions by the newcomers was the imminence of Indians in the life of Euro-Americans. "There was an inverse relationship between this interest in the Indian and the remoteness of the frontier.... " (Rutland 1951: 169) Further, the weakness of the early settlers vis-à-

vis their Indian neighbors led (or forced) them into a very different perception and policy than was available after Euro-Americans gained a clear ascendancy.

A persistent question in the history of Indian-American relations has been how the newcomers could profess and implement such conflicting concepts of the natives. Some (Jennings 1975) have simply assumed that any Euro-American interactions have been motivated by a mixture of greed and guile, and any statements or even actions to the contrary must be dismissed as expediency. Others (Sheehan 1973; Ronda 1974) hold that the contradictions are actual, and that the same individuals, such as Thomas Jefferson, could hold at the same time a belief in the civilizability of the Indian and the necessity to alienate their land and restructure their cultures.

It seems apparent that this way of dichotomizing the problem is misguided. One of the supreme ironies of Indian-White relations in this period is the extent to which individuals with diametrically opposite perceptions of Indians could converge on a policy such are Removal, with diametrically opposite expectations of outcome. As Bernard W. Sheehan observed in his extensive investigation of the impact of Jeffersonian ideals upon contemporary and subsequent philanthropy towards Native Americans, “The tendency of philanthropists to resort to manipulation and intimidation left them open to the charge of opportunism and even hypocrisy. By supporting removal, they seemed to furnish positive evidence not only of the shallowness of their principles but also of the frailty of their commitment to the Indian’s welfare.” (1973: 243)

A Tentative Equality

Early interactions between Euro-American newcomers and Indian societies east of the Mississippi River were marked by a tentative equality among the groups (but see Blackhawk 2006, 2007b for a discussion of how quickly this broke down in the Great Basin). Sadly, this was in most cases a thin veneer of expediency on the part of most newcomers. Ronda identified several reasons for this, in his detailed study of court records in Plymouth Colony. The primary reason was the existence of "sharply divergent" views between the native and colonist concepts of law and of legal procedures. Colonists were more provincial and ethnocentric than native groups. "It would have been unthinkable for Pilgrim lawmakers to suggest that those who wronged Indians be punished by Indians." (Ronda 1974: 202)

Another reason for the decline of this initial perception of equality was "the twin themes of protection and subjugation" of the Native American groups by the colonists. A third theme also began to emerge. "Many Europeans believed that as part of the larger effort to make America a purified Europe, Indians should be Europeanized in life style." (Ronda 1974: 209)

"By creating separate legal regulations for Indians, the Plymouth government suggested that Native Americans were actually childlike wards who did not fully possess the human capacities of will and reason requisite for using firearms and alcohol.... Law was at once the protector of Indian rights and at the same time a means of subjugation and exploitation." (Ronda 1974: 205)

Savagism -- Noble and Ignoble

One of the keys to understanding Euro-American reactions to the Indian societies they encountered in the New World is the recognition that "throughout the early years of exploration and settlement European thinking and feeling about the native people of America occurred within the limits of the customary division between civility and savagism. Until the nineteenth century few serious European thinkers transcended this limitation." (Sheehan 1980: 1)

This assumption of savagism is not primarily an assumption of violence, of savagery. Violence by all parties is more or less taken for granted, if not emphasized or mythologized (Slotkin 1973, 1985, 1998; Blackhawk 2007b). An important aspect of this violence is the systematic role violence played in the colonial projects of all European intrusions into the New World. "Ultimately, however, violence becomes more than an intriguing or distressing historical subject. It becomes an interpretive concept as well as a method for understanding these understudied worlds. By charting the ... changing relations of violence, [scholarship] seeks to open up historical landscapes already altered by European contact, as violence provides the clearest and at times only windows into them." (Blackhawk 2006: 5 - 6)

Savagism was the opposite of civility. It implied closeness to nature if not outright incorporation. "Savagism assumed meaning only in the sense that it inverted the civil condition." (Sheehan 1980: 3) This othering of European civilization had both ethnocentric and mythic elements. It clearly buttressed the

unexamined assumption that European civilization (and especially that of the group in question, such as the English “gentlemen” settling in Virginia (as intensively examined by Sheehan) was the measure of perfection against other societies must be measured. Further, it gave an evolutionary framework for society in that it was generally held that European civilization had raised itself out of savagism (with the concomitant inference that others could -- and should -- eventually do so as well). This mythic structure however had a dark side, an “intense fear that the coherence of life might disintegrate.” (Sheehan 1980: 3)

Savagism came in two flavors, noble and ignoble. The noble savage is tied to the paradisiacal concept of unsullied nature, and “merited admiration because they had been preserved from the burdens of history ... a virtuous exemplar.” (Sheehan 1980: 37)

In contrast the ignoble savage was uncivilized and repulsive, to some a servant of the Devil, or even a beast. “This extreme depiction of the ignoble savage came close to depriving the Indian of his humanity. Though never stated explicitly, the language of savagism disclosed the doubts about the Indian’s right to membership in the human family” (Sheehan 1980: 3).

Violence on the frontier helped promote the ignoble savage trope. As white settlers moved beyond the Appalachians, “[t]he tribes fought a series of stubborn holding actions that delayed the frontier only slightly but fueled as never before the passion of many whites to see in the Indian signs of human

degradation." As a result, a contemporary writer could describe their opponents as "animals vulgarly called Indians" (quoted in Sheehan 1973: 211)

This trope conveniently ignores a long history of mutual violence, along with any claim to legitimacy on the part of Native American military actions. "The violent transformation of Indian lands and lives characterizes European and American expansion. Neither natural nor inevitable, the violent deformations of native communities locate these indigenous pasts within the broader field of European global colonialism" (Blackhawk 2006: 9).

In the extreme, the white backlash against continued Native American resistance to white expansion led to an ethnic antagonism that would not countenance continued existence of the Indian (Pearce 1957), or in more moderate forms led to a push for separation through removal or (after this period) isolation on reservations.

The ultimate impact of the savagism trope, whether noble or ignoble, was to devalue the Native American culture and society, and thus to move him closer to a "state of nature". While this state might be admirable in some senses, it clearly did not give the Native American any claim of equality to Euro-Americans.

Enlightenment Environmentalism

Sheehan (1973) presents the theory of Indian-White relations held by Thomas Jefferson and many of his contemporaries as a philanthropy based on an environmental determinism and Enlightenment goals.

> "In the manner of the eighteenth-century rationalist mind, Jefferson and his generation viewed the future optimistically. Indeed, nature itself provided the means for its own improvement.... Differences among men, variety in nature, could be explained by environmentalism, as could any changes induced by a reaction to nature or by positive human decision. Moreover, the ends of human development came within the broad conceptions of paradise and the noble savage. These stereotypes explained the differences between civilization and primitive existence, and they also presented the white man with an ideal his whole society might strive to reach.... A deep-seated benevolence, intending for the Indian the best that civilization could offer, translated this theoretical statement into a design for action. Furthermore, the conviction that the Indian had only a short period in which to complete the work of incorporation added an element of realism..." (Sheehan 1973: 8-9)

The environmentalism of the Jeffersonian generation was based on contemporary natural history. This concept of natural history treated the Native American and other "primitive" groups as part of nature. (Sheehan 1973: 15) Both belief systems had the advantage of providing a coherent, all-encompassing, and deterministic definition of natural processes. Environmentalism, especially, held that the physical characteristics of an individual and the group characteristics of his society were determined by the environment, in a unilinear evolutionary progress from primitive savagism through the highest form of civilization, the contemporary Euro-American society.

Environmentalism had room for missteps on the road to civilization. The discovery of large earthworks in the Middle West and the Mississippi Valley was explained by degeneration theories, though many felt that these were not Indian works at all but showed the previous presence of "higher" civilizations. On the other hand, given that the environment in the New World was so paradisiacal, what had prevented the Native Americans from achieving a high civilization?

Perhaps there was some inherent deficiency in the environment, or perhaps the sheer richness of the environment led to indolence and stagnation.

Out of all these trends, the environmentalists developed a coherent utopian goal (Sheehan 1973: 89). "The noble savage provided the impulse, and environmentalism contributed the mechanism, for the incorporation of the Indian in the white man's society" (1973: 119).

An Incomprehensible Resistance

Regardless of the underlying conception of the Native American held by Euro-Americans, there can be discerned:

> "... a basic consistency [that] informed the white man's attitude toward the Indian. He generally believed that savagery would recede, while civilization spread its influence over the entire continent... the Indian always retreated, the white man always advanced. Yet governmental policy, and a substantial portion of civilized opinion, appraised the situation with more subtle ends in mind than simply forcing the Indian aside. The elimination of savagery, many reasoned, could be accomplished in more refined and humanitarian ways. The Indian need not be destroyed; in fact, most men ... agreed that the white man had a moral obligation to himself and to his posterity to see that the tribesman survived. If the Indian were transformed, if he adopted civilization and lived like a white man, his savage ways would disappear, and he would endure to become a useful member of the white man's world." (Sheehan 1973: 4)

One of the major ironies of the Euro-American perception of Native Americans in the period under investigation is the consistent inability of the whites to either see what was happening in Native American society or to understand why the "gifts" of civilization were not immediately and totally adopted (Kimney 1960; Sheehan 1973: 141). For one example, the extent to which tribal groups in eastern North America were agriculturalists was simply ignored. Even

as the Powhatan Confederacy was feeding the Roanoke colonists out of their stored surplus at the direction of a central regional authority, Englishmen were writing of them as savage hunters, devoid of culture.

This general incomprehension was apparently universal among the colonial powers intruding into North America. "The failures of Spain, Mexico, and to a lesser extent France to consolidate their influence over western Indians stemmed in part from their inabilities to understand and meet Native groups' changing demands" (Blackhawk 2006: 150).

In the "old southwest", the Chickasaw and other "civilized tribes" were increasingly shifting from their ancestral mixed economy of communal farming and hunting to an Americanized farmstead economy – but not fast enough to prevent removal across the Mississippi.

A Vanishing Race

One reaction to the recognition of the general failure of Enlightenment practices to incorporate the Indian into the Euro-American cultural milieu was to emphasize the baleful effects of this recalcitrance on the natives. As early as the late 1700s, concerned observers saw the devastation wrought on native societies by disease and warfare. Indeed, much of the urgency in the philanthropic approach was driven by the sense that Indians had to 'adapt or die'. This was only exacerbated as the far-reaching effects of what we today might label as cultural collapse became obvious, as decline in demographics, health, spirit, and

social cohesiveness persisted even after a form of peace settled over the frontier areas.

One legacy of this recognition is the treatment of the Indian as a "vanishing race", which is a persistent theme in American life down to the present (Dippie 1973). Dippie cites a presentation in 1828 at commemoration of settlement at Salem, Massachusetts as an early example. "By a law of their nature, they seem destined to a slow but sure extinction. Everywhere, at the approach of the white man, they fade away" (Joseph Story, Associate Justice of the Supreme Court 1811 - 1845, quoted in Dippie 1973: 3).

> The origin and implications of this trope are clearly summarized by Dippie. Although he attributes this to mid-20th century Euro-Americans, it could just as well have been said of their ancestors a century before, at the apex of this trope.
>
> "... American opinion on the Indian alternated between two basic positions: he can be civilized; he cannot be civilized. The former assumes that what makes the Indian Indian is his environment. Once his environment is changed, he will be transformed. The latter contends that heredity determines the nature of the Indian. Thus no amount of outside effort can make him other than what he is, a savage, congenitally incapable of being civilized. Given two other basic American assumptions -- that civilization and savagery were mutually incompatible, and that civilization was destined to reign supreme in the New World -- the two positions on the Indian's fundamental nature translate as: he can be saved through civilization; and he cannot be civilized, and therefore cannot be saved. Thus, the Vanishing Race. It is worth noting, also, that both views proceed from the assumption of the Indian's decline so long as he remains a savage, the difference being that the one supposes he can be elevated above savagery, the other, that he cannot." (Dippie 1973: 5)

The implications in the early 1800s were clear. If the Indian is to be saved, the whites need to buy them some time for the civilizational process to proceed. The best way to do this is to remove the Indian from the baleful

influence of interaction with white society (Dippie 1973: 7; Sheehan 1973). This approach served an additional benefit, since one of the main reasons the Indian resisted the benefits of the civilizational process was the surplus of resources available through communal ownership of large tracts of land. If the Indian societies could be induced to give up their ancestral lands and remove to smaller, less well-known lands at a distance, this comfortable existence would be uprooted.

> "Hence the symmetry of the process: the ultimate good of the native demanded the adoption of civilization; the end could not be achieved lest he surrendered the land; and the white man stood ready to accept it from him" (Sheehan 1973: 169).

This trope has continued to the present day, despite proof to the contrary. In discussing how he applies his research on Great Basin Indian history to an undergraduate American Indian history survey course, Ned Blackhawk describes how he attempts to counter the trope of inevitable disappearance.

> "I offer exams and teach texts specifically aimed at recasting the narrative of Indian victimization and disappearance and highlight the ways Indian communities endured, adapted, and refashioned the world around them, particularly after reservation confinement.... the resiliency of Indian peoples illustrates an underrecognized form of American achievement, one that can reorient the often linear teleology of America and offer insight into the ongoing transformations of its indigenous communities" (Blackhawk 2007a: 1169 -1170).

Wards

The language of Indian-White relations throughout its history has stereotypically partaken of paternalistic language (Dippie 1973; Rogin 1975). One reason for this language has been the recognition of the shift in relative

power from early colonial period. The tribes, having “ceased to be an object of terror, have become that of commiseration” (John C. Calhoun, quoted in Sheehan 1973: 152).

This was taken to an extreme by Andrew Jackson. He refused to treat the tribes as sovereign entities, which was one basis of his famous defiance of the Supreme Court and other maneuverings that led up to adoption of Removal as national Indian policy (Prucha 1962; Sheehan 1973: 173; Rogin 1975). This paternalistic stance has continued as the predominant trope of Indian-White relations down to the present.

Euro-American Concepts of “Unimproved Wilderness”

Another major trope in the American discussions of Native American futures was the perception that their occupation of the country was ineffective, for variously hypothesized reasons, in taming the land. Sheehan (1980: 10) describes how, in contrast to environmentalist concepts common among the Virginia settlers, the Puritans preferred an image of the “perilous wilderness” over any concept of the earthly paradise.

The concept of the land as wilderness militated against Native American rights. “Although common opinion ... refused to grant a primitive people sovereignty over land it did not cultivate, it did require that their right to its use should be formally purchased. Practically, there was no alternative.... From the beginning the English either conquered the territory or arranged for the steady

advance of their settlements by treating the Indians with the forms of sovereign power and by offering money or goods in return for each plot of ground" (Sheehan 1973: 168).

As previously noted, one reason advanced for the Euro-American tendency to discount all Native American land use practices is the differing subsistence strategies of the two cultures. (Thomas 1976; see also Cronon 1983 for a more broadly economic assessment.) European settlement and subsistence patterns were "land intensive". Many – but certainly not all – natives, in contrast, practiced a more extensive subsistence strategy. Their agriculture, focused on maize and beans, was less labor intensive than that of the European newcomers. Fields were rotated to new land as older plots were exhausted, and were unfenced (since deer and bear would not be deterred by fences and the natives had no tradition of grazing livestock). Also, natives relied far more on hunting and gathering activities than did the newcomers. As a result, native settlements – though residing in the same location for years at a time – did relocate intermittently once resources were depleted in the immediate environment.

The result of these variations in approach to subsistence was that much Native American utilization, and even improvement, of the land was quite simply invisible to the Euro-American newcomers. Admittedly, it was very convenient for the newcomers to continue such blindness, because it lent force to their rationalization for taking the land. This was exacerbated by the fact that both

societies came to rely on maize as a staple crop, pitting the two societies in direct conflict for the best farmland for that crop.

The difference in subsistence patterns helps explain how the Puritans could hold the justifications for taking Native American land documented by Eisinger (1948). The Puritans claimed they only took land that was vacant, and negotiated a sale or other transfer for all land used by the natives. This was based on a conception of *vacuum domicilium*, in which the lack of buildings, fenced and "manured" fields, and other improvements invalidated the Native American claim of ownership. As John Winthrop put it, "for the Natives in New England they inclose noe land neither have any setled habitation nor any tame cattle to improve the land by" (quoted in Eisinger 1948: 136-137). Winthrop draws the conclusion that Native Americans have a right only to "only so much land as they had or could improve, so that the rest of the country lay open to any that could and would improve it."

Indians' Place in Nature

The place of Indians in nature embodied to many early settlers a profound contradiction (Cronon 1983: 33-35). How was it that the Indian led such a "poor" life in the midst of such potential natural abundance? Cronon extensively discusses Euro-American and Native American exploitative strategies in early New England. One aspect of Native American adaptation among the non-farming tribes that baffled the newcomers was the willingness to endure hunger in the late winter months with little effort to stockpile supplies (1983: 40-41). The

natives' tolerance of seasonal variation in food supplies struck the Euro-Americans as profoundly foolish.

"[A]s part of the landscape of paradise, the noble savage reflected a unidimensional image. Rather than standing aside from his surroundings, as did civilized man, the noble savage blended into the surface of paradise. In effect, he could not be differentiated from a natural resource, and the white man tended to treat him as such" (Sheehan 1973: 90). These reactions failed to distinguish native wants and needs from those presumed by European-Americans.

> "By the last decades of the eighteenth century, it became clear that the American Indian had failed to fulfill the promise of his idealization. He had not become civilized, at least not in the way that the white man expected he would. The continent had yielded to civilization's molding influence. Through the same process, the native as noble savage, indistinguishable from the land, should have gradually taken on the virtues, though not the vices, of the civilized world. The ideal that defined the ultimate possibility in pushing back the wilderness supplied a basis for the eventual incorporation of the Indian within the white man's culture." (Sheehan 1973: 90-91)

One outcome of this trajectory of opinion was satirized by Ambrose Bierce in his famous dictionary – "ABORIGINES, n. Persons of little worth found cumbering the soil of a newly discovered country. They soon cease to cumber; they fertilize." (Bierce 1911)

Recent Challenges to the Nature-Society Dichotomy

The distinction between "Nature" and "Society" seems unproblematic to most members of Western societies. Yet it has been recently challenged on

multiple grounds by scholars working in environmental, anthropological, and philosophical fields among many others. (Haila 2000; Descola and Pálsson 1996)

Recent Challenges

"The culture-nature dualism is ultimately harmful and should be challenged; this is a widely accepted conclusion in recent philosophical discussions on the humanity - nature relationship.... I think the dualism tends to be reproduced because of two main reasons. First, it arises in human interactions with the world that tend to turn into subject-object relationships. Second, these specific subject-object relationships are generalized to a totalizing distinction between 'us' and 'the environment'" (Haila 2000: 155-156). This is clearly a summation of a major theme in Western thought (Glacken 1967), though until recently most commentators would hold this to be both self-evident and beneficial.

Haila (2000: 169) stresses that this dichotomy "is continually reproduced on the level of ideology", and thus leads environmentalists and others to think of it as inevitable. She challenges this inevitability by "identifying dominant elements in each particular instantiation and showing that their strict separation evaporates under close scrutiny" (2000: 155).

The dichotomy must first be examined to determine the boundaries of the two members. Concepts of "nature" and of "society" are independently slippery; when placed together in a relational dichotomy their meanings become even more multivalent. One useful effort to sort out different stances on the dichotomy

is provided by Marina Fischer-Kowalski and Helga Weisz (1999). They use the concept of “socioeconomic metabolism” to assess different approaches to this dichotomy. This is based in a Marxian formulation, and essentially refers to the transfers of matter and energy among the structural elements of a sociocultural system (1999: 224). They attempt a synthesis of different approaches to the dichotomy through transforming it into an overlapping dualism. In this synthesis the “natural sphere of causation” includes a reduced ‘nature’ and humans, while the “cultural sphere of causation” includes a reduced ‘culture’ and humans. This demonstrates a convincing alternative to the strict dichotomy, though in this author’s opinion it doesn’t push the overlap concept far enough.

A ground for this push lies in a distinction several authors have tried to draw between different layers of nature. Spirn (1997: 260) ties this back to the idea of “second nature” attributed to Cicero (106 BCE – 46 BCE) – “"We sow corn, we plant trees, we fertilize the soil by irrigation, we confine the rivers and straighten or divert their courses. In short, by means of our hands we try to create as it were a second nature within the natural world." Through this distinction, the traditional Enlightenment view of nature as the other to (our) culture has been unpacked into a material environment that is heavily influenced by human interactions and a subset of the total material environment that is relatively uninfluenced.

The boundary between “first” and “second nature” as described above must be arbitrary, in the sense that it is culturally negotiated in the absence of

any meaningful inherent dividing point along this continuum. Two attacks on the nature-society dichotomy have used this distinction with advantage. Tim Ingold (1997) attacks the segregation of the social from the "natural", by examining different non-human real and theoretical social acts. His conclusion is that there is nothing essential in humanity that reserves the social to our species. Another line of attack is exemplified by Kaj Århem's ethnographic work among Amerindians of the Amazon, where "the notion of 'nature' is contiguous with that of 'society'. Together they constitute an integrated order.... Humankind is thus seen as a particular form of life participating in a wider community of living beings regulated by a single and totalizing set of rules for conduct" (Århem 1996: 185).

Applicability to Understanding Indian-White Relations

These attacks on the nature-society dichotomy attempt to break down the 'othering' of nature within Western societies. This combines with invidious comparisons and an aesthetic appreciation for the exotic that Said identifies as 'orientalism' (Said 1979; Pálsson 1996). This succinctly demonstrates the linkage of the guiding tropes identified for Indian-White relations during the period of study back to the differing uses of the conception of nature-society used consciously or unconsciously by the contemporary Euro-Americans in their assessment of Native Americans.

Trivially, the challenges to the classical dichotomy are directly relevant to these perceptions of Native Americans. This is due to the embedding of the mainstream of Euro-American thought on these matters within an Enlightenment

episteme of environmentalism. The Jeffersonian perspective as summarized in this exploration must clearly stand or fall with the distinction of nature/Indian from the realm of civility/American.

There is a more subtle insight to be gained from this effort. An abiding theme in more modern reviews of Euro-American perspectives on the Indian has been the apparent inconsistencies and contradictions held by key participants. How, for example, could both philanthropists and Indian-haters agree that dispossession of the Native American of their land was “good”? The strong dichotomy of nature versus civility/culture/society gives an answer.

The Native American was to greater or lesser extent excluded from the realm of civility. Whether conceived of as noble savage or ignoble, these societies were placed within nature. In so doing, the Euro-American ethnocentrically (and conveniently) eliminated Native American cultural and social achievements from the realm of the social.

The results of this de-socialization of Native American groups were two-fold. First, it allowed the imperialist ideology behind the acquisition of land to remain unquestioned. For some, no justification for acquiring native land by any available means was needed, but for more tender consciences like Jefferson it was essential that “meaningful” claims to land by the natives be denigrated. This worked by refusing to recognize native utilization of land for subsistence or for extractive activities such as the fur trade as being comparable to the intensive and sedentary European utilization. The communal ownership of most native

groups was also invoked as ‘proof’ that natives did not improve the land. By the time that any neutral assessment of native claims to ownership would have overwhelmingly sided with the natives, e.g. in the old southwest among the Five Civilized Tribes, it was too late – there were no neutrals capable of such an assessment.

A second consequence is the perspective on the Native American individual that placed the native in a no-win situation vis-à-vis their white benefactors. The savage is embedded in nature, not (quite) an animal but certainly not fully human/mature/civilized. According to environmentalist concepts, the savage should be capable of adopting the status of civility through emulating his betters and striving to acquire the obviously superior white culture. However, this process of improvement is only ideal; in practice, the savage is handicapped by being entangled too closely with nature. Communal land ownership and the perceived indolence of native life combine to obstruct the perfection of the savage. Only by being stripped of his land and society can the savage progress. And, stubbornness and indolence has put the savage at risk; the inevitable progress of white society threatens to overcome the savage – through military force, land pressure, and loss of hunting grounds.

Conclusions

So, in the end, the Native American was thrust aside by the ascendant white society as soon as it was safe to do so. Their traditional lands lost to them piece by piece, their cultures scorned and disrupted, their ranks decimated by the

baleful influences of liquor, disease, and cultural collapse, the tribes were first removed or extinguished in the east. Later, in the western lands, a reservation policy was adopted, to protect the remnant populations of America's wards.

Would a different ontological take on the nature-society dichotomy have made a difference? To make such a claim is surely to overstate the influence of ideas on material processes. It is hard to imagine a different concept of Native American society making much difference to most Euro-American settlers, when fortunes were to be made by acquiring land and goods not claimed by fellow settlers (or even if they were already claimed). On the other hand, one can look to Roger Williams (Cronon 1983: 57-62) as a possible exemplar of an alternative approach to Indian-White relations that might have led to a truly pluralistic society in the New World.

What this exploration has done is illuminate some of the confusion around how the Euro-American settlers could sincerely believe they were acting in the best interests of the Native Americans in systematically extinguishing their title to land and disrupting their culture. In so doing, it also exposes one of the darker aspects of Enlightenment thought – the ethnocentric, absolutist assurance that its bearers have the single best answer for the question of how humans should live together, and that no contradictory answer could possibly have any validity. After all, any other society must be "naturally uncivilized".

Processing The New Lands

As the young United States expanded westwards beyond the original colonial settlements, the emerging area of settlement was stamped into the characteristic rectangular pattern of the Public Land Survey System (PLSS) that "expanded the impress of the national order upon western America" (Meinig 1993: 404). This pattern was created through the complex interaction of technoscience, public policy, and market economics. The "very common and familiar" township grid into which the newly available lands were packaged is iconic for much of the western United States (Butlin 1993: 86; see also Rogers 2005), but was neither inevitable nor structurally determined. "... [T]he distribution of principal meridians and baselines [and therefore the townships and sections nested within them] ... reflects no system but is the result of historical and geographical forces" (Johnson 1976: 72).

The initial survey of the newly acquired land was a critical step in bringing the land to market. The PLSS surveyors were instructed to record any facts they discovered during survey that would help make a section more desirable to potential buyers. One version of these instructions (Fitz 1832: 2) required: "That every Surveyor shall note in his field-book the true situation of all mines, salt licks, salt springs and mill seats which shall come to his knowledge; all water courses, over which the line he runs shall pass, and also the quality of the land. That these [shall be communicated] to the officers who may superintend the sales." Similar instructions specified what is to be noted on the plats.

The surveyors were also involved in identifying pre-existing Euro-American settlement within the area being surveyed, though the instructions for this activity were not explicit during the period of Chickasaw surveys. Prior to the Preemption Act of 1841 (Hibbard 1965: 144-170) the guiding presumption (modified by a sequence of special legislation during the 1830s) of the Federal authorities had been that no settlements of outsiders within tribal lands would be recognized as legal. However, in the porous conditions along borders in the Old Southwest (Hurt 2002: 103-163; Atkinson 2004) many pre-existing improvements by Euro-Americans and mixed bloods could be noted. The surveyors unofficially noted some of the more important of these on their plats. Various treaties and an evolving bureaucratic process identified methods of claiming rights to property through preemption but these did not explicitly call for survey to establish ownership rights – in fact, claims had to be recast within the newly created framework of land description created by the public land survey.

Systems of Land Description

Land within the United States is treated as a type of real property, as "real estate". The underlying assumption is that the earth's surface is divided up into a series of separate and distinct parcels of land, each of which is capable of highly precise description in the terminology of land surveying and of highly accurate demarcation by surveyors following this legal description. The parcels are defined in US law and practice so as to share boundaries with adjacent parcels or other unit of land so that the total area on the earth's surface within the legal

jurisdiction falls into one of three categories – a real estate parcel, a unit of public ownership such as a street right-of-way, or “public land” not (yet) in individual ownership. (In practice, minor errors in past subdivision steps may have created “slivers” of unassigned land but when discovered these are usually either added to adjacent parcels by an adjustment of boundaries or converted into a new parcel belonging to the local unit of government. These adjustments restore the idealized vision of a continuous fabric of contiguous real estate units.)

In order for this to be true, a standard descriptive framework must be available for use in devising and interpreting these legal descriptions. The Public Land Survey System is but one of several such frameworks in use within the United States of America. The traditional metes and bounds system was imported along with many other institutions into the thirteen colonies, including into their westerly extensions under colonial charters into areas such as present-day Tennessee or Kentucky. States derived from Spanish colonial areas, such as Texas, also have metes and bounds frameworks. Ohio, the “test state” for the Federal rectangular survey system, still has “nine major land surveys and 46 subsurveys” to contend with, with varying grids and orientations (Burke 1997). The Ohio situation is an extreme example, but several other states also have mixed survey frameworks, such as the Western Purchase in Kentucky which is a state-level implementation of the PLSS grid within an otherwise metes and bounds state.

Metes and Bounds

The oldest form of survey framework is the use of metes and bounds. This practice within the United States derived from medieval land mensuration practices, especially in English law, though the concept may go back to Pharonic Egypt.

the US Bureau of Land Management defines Metes and Bounds as “[a] method of describing a parcel of land by citing the owners of abutting lands and describing the length of each course of a boundary as ‘along’ some apparent line such as, ‘along a stream’ or ‘along the road’. In modern usage, a metes and bounds description includes the bearings and distances of each course” (US BLM 2003).

In earlier practice a metes and bounds description might read:

> “Beginning at the mouth of Oak tibby-haw and running up said stream to a point, being a marked tree, on the old Natches road, one mile southwardly from Wall's old place. Thence with the Choctaw boundary, and along it, westwardly through the Tunica old fields, to a point on the Mississippi river, about twenty-eight miles by water below where the St. Francis river enter said stream on the west side.”

This is the boundary between the Chickasaw and Choctaw as defined in the cessions made by the Chickasaw Nation under the Treaty of Pontotoc, Article 13 (Kappler 1904: II, 360 – 361). More modern metes and bounds descriptions use precisely measured bearings and distances to define each boundary element.

It is obvious that this kind of description is subject to significant ambiguity, especially after a period of time. In fact Article 13 of the treaty included a provision that “the old and intelligent chiefs” of the Chickasaw and Choctaw should be empowered to jointly define a more precise boundary. The long and painful history of land law in states like Kentucky (Aron 1996: 76 – 78; Hammon and Harris 2004; Smith 2013) attest to the difficulties inherent in this system.

A critical element in this practice is the unambiguous establishment of a known point of beginning for this description. Each element of the metes and bounds description is therefore defined relative to this Point of Beginning. The Point of Beginning of a metes and bounds description can be the corner of a previously surveyed property, an observable “natural” feature such as the centerline of the intersection of two roads or a distinctive rock on the banks of a stream. In modern surveying, it may be an arbitrarily selected point whose coordinates are determined by GPS or other survey method.

A possible point of confusion arises when one thinks of metes and bounds description practices as archaic and as superseded by the Public Land Survey System. This is both incorrect and a misunderstanding of how metes and bounds descriptions are used. The PLSS and its predecessors provided a highly accurate and consistent framework of monumentation – the set of corner points – which can serve to define the Point of Beginning of a metes and bounds legal description. This greatly reduces two of the problems of a pure metes and bounds approach to land delineation – first, the cost to the private parties of

establishing an accurate location of the point of beginning for the survey is substantially eliminated, and second, the risks of a point of beginning being ambiguously defined, contested, or lost is reduced. This framework role was not important during land office sales, as the land was offered as full sections or standardized quarter-section (or occasionally smaller) units, but as land was subsequently subdivided among new owners the requirement for consistent metes and bounds styles of legal description increased. The PLSS framework doesn't eliminate potential problems but it does provide an independent means of unambiguously resolving any problems of location as might arise during subsequent land transactions.

Metes and bounds descriptions of property continue to be used today throughout the United States. They are typically referred to simply as "legal descriptions" of the land, but they are constructed in the same manner as the older forms. They are used even in states lying within the area of the PLSS – when the unit of land sales was a consistent element of a section, the shorthand "quarter" terminology might be used, but as soon as that section was split up into smaller pieces a metes and bounds description was required.

Rectangular Prototypes

Ohio, as noted, has a number of rectangular grid systems (Burke 1997 provides a systematic overview; Ford (1910) created an early but still useful systematic review of colonial survey and land tenure systems.). The territory was being surveyed during the early expansion of the United States, when Congress

was experimenting with various approaches to delineating parcels over relatively large areas (as discussed above). Native American land title in the Old Northwest was extinguished in a series of eight treaties, beginning with the Treaty of Greenville in 1795 and ending in 1818. These opened up areas for European settlement from the southeast along the Ohio River and northeast along Lake Erie.

It is not necessary to go into detail about how each of the prototype grid systems was structured. The relevant point is that the mature PLSS approach applied in the Chickasaw cessions containing our study area in northeast Mississippi was the result of several contingent decisions over the previous four decades. Major early variants within Ohio (Burke 1997: 4 – 16) included:

- Virginia Military District – Metes and bounds area in southeastern and central Ohio, created by the infant State of Virginia to satisfy military bounty warrants from the Revolutionary War.
- Western Reserve – 14 counties in northwest Ohio, originated in a colonial charter to Connecticut. The area was subdivided into five-mile-square survey townships. Interior subdivisions were of arbitrary shape and size.
- Fire Lands – Set-aside on western edge of Western Reserve by State of Connecticut prior to transfer to Ohio, for victims of British invasion of Connecticut in 1781. The area was subdivided into five-mile-square

survey townships. Interior subdivisions were into four quarter-townships.

- Seven Ranges – Area in eastern Ohio, the first area to be surveyed under the Land Ordinance of 1785. Used the six-mile-square survey township, with interior of 36 regular sections. Numbering of sections began in the southeast corner and ran northwards so that Section #1 and #7 were adjacent. (Two other survey areas along the Miami River in southwest Ohio used the same organization.)
- Post-1796 – Remaining surveys in Ohio were based on the requirements of the Land Act of May 18, 1796, which basically established the PLSS as applied throughout the rest of the country.
- The state also includes numerous small districts, including small "purchases", military reservations, and other Federal holdings, which were surveyed outside of larger districts. These exhibit a number of idiosyncrasies as compared to the mature PLSS framework.

The Public Land Survey System Framework

The Land Act of May 18, 1796 (Johnson 1976; White 1991; Burke 1997) created the system of land description familiar to us as the Public Land Survey System (a label applied retrospectively, at a much later date). This framework included the following key features:

1. Creation of a baseline framework of Principal Meridians and Baselines (called “Basis lines” by Gideon Fitz) as primary control structures for locations within the framework. The Principal Meridian name was used to refer to all survey activity within its area of control, which had the benefit of ensuring uniqueness of names across the entire country. (“T11SR05E” might occur many places across the country, but only once within the Chickasaw Survey, based on the Chickasaw Meridian.)

2. Use of a six-mile-square township as the largest control structure for land survey. These are to be numbered North-South of the Baseline and East-West of the Principal Meridian. This naming convention has changed over time. In the documentation relative to the Chickasaw Survey covering our study area, the official convention was to list Range before Township (Fitz 1832), but most field documentation followed present-day practice in listing Township before Range.

3. Creation of standard meridians every six townships north or south of the Baseline, which was used for adjustments of the PLSS framework to accommodate the east-west shrinkage of a degree of longitude as one moves northward away from the equator. (This interval was adjusted from time to time. Within our project study area, a standard meridian was created along the southern boundary of the township tier designated T08S. This explains the offset of township and section corners visible within the survey framework.) Note that in more

western areas this structure of standard meridians has sometimes been used to define a larger control structure above individual townships, but this terminology was not apparently used in the District South of the Tennessee.

4. Division of (at least some) townships into 36 mile-square sections, numbered from the northeast corner in an alternating pattern in which sections 1 through 6 run east-to-west along the top tier of sections but sections 7 through 12 run west-to-east. (This was later standardized for all townships.)

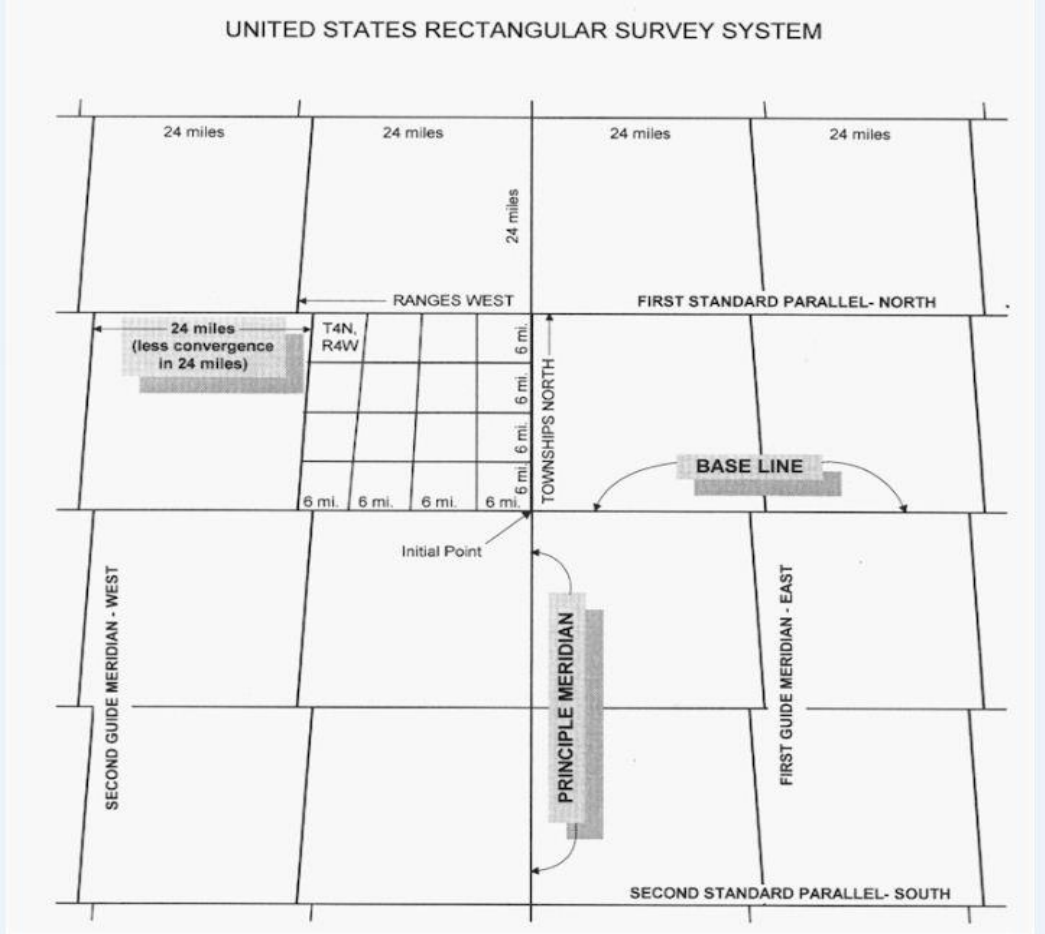
5. Placing any adjustments to bearings or corners within the “outermost” tiers of sections. For example, in T09SR06E the eastern and southern tiers of sections might not be the same mile square configuration of the others in the township.

Evolution of the Public Land Office to 1850

The several colonies had had independent land offices, which varied somewhat based on the terms of the colonial charter. All of these had a common basis in the body of law and real estate practices of England. After the success of the Revolution, these practices were not adequate for the new situation. Two forces drove the new nation towards establishing a national real estate program, despite the classically liberal laissez faire propensities of the Confederation period. First, with the overthrow of British rule the administrative barriers to

westward expansion embodied in such regulations as the Ordinance of 1763 no longer applied. Further, the reluctant exodus of British forces from the Old Northwest territories and the need for the new nation to establish independent relations with the Native American tribes meant that some administrative process was required to regulate incorporation of newly available land into the national domain. A series of Congressional actions over about 40 years put this process into place (Johnson 1976: 54 – 70; White 1991: 12 – 112).

Figure 3-1: Regional Framework of PLSS



SOURCE: Land Prints, Inc. http://www.landprints.com/LpRectangularSurveySystem.htm

The first effort in this direction was the Ordinance of 1785, “An Ordinance for Ascertaining the Mode of Disposing of Lands in the Western Territory” (White 1991: 12 – 15). This was the first effort at national land regulation. It established the basic framework of land description and delineation in the newly opened territories and an institutional structure for conducting the survey. It established the office of State Surveyors, under the authority of the short-lived Geographer of the United States. The office of Geographer grew out of wartime support efforts. In a resolution of May 27, 1785, Congress continued in service the “geographer of the United States” for a period of three years (Evans and Frye 2009: 1). Timothy Hutchins was one of two “geographers to the army” and continued as the first (and almost the only) Geographer of the United States. Upon his death the office lapsed, soon to be replaced by Surveyor(s) General. The State Department re-established this office in 1921, but with a different mission and scope (Taylor 2009).

The Ordinance of 1785 also incorporated as national policy that only lands acquired by the new nation through Indian cessions were to be included in the survey, and that only the national government had the legal right to negotiate such cessions. This restriction was part of a systematic plan to “ensure lands obtained [from] Indians came with unimpeachable title deeds” (Schweikart and Allen 2004: 194) Along with the Indian Ordinance of 1786 and the more famous Northwest Ordinance of 1787, the Congress established “two fundamental principles of American Indian policy: the sovereignty of the national government

(versus the states) in orchestrating Native American affairs, and the right of soil [of Indians, which] “could be removed only through military conquest or bona fide purchase.” As these avowedly conservative historians admit, “No one pretended that this policy intended that the laws would favor the Indians.... Rather, nationalist leaders wanted an orderly and, if possible, peaceful settlement of the West” (Schweikart and Allen 2004: 194).

The Land Act of 1796 (Johnson 1976: 53-55) carried over many of the land management principles defined during the Confederation period into the new Constitutional era. Its ostensible purpose was for the orderly disposal of lands north of the Ohio River, but it refined and extended the earlier processing regulations. It for the first time authorized the Surveyor General to hire deputy surveyors as contractors, a system of privatization that persisted for over a century. It established the concept of a Principal meridian to control surveys. It also standardized use of the Gunther’s chain as the instrument of measurement.

Also in 1796, a companion act “regulating the grants of land appropriated for military services, and for the Society of the United Brethren for propagating the gospel among the Heathen” established an important principle. Corners established through the survey of public lands were to be considered inviolate even if later surveys proved that they were not correctly set. Original errors of surveying were to be carefully measured but that they were not to be corrected, and such errors should not lead to the changing of boundaries. This is the

earliest expression of the inviolate nature of the American survey, a principle still in force (Johnson 1976: 56).

In the early 1800's other elements of the Public Land Survey System were quickly put into place (Johnson 1976; White 1983). In 1800, the concept of the land office to process the sales of a designated area of the public lands appeared. In 1803, the concept of a principal meridian was applied to more westerly areas with the creation of the 2nd Principal meridian in Indiana. In 1804, Congress established administrative procedures for documenting, recording, and reporting on survey activities that led to the system of PLSS field notes and plats. The same act also mandated establishment of quarter-sections as the smallest unit of land survey within the PLSS. In 1832, this was supplemented to allow quarter-quarter-sections of 40 acres.

Thus, when in 1812 the General Land Office was established, the essential elements of the Public Land Survey System were in place. Up to 1855, a series of acts and administrative instructions refined the process but essentially left it unchanged. In 1855, the first system-wide manual of instructions was promulgated, superseding localized manuals such as Fitz (1834) had created for the District South of Tennessee.

The other major thread in the evolution of the PLSS, evolving in parallel with these purely administrative changes, had to do with the legal status of squatters on the public lands. (The related issue of trespass onto Native American lands was not dealt with in the legislative history of the GLO.) The

official policy since 1785 had held that the public land was not “legally free for selection” until survey was complete (Johnson 1976: 64). The Pre-emption Act of 1841 for the first time recognized “squatting” on public hand and thereby gaining the right to purchase up to 160 acres (a quarter section). When two or more claimants settled on the same quarter section, the one who had come first had the right of pre-emption; this and other disputes were to be settled by the register and receiver of the district in which the land was situated. This formalized the various accommodations to the realities of White intrusions into the public lands, often even before title was fully acquired by Native American cessions.

Technology of Survey and Recordation

The technology of land survey as required to implement the Public Land Survey System varied with the task (Burt 1997). Highly accurate and precise observation using the most advanced instruments available was required to establish the Principal Meridians and related control structure, and to develop the legal documents used for the official act of recordation, which actually created the new parcels of land. Once these were in place, however, the process of laying out the rectangular elements relative to them could be performed by less skilled surveyors using less exotic instruments. The minimum instrumentation required would include (1) a compass, transit or other instrument for determining the bearing of a line; (2) a Gunter’s chain with tally rods for measuring linear distance along a line; and (c) note taking equipment for recording work

performed. Axes to clear a path and mark trees, and shovels for setting up corner posts, were also important tools that made the application of more sophisticated technology possible.

Gunter's chain was specified in the Land Act of 1796 (Johnson 1976: 53-55; Linklater 2002) as consisting of 4 perches (rods), 16½ feet each, and was to be adjusted to a standard kept for that purpose. This measuring distance of 66 feet (100 links) per chain or 80 chains per mile was to have a lasting effect on the width of subdivisions, roads, and alleys in the United States. It was widely used in surveying and measurement, and (except for a regrettable tendency to elongate during extended use as the joints between the links wore) sturdy and easy to use. Its major disadvantage was that the heavy links were challenging to stretch horizontally as the survey crew attempted to compensate for sloping terrain.

Surveyor General Tiffin in 1815 had instructed "As the measurement by the chain is the principal source of error in surveying you will be careful to attend to your chainmen that they carry the chain horizontally, and to prevent their losing a tally rod you must be provided with a set of them pointed with iron or steel, and to allow no other to be used but the precise number which you shall have selected for the Purpose" (quoted in Johnson 1976: 76). Tally rods were large spikes sunk into the ground at the leading edge of the extended chain, then picked up by the trailing chain handler when he arrived at that spot. The rod thus (a) marked a spot on the line being measured, preventing a drift to one side or

the other; and (b) gave a quick count of how many chains in distance had been measured from the initial point. If the trailing chain handler wound up with five rods when a measurement was completed, the crew had covered a distance of five chains, plus however many links forward of the last tally rod had been required.

A recent review of survey accuracy issues for use in legal proceedings (Hermansen 1992) held that "The typical compass and chain [survey of the 19th Century] was seldom able to obtain measurements better than the nearest ¼ degree (15 minutes) in direction and nearest link (7.92 inches) in distance." Using this standard, any distance measurement would have to be taken as plus-or-minus 7.92 inches assuming no other errors had crept in to the measurement process. These inherent inaccuracies have to be accounted for by later surveyors, but can be ignored for this project.

The field technique of the deputy surveyors is not often exposed in the PLSS records (with the limited exception of "random" line adjustments used to identify and allocate cumulative error within a township). The field notes required of the surveyors were not, as would be common today, the raw notes compiled step-by-step in the field. Instead, they were a summary of results, compiled using standard forms required by their individual contract and/or by the instructions applicable to their contract. We don't know, therefore, exactly how they handled the process – if any – of correcting for the inevitable errors of measurement of distance or angle.

We do know that they were supposed to follow good contemporary survey practice. For example, a directive was issued in the 1834 General Instructions to Deputy Surveyors, requiring surveyors to take random lines and to retrace them when laying out townships (Johnson 1976: 74-76). To speed up the survey of western Iowa, only "fallings" – lines obtained by merely following a compass without rechecking the random lines – were often used. Along random lines, surveyors were expected to "close the corners" by adjusting the locations of section corner posts set earlier at every half mile along the exterior township lines (Johnson 1976: 76). The survey party was expected to adjust backwards from the end of a section line and proportion the errors encountered.

In many areas surveyors did not always make these corrections. For example, in parts of Alabama the quarter-section post was not adjusted for overage or underage of the section line (Griffin 1999). If the section line were exactly one mile in length from section corner to section corner, the quarter-section post would be located exactly one-half mile from the corner of origin using this method. The survey party often placed the post when they had chained off the first half-mile. If the section line measurement was not exactly a mile, the surveyors were expected to go back and adjust the quarter-section post placement accordingly – so if, for example, the section line totaled only 99 chains, the post should be adjusted to be 49 chains, 50 links from each section corner.

Commoditizing And Disposal Of Federal Lands

This complex public land survey "system", contrary to its mythic status, evolved over time in a process both highly deterministic and highly contingent. The technoscience determinism of geodesy and trigonometry has captivated the popular conception (Linklater 2002), but the administrative pressures of supplying the never-ending demand for new land to purchase did more to shape the institution.

The approach taken here to unraveling some of these complex interactions is metaphorical – but only to a degree. The participants in the formation of the public land survey institutions and practices probably did not consider themselves participating in a manufacturing enterprise, but if one considers their activities in this perspective much becomes clear because of the resulting de-emphasis upon technology.

The Techno-Business of Supplying the Land Market

The process for supplying land for the marketplace was an extractive process based on a finite supply of raw materials that were extensively packaged to produce relatively standardized commodities for the marketplace. The land survey system turned land into property, "real estate". The imposition of the survey grid onto broad expanses of land produced a segmentation into standardized packets for the market. The size and regular shape of these

packets were constantly tinkered with in the early decades of the industry, as the land sellers tried to adjust to market demand.

The combination of frontier exploration and scientific precision embodied by intrepid parties of surveyors has captured the public imagination (Johnson 1976; White 1983; Linklater 2002). Yet the policy debates back in Washington regarding the optimum specifications of the land commodity did far more to shape the form of the public land survey.

Market Demand for Land in Early 19th Century America

At the end of the Revolutionary War, the newly formed United States was burdened by significant debt and no effective fund-raising mechanisms. What it did have – in apparent abundance – was public lands and willing buyers. The Jeffersonian vision that largely shaped the initial approaches to America's public land policies called for creation of a nation of yeoman farmers, each owning enough land to provide for their family and a modest surplus for sale.

The public policy of the period favored expeditiously selling this land so as to generate cash for the government and to start the land improvement process (Rohrbough 1968; Johnson 1976; Prucha 1982). Building on earlier efforts, the General Land Office was implemented in 1812 to expand and execute the systematic process begun by the Surveyors General for commoditizing these vast tracts of land, leading to the familiar Public Land Survey System (White 1983; Linklater 2002).

The challenge was to get this land onto the market quickly yet profitably. The approach taken, loosely based on ideas of Jefferson, was to survey the area into uniform rectangular tracts of land. These would be marked on the ground and documented in public records in a consistent manner. The prospective buyer could quickly ascertain what land was available and where it lay relative to rivers, towns, and other terrain features. The land units were generally uniform in size, and any distinctions in quality were duly noted, so that a buyer could in theory select a suitable purchase without actually inspecting the property. Certainly, the administrative considerations of quick field delineation and ease of handling sales overrode any local characteristics of the property.

This examination follows a portion of land from initial intake into the "public lands of the United States" through to "original entry" by the first private purchaser. In so doing, it traces a linear complex of institutions, individual participants, and technologies – administrative and technological. This trace delineates a network of activities that, as noted in the organizing metaphor, resembles the pattern of extractive commodity manufacturing.

This tracing is intended to help clarify the relationships among key institutional components of the "land office business". This complex network has been studied by several scholars, but such studies tend to focus on one component in relative isolation, which can lead to unexamined distortions. White (1983) focuses on the administration of the General Land Office. Linklater (2002) (and to some extent White 1983) discuss the surveying techniques used to lay

out the land, while Burt (1997) focuses on the technoscientific practice of survey. Rohrbough (1990) and Young (1961) focus on different aspects of the sales practice. The interactions among the actors in the complex network are frequently noted, but the implications are not traced.

The primary actors whose actions we will be tracing include:

- Negotiators of treaties, to acquire new acreage for incorporation into the “public lands” (This process is itself a complex network, which we will treat as outside the network under examination. The literature on treaty negotiation with Native Americans is voluminous (Prucha 1982) while that of similar negotiations with European and Euro-American sovereignties is more scattered but still massive.)
- Surveyors within the General Land Office, to identify the boundaries of large tracts of public land and divide it up into parcels for sale.
- Land Offices within the General Land Office, to manage the land sales processes

Within the portion of Chickasaw territory examined in this study, there is little notice of non-Indian settlers who were not associated with American institutions such as missions or the government Agency. In general, such individuals would have been treated as squatters whose establishment prior to the opening of land sales might or might not be recognized through preemption rights (Hibbard 1958; Johnson 1976).

Provisioning the Market

The public policy was driven by both the desire of government to expand settlement and the pressure of land speculation. "Upon the urging of Congress, in turn spurred on by eastern capitalists, land surveys were carried out rapidly, to stay ahead of the settlers.... [The land business] could not have operated with a survey system in which land parcels were identified ambiguously. Simple identification made possible the easy transfer of land and thus land speculation and sales. Thus another potent force contributing to the speed of the westward movement was the rectangular survey" (Johnson 1976: 19-20).

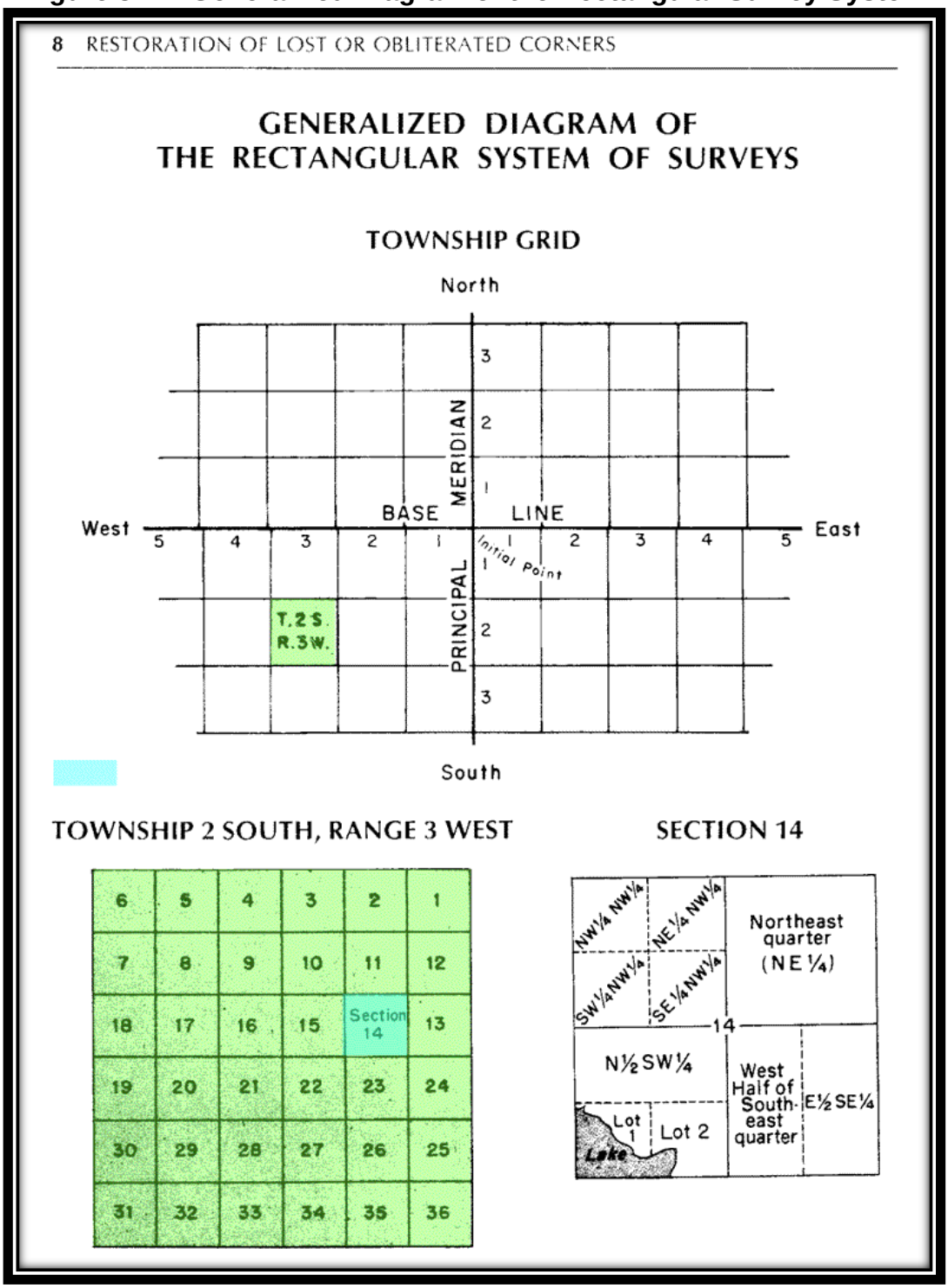
The resulting provisioning process moved ceded land into the marketplace through a sequence of steps.

Acquisition through Treaties of Cession

The public lands which were inputs into the land provisioning network did not exist de novo. The public lands had to be constructed through a dual process of transfer.

> "The public domain of the United States included all lands that were ... owned by the United States and subject to sale or other transfer of ownership under the laws of the Federal Government. The national domain, on the other hand, consists of the total area, both land and water, under the jurisdiction of the United States. Hence, the difference ... is one of property rights in the land itself and not one of sovereignty.... This definition of the public domain excludes all lands rightfully claimed by individuals or other private interests on the basis of occupancy or grants by other governments prior to the accession of the territory by the United States." (Hibbard 1965: 7)

Figure 3-2: Generalized Diagram of the Rectangular Survey System



SOURCE: BLM 1994. Restoring Lost and Obliterated Corners

The public domain at any given time consists of the public lands, those parcels the United States could at least potentially sell to a private party without losing sovereignty. Participation of a parcel of land in the public domain thus began when the United States acquired sovereignty over a tract that had no recognized pre-existing private claim encumbering it, and ended with the sale to the first private purchaser, called “land entry” by the General Land Office (Hawkins 1997).

Thus, the formation of the United States did not automatically create a public domain. Land not already in private ownership within the original colonies belonged to the superseding state, not the national government. One of the first orders of business of the infant nation was to negotiate a series of treaties or agreements with the several states to define their indefinite or extended western boundaries and to transfer the unsettled western portions of the colony to the national government. Some of these agreements were negotiated as preconditions for ratification of the Articles of Confederation, and some shortly thereafter (Hibbard 1965: 7-14). Importantly, one side effect of these negotiations was resolution of several inter-colony debates over contested stretches of their western backcountry. However, for several reasons, including existing grants of extensive bounty lands or prior settlement granted by colonies prior to these cessions, only the portions of the backcountry west of the newly-created thirteen states and north of the Ohio or (approximately) south of the Tennessee became part of the Public Land Survey System. The new states of

Kentucky and Tennessee were formed out of these ceded lands, but remained outside the evolving system due to their origination as parts of an original colony.

Lands acquired through international treaty, such as the lands west of the Mississippi River, were more systematically processed into the public domain, since there were none of the complexities of colonial history to resolve. Only grants of land ownership from the ceding sovereign power need be acknowledged, which was as much a matter of expedient public policy as of law. Indeed the survey and adjudication of such claims caused long-running problems in the South and Southwest.

A third category of land acquisition by treaty was the cession of land by Native American groups. Comparing these treaties to those such as the Louisiana Purchase from France, certain ambiguities arise that created policy debates and administrative snarls throughout the extinction of Native American title to land. Basically, the US Government recognized a limited sovereignty right of a tribe sufficient to transfer both sovereignty and title to the US through treaty. At the same time the government did not recognize any systematic property rights of individual Native Americans, nor did they consistently recognize the rights of tribes to sell land to non-members. While this contradictory set of policies conveniently gave the Federal government the exclusive right to acquire land from tribes, it did give more than a pro formal legal “cover” for this acquisitiveness. In combination with land grants from France or Spain, these

created complex challenges to the simple land survey process that bedeviled the land office for generations (Young 1961; Hibbard 1965; Rohrbough 1990).

Packaging the Commodity

Once a tract of land was added to the public domain, the general policy of the United States Government was to get it onto the market as quickly as possible. This typically proceeded in the following sequence of steps, with numerous variations due to local circumstances.

(1) Extension of the framework to support the survey activities.

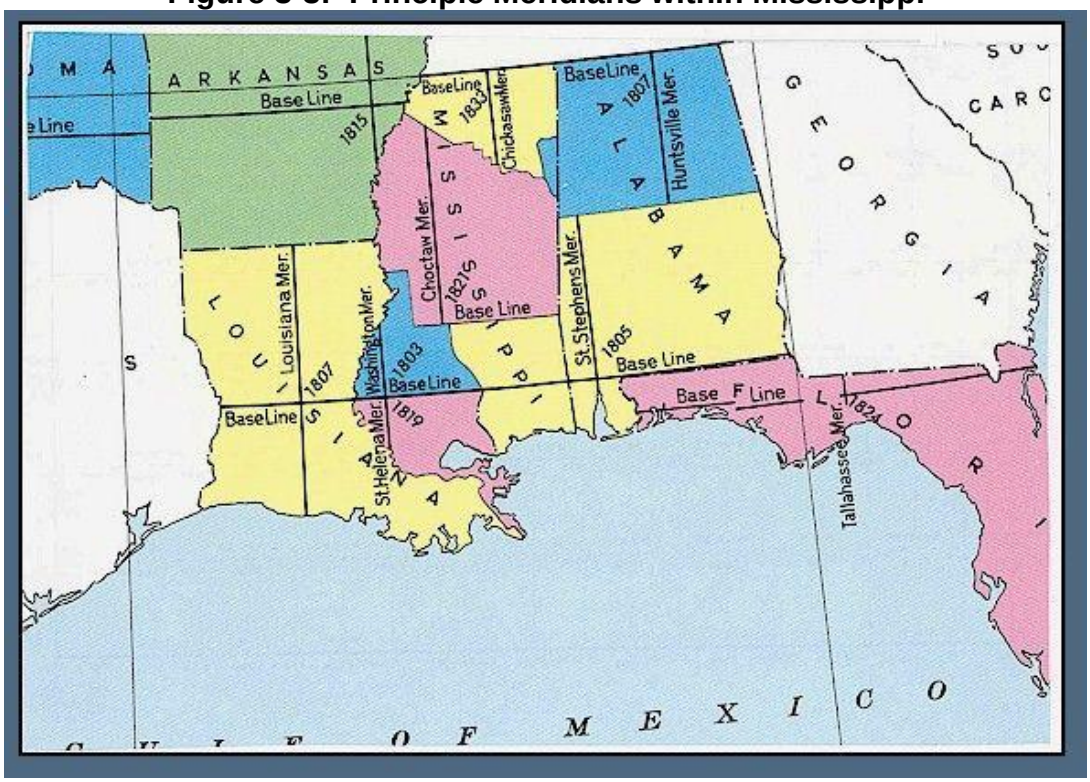
The technical framework of the public land survey required a consistent approach that could be extended indefinitely across the continent, with several technical adjustments (discussed below). This consistency was not strictly speaking a technical requirement, though it made the work of surveying such vast tracts proceed more quickly. Instead, "[the land business] could not have operated with a survey system in which land parcels were identified ambiguously. Simple identification made possible the easy transfer of land and thus land speculation and sales. Thus another potent force contributing to the speed of the westward movement was the rectangular survey" (Johnson 1976: 20).

Table 3-1: Principal Meridians within State of Mississippi

Meridian	Adoption Date	Governs Surveys In	Initial Point
Washington	1803	Mississippi	Latitude 30-59-56 Longitude 91-09-36
St. Stephens	1805	Alabama and Mississippi	Latitude 30-59-51 Longitude 88-01-20
Huntsville	1807	Alabama and Mississippi	Latitude 34-59-27 Longitude 86-34-16
Choctaw	1821	Mississippi	Latitude 31-52-32 Longitude 90-14-41
Chickasaw	1833	Mississippi	Latitude 35-01-58 Longitude 89-14-47

SOURCE: http://www.blm.gov/wo/st/en/prog/more/cadastralsurvey/meridians/alabama__louisiana.html

Figure 3-3: Principle Meridians within Mississippi



SOURCE:http://www.blm.gov/wo/st/en/prog/more/cadastralsurvey/meridians/alabama__louisiana.html

This framework allowed relative location of the corners of the townships, derived from standard meridians of longitude and base lines of latitude. These in turn were derived from a combination of reference to base points and direct

celestial observations. Burt (1997: 15-23) provides a detailed, technical discussion of how the Ellicott Stone was set as the base point in the Mississippi Territory in 1799, on the west bank of the Mobile River near present day Mobile AL. This stone was subsequently the point of beginning of the St. Stephens Prime Meridian. The survey also delineated the base line along the 31º north latitude.

From these and similar surveys, the subsequent public land surveys would begin. The early surveys, east of the Mississippi River, tended not to be extended very far from the origins. As skills and processes improved, the surveys were extended. The Fifth Principal Meridian, at longitude 90° 58' 00" W from the baseline in Arkansas to the Canadian border, and surveyed in 1815, was extended hundreds of miles west across the Great Plains. It was used in "the most extensive numbering system in the survey as well as the largest single area referred to a single point. In Iowa and Minnesota all ranges and townships west of the Mississippi were referred to that meridian and baseline, and when the boundary between Canada and Minnesota was reached, 164 townships had been stacked on the baseline" (Johnson 1976: 74).

The townships and smaller sections into which the tract would be subsequently divided would be referenced to this combination of controlling prime meridian and base line, and in the Old Southwest at least named after the prime meridian. Thus the present state of Mississippi includes the St. Stephens

survey, the Choctaw survey, the Huntsville survey, the Chickasaw survey, and the Washington survey.

The prime meridian and/or base line would be evaluated relative to the tract of land to be surveyed. If necessary, they would be extended to provide a metric framework for the detailed survey of the interior of the tract. The establishment and extension of the guidelines required a high level of professional skill on the part of the surveyors (see Burt 1997), comparable to what today would be labeled geodetic survey.

(2) Survey the perimeter of the tract to be divided

The perimeter of the tract to be surveyed had to be determined precisely, especially in the portion adjacent to still unceded lands. (Presumptively, the portion contiguous to US lands was already adequately delineated.) This was a process fraught with tension, as various members of the affected tribe or European nation might have a different interpretation of the intent of the treaty and as the Federal and local officials had significant pressures to maximize the cession area. Further, treaty language was less than precise (at least by modern standards).

For example, Article 13 of the Treaty of Pontotoc in 1830 with the Chickasaw Nation attempted to define their boundary with the adjacent Choctaw:

> "Beginning at the mouth of Oak tibby-haw and running up said stream to a point, being a marked tree, on the old Natches road, one mile southwardly from Wall's old place. Thence with the Choctaw boundary, and along it, westwardly through the Tunicha old fields, to a point on the

> Mississippi river, about twenty-eight miles by water below where the St. Francis river enter said stream on the west side. It is now agreed, that the surveys of the Choctaw country which are now in progress, shall not cross the line until the true line shall be decided and determined; which shall be done as follows, the agent of the Choctaws on the west side of the Mississippi shall call on the old and intelligent chiefs of that nation, and lay before them the line as claimed by the Chickasaws at the Franklin treaty, and if the Choctaws shall determine that line to be correct, then it shall be established and made the permanent line, but if the Choctaws say the line strikes the Mississippi river higher up said stream, then the best evidence which can be had from both nations, shall be taken by the agents of both nations, and submitted to the President of the United States for his decision, and on such evidence, the President will determine the true line on principles of strict justice. (Kappler 1902: II, 360-61)

The perimeter of each cession was surveyed and marked, with due attention to the specifics of each treaty. This was done independently of the controlling prime meridian and base line, and was based on a combination of the metes and bounds description included in the treaty, use of compass and chain in the field, and local knowledge of the “old and intelligent” members of the affected tribe. This constituted outer boundaries for subsequent survey.

(3) Survey the townships within the tract

Commoditizing the delineated tract started with survey of the township boundaries. These constituted a control framework within which more detailed surveys of sections (and in later periods, of quarter sections) could be expeditiously run by using the township boundary as a framework relative to which the sections could be fitted.

These township surveys tied back to the controlling prime meridian and base line, and sectioned off the six-mile square townships, defined as a township

north/south of the base line and a range east/west of the prime meridian, thus "T6NR11W of the St. Stephens Survey" or "T11SR6E of the Chickasaw Survey."

(4) Survey the sections within each township

The detailed survey work that created the familiar public land survey sections was performed within this hierarchical framework already created. Survey parties located the corners of the previously defined townships and then proceeded to lay out the mile-square sections within the township. Any errors were controlled within the township boundaries, and all survey measurements were taken relative to the corners (for points of beginning or end) and the perimeter. (Fitz 1832 provides a detailed set of instructions for this process within the public lands of Mississippi, compiled at a time when the procedures were becoming standardized.)

Depending on the size and relative desirability of the ceded tract, contracts were made with one or more deputy surveyors to survey designated portions of the tract. "The contract system [established in the Ordinance of 1796], ... continued unchanged until 1910, when professional government surveyors only were permitted to do the work formerly performed by private parties." (Johnson 1976: 55) The number of contractors depended on the sense of urgency in bringing the lands to market.

These deputy surveyors were not government employees, but contractors who worked more-or-less consistently based on instructions from the Surveyor General or District Surveyor. These instructions were initially issued ad hoc for

each contract, but over time became formalized into manuals of instruction. The first formal instructions for surveyors were issued about 1815. The first general manual, Manual of Instructions to Regulate Field Operations of Deputy Surveyors, was issued by the General Land Office in 1855. (Johnson 1976: 57-58) Fitz (1832) represents an intermediate step, providing uniform instructions within a district.

The survey crew cleared the section lines (and, where contracted to do so, quarter section lines) through the vegetation as a by-product of conducting the survey. The surveyor (or instrument man) – most commonly within the project study area, this was the deputy surveyor who undertook the contract, but could be an employee – would guide the crew through taking a fore-sight using the primary survey instrument and compass bearings, to produce the "random" or uncontrolled line. Instrumentation might vary from a compass and simple transit through more elaborate instruments (Burt 1997 and Linklater 2002 give good discussions of the available instrumentation). When the approximate location of the corner was reached, a process of back-sighting to the corner of origin and adjustment of error was (supposed to be) used to place the new corner and define the "true" line. If the target corner was already established in the survey process, the line was adjusted to hit the target. Then the process was repeated to define the next corner.

Surveyors worked out the most efficient sequence of steps to survey the perimeters of each section within their contracted township. They did not survey

in section number sequence. (Johnson 1976: 55) nor did they always observe the niceties defined by headquarters. For example, in parts of Alabama, surveyors are known to have placed the exterior corners of quarter-sections, or “half-mile posts”, at a measured half-mile from the section corner of origin instead of an exact half-way point (Griffin 1999). A typical sequence for surveying a township might be to start in the southeast corner, then survey west one mile to the first interior section corner. From this southwest corner, the line would proceed north to the northern boundary of the township by (a) running north one mile to the northwest section corner, then east one mile to the northeast corner using a “random” line, then back to the northwest corner making adjustments to create a “true” line; (b) repeating this process for each interior section line in the first column. From the northern boundary, the crew would reverse direction and repeat this run north to south, but laying out the southern boundaries to the west. The first run north would lay out the “random” line, while the reverse run would lay out the “true” line. (Johnson 1976: 77)

In general, the much more exacting surveys of prime meridians and base lines would require the most sophisticated technologies, while in filling in the gaps inside previously surveyed frameworks a simpler toolkit might suffice. The axe men would clear away underbrush only sufficiently for the chainmen to measure out the distances using the Gunter’s chain. Corners were marked in various ways, depending on the character of the country. In timbered county, a convenient post was placed, and witness trees surveyed relative to the corner.

Witness trees and corner posts were blazed, painted, or otherwise marked to provide a moderately persistent designation.

The intent in marking the corners on the ground was two-fold. Primarily it was intended that the purchaser would have unambiguous indication of the boundary of the tract, without requiring further surveying. Later, when inevitable disputes arose, the markings in the field were the determining definition. As early as 1796, a companion act to the Land Act of 1796 for "regulating the grants of land appropriated for military services, and for the Society of the United Brethren for propagating the gospel among the Heathen" established this primacy. "Corners were to be considered inviolate even if later surveys proved that they were not correctly set. Original errors of surveying were to be carefully measured but that they were not to be corrected, and that such errors should not lead to the changing of boundaries. This is the earliest expression of the inviolate nature of the American survey, a principle still in force." (Johnson 1976: 56)

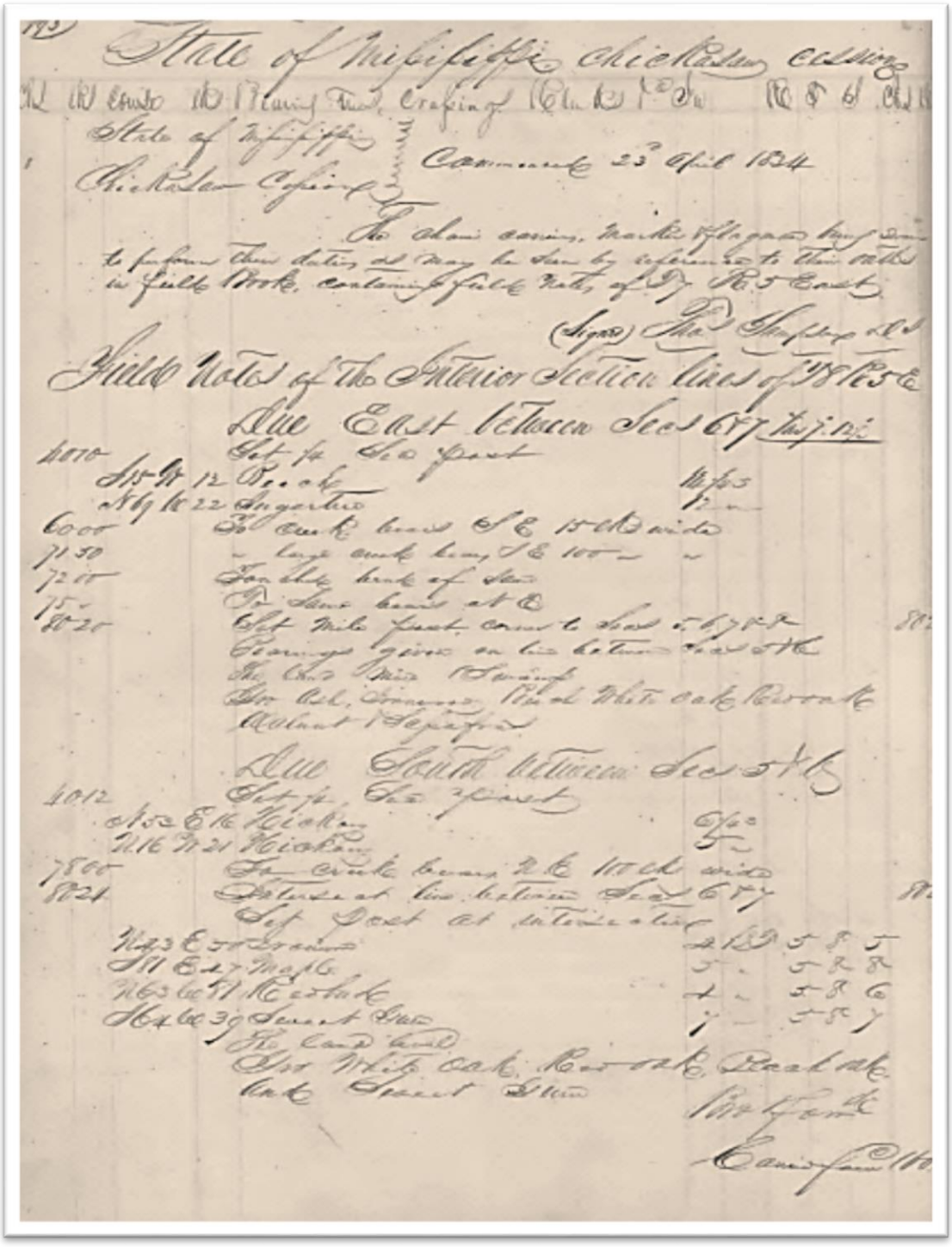
(5) Document the survey

The surveyor was required to produce and submit standardized field notes, in later years using preprinted forms provided for the purpose. (This standardization makes it practical to use the field notes for reconstructing the vegetation and other aspects of the landscape being surveyed, across large areas. However, as discovered during this research, surveyors still created surprising amounts of variation when filling out these forms, which places numerous obstacles in automating analysis of the contents.)

These notes were to be turned in at the completion of the survey. A draftsman at the appropriate land office would utilize these field notes to draft a township plat, a standardized summary map of the land that was surveyed. At least two copies of these notes and plats were prepared – one for the General Land Office and one for the local land sales office. A third copy was frequently prepared for the state in later years. (The researcher must recognize which set of documents is being utilized, since different sets were annotated and updated in response to different business needs – the land office copies were often annotated during land sales and supplemented with results of per-emptions or land viewings.) (Miller 1996: 35 - 37).

The field notes each deputy surveyor was required to turn in as documentation of the survey were not raw notes taken day-to-day during field work. Instead, they were summaries from which much of the technical minutia of survey work had been omitted. The result is a sequential description of what was encountered in tracing out each boundary but only occasionally does one find any of the details involved in performing the survey. The only examples of such technical details encountered within the field notes for the project study area were recordation of the magnetic variation of the compass at the start of each township survey, and occasional reference to the accumulated error of closure and means of adjustment used for correction at the eastern boundary of a township during section boundary delineation

Figure 3-4: Example of Field Notes Page



SOURCE: Office of Mississippi Secretary of State

Figure 3-5: Example of Township Plat

SOURCE: Bureau of Land Management

Selling the Commodity

The process of selling land varied considerably from the first offerings in 1796 up to the Civil War. Rohrbough (1968) describes this evolving process

from the perspective of the clerks and administrators handling the sales. Young (1961) examines selected sales in the Old Southwest from the perspective of purchasers and speculators (as well as that of the dispossessed tribal member), and Johnson (1976) looks at the sales process from a more expansive perspective in the upper Mississippi Valley. One of the few examinations of particular land offices is provided by Silver (1944) for a series of sales in north Mississippi, including the project study area.

Overall, there were four primary means for a private Euro-American party to acquire one of these parcels of land. Many tracts of land were offered at public auction, especially during boom times or for tracts presumed to be of especially high value such as prime cotton land in Alabama and Mississippi during the Removal period. Less desirable lands, or land that did not sell at auction, was available for over-the-counter sale. Land that reverted to the Federal government through nonpayment would be added to this inventory. A claim might be asserted through a right of preemption, which originated as a means of dealing with squatters without coercion. Preemption became general public policy with the Pre-emption Act of 1841, but had been provided repeatedly as an "exception" in previous land sales. This process "ended the conservative policy of 1785 which stipulated that land was not legally free for selection until it was surveyed." (Johnson 1976: 64) Finally, title to land might be acquired without additional payments through a successful assertion of private claim,

usually based on a land grant from the previous sovereign government, or through possession of a bounty grant.

Bounty land was provided during the Revolutionary War and War of 1812 by the U.S. Government to soldiers and officers in lieu of salary, or to encourage enlistments. The payment was usually made as a grant of unidentified land within a larger set-aside, from which the grantee would pick their land and record it with governmental agencies. These areas were not typically surveyed in advance of settlement and resulted in complex and overlapping claims that had to be adjudicated. No bounty land existed within the Chickasaw session, but land office practice had been shaped by the complications it created in other areas.

> "The size of the units offered and the level and mode of payment were, expectedly, matters of intense and chronic controversy. Pressures for the right to purchase smaller units led to recurrent reductions in the minimum size parcel available: from one section (640 acres) to a half section (320 acres) in 1800; to a quarter section (160 acres) in 1804; half of a quarter (80 acres) in 1820; and a quarter of a quarter section (40 acres) in 1832. " (Meinig 1993: 242-243)

The terms and conditions for land purchase, whether at auction or over the counter, again varied year to year. Generally, the purchaser agreed to acquire a specified unit of land for an agreed-upon price (set at auction or at the legislated amount), with a stipulated payment plan. The intent was always, somewhat idealistically, that land would be settled and worked by the purchaser. The purchaser was therefore given a timetable to "prove up" the land through planting crops, building a home, or making other improvements. Subsequent

payments were in principle timed so that the settler had several years to establish a working farm and sell surpluses to acquire cash for the payments.

Each step of this process was recorded with the General Land Office bureaucracy, as well as the state land offices once these were established. The process by which a parcel of land left the public lands and became private property was referred to as “land entry”, or “original land entry.”

> “Land entry case files comprise the paperwork accumulated by a local US land office in administering a land entry application. Once the legal requirements governing a land entry were met, whether by a cash payment, surrender of a bounty land warrant, or proof of residency and improvements, officials at the local land office forwarded the case file to the headquarters of the General Land Office in Washington, along with a final certificate that declared it eligible for a patent. There the case file was examined and, if found valid, a patent or deed of title for the land was sent back to the local land office for delivery to the entryman. “(Hawkins 1997)

Technical Responses to a Non-Standardized Commodity

As noted, the plan of the public land survey made no allowances for variation within the tract being surveyed. The rectangular grid, in theory at least, ran uniformly across the tract within the orientation defined by the prime meridian and base line. Variations in terrain, vegetation, soil quality, or hydrography were considered only to the extent that more complex adjustments to the survey process might be required to accommodate them, such as meander lines outlining a large lake or river.

This monolithic, ruthless impress of ‘order upon the land’ (Johnson 1976), though a major portion of the myth surrounding the survey process, was in practice untrue to the much more flexible practice of the survey. For both

technical and cultural reasons, the ideal plan was modified or abandoned in selected areas.

One difficulty lay in the terrain differences encountered. “From its incipient stage, the survey delineated tracts for which measured acreages can be true only when they cover level land. The ground surface of sloping land comprises areas that are larger than the quantities given on township plats for squares and rectangles....” (Johnson 1976: 77-78) The resolution to this difficulty lay in a process of leveling the chain, in which shorter sections of the boundary lines are run and the chain is stretched taut and level. The line is run up of down the slope of the land, but measurements are taken based on the stair-step sequence of horizontal chains. The outcome is a “square mile” section based on a theoretical flat surface, but the tilted land area is somewhat larger due to the slope.

Some sections wound up as partial sections, due to the collision of the rectangular grid with barriers that limited its extension. These barriers might be the boundary of the subject tract of land, or physiographic features like the shoreline of large lakes or rivers. (The law of riparian land rights was still evolving, but was stable enough to avoid inclusion of larger bodies of water in the land offered for sale.) No technical adjustment was made for these situations; instead partial sections were duly surveyed and platted as needed.

One major technical adjustment to survey practice evolved to deal with the difficulty of applying a planar scheme to a spherical planetary surface. Base lines (running along longitudes) remained parallel along their extent, but prime

meridians (running along latitudes) converged towards the North Pole. The result when these reference lines were extended across broad expanses was land units of unequal size. In 1804, the process of laying out these base lines was amended. A series of secondary base lines or standard parallels were to be created at intervals, “along which lines of true north could be offset against township lines from the south. Such parallels came to be called correction lines. In theory, a township to the south of the correction line is less than six miles wide and one to the north more than six miles wide.... The process was worked out pragmatically.... Although important to surveyors, the excesses and deficiencies of tracts are rarely noticed in the field except by experts.” (Johnson 1976: 57-58) These offsets are evident in the road network, which tended to follow the section lines and therefore have a sharp jog at the point of offset.

Not all adjustments were technical. As noted, the size of the minimum unit of land the government would sell diminished throughout this period. In earlier surveys, only the section corners were set by government surveyors, since the section was the unit of land sales. As smaller and smaller units were offered, the interior of the section was also marked. Originally only the perimeter corners were marked, as “half-mile posts”, but in later years the interior corner of the quarter sections was also sometimes marked. Surveys of smaller units in general had to be paid for by the purchaser.

In portions of the Old Southwest, the rectilinear grid yielded to local customs. In the lower Mississippi valley, for example, townships along larger

streams and rivers were surveyed in a variation of the French long-lot system, to allow all land purchasers frontage on this important transportation feature (Johnson 1976: 21-27; Fitz 1832).

Yet another adjustment of the grid occurred in areas with prior Euro-American settlement. The grid would be extended to the edges of settlement, and for smaller communities across it, but the extant land holdings would be surveyed without imposition of the grid upon them. To the General Land Office staff, there was no reason to include these parcels within the survey grid – the land was legally considered to be already in private ownership and was not technically part of the public lands.

Utilizing the Marketing Materials

The “marketing materials” provided by the surveyors were in theory available to prospective purchasers at the appropriate land office prior to sales. The expectation was that the potential purchaser could look through the plats of unclaimed land and review a copy of the field notes to decide which land to inspect and possibly purchase. Auctions were (supposed to be) announced sufficiently in advance to allow potential purchasers to inspect the land for themselves, or negotiate with locally knowledgeable individuals (perhaps members of the actual survey crews).

To this end, the survey instructions generally contained some requirement for the surveyors to record any facts they discovered during survey that would

help make a section more desirable. (It was in the public policy interest of the United States Government to sell the land as quickly as possible. Price differentials among sections were not as important as differences in desirability within a regionalized competition to ensure prospective purchasers were willing to invest in these particular lands.) This instruction required that "the surveyors were to be good field geographers and not merely geodetic workmen" (Meinig 1993: 241). One version of these instructions (Fitz 1832: 2) required: "That every Surveyor shall note in his field-book the true situation of all mines, salt licks, salt springs and mill seats which shall come to his knowledge; all water courses, over which the line he runs shall pass, and also the quality of the land. That these [shall be communicated] to the officers who may superintend the sales." Similar instructions for what is to be noted on the plats were also provided.

One major flaw in this ideal was that it depended on the surveyor to make these notations, which were marginal to their core mission. "Under the pressures to get the land onto the market as soon as possible, such notations tended to become rather perfunctory.... That the government ought to classify land into a set of graded qualities was debated from time to time [but] before the Graduation [in price] Act of 1854 no such differentiation was made; all land was offered at the same fixed minimum price, surveyors' notations remained incidental, and it was left entirely up to buyers to make their own judgments about quality" (Meinig 1993: 241). One might suggest that a bigger deterrent to extensive commentary

by the surveyors was that they were paid by the number of sections surveyed, and could only file for payment upon delivery of the field notes.

Another important use of the plats was for recording activity at the land office. The office staff might annotate their copy of the plats with various information, including prior entries, pre-emptions, locations of prior settlements and other information about the current state of affairs. This annotation was unofficial and sporadic, but affects the data content of these sets of plats. Such plat sets may have been at least partially preserved, most commonly by being used to replace lost or damaged documents at the state or Federal repositories (Miller 1996: 35 - 37).

CHAPTER 4 -- CHICKASAW LAND USE KNOWN FROM OTHER SOURCES

What is now North Mississippi was first visited by Europeans in the winter of 1540, when the de Soto entrada crossed what has been identified as the Tombigbee River into northeastern Mississippi (Atkinson 1987, 2004: 6 – 7; Swanton 1939/1985: 220). However, aside from the profoundly ambiguous reports on that expedition and a few scattered comments from English traders out of the Carolinas, Europeans made little notice of the area until the early 1700s, when French colonial administrators began to interact with the Chickasaw. Accordingly, we know most about the Chickasaw settlement area in the period 1700 – 1840; and thus any discussion of "first observation" of the study area though European documentary sources has to be based on observations of a long-settled and already potentially much modified landscape.

This chapter consolidates the ethnohistorical and archaeological information available on the physical and cultural aspects of the study area at the time of the land cession by the Chickasaw. As such, much of the ethnographic research on the Chickasaw (Swanton 1939/1985; Gibson 1971) has been set aside – that research was primarily based on eyewitness accounts from the early to mid 1700s (such as Adair 1775), and it blends together descriptions of cultural elements across a hundred and fifty years of dramatic change. For example, descriptions from Adair of house construction circa 1740 are of little assistance in understanding the composition of a Chickasaw farmstead circa 1840, post

“setting out” – reasonably well documented changes in Chickasaw material culture as well as subsistence and economic practices mean that the traces of Chickasaw occupancy would have changed significantly from those of earlier centuries.

Another important aspect of this assessment is the descriptive classifications of the environmental setting, as understood not by participants in the Chickasaw dispossession but instead by modern environmental scholars. This understanding of the environmental setting provides a broad-brush basis of comparison of the environmental information contained in the PLSS source documents, in that we can expect the small area descriptive details in the survey to generally conform to the regional descriptions. This understanding can also help us identify locales in which cultural practices had created deviations from the general environmental conditions, such as notations about “old fields” outside known prairie conditions.

The intent of the following discussion is to “prepare the way” for comparing the landscape information derived from the PLSS survey data with what might be expected to be found based on other sources. (As a methodological note, I transcribed the PLSS data into the GIS database and began analysis before compiling this chapter. My compilation was by design as literal and as naive as I could contrive, given research previously completed.)

The Environmental Setting

Area of Settlement

The Chickasaw land holdings (Atkinson 2004: 7-23) ran generally from central present-day Mississippi north to the Ohio River. Tibbee Creek, a tributary of the Tombigbee River flowing from the west from around Columbus between Starkville and West Point MS, comprised much of the southern boundary. Portions of this stream are also known as Line Creek. In earlier times, this stream was also known as Oktibbeha Creek (the *Oak tibby-haw* mentioned in the Treaty of Pontotoc). The eastern boundary of Chickasaw holdings ran generally from the Ohio southwards up the Tennessee River to the lower end of the Muscle Shoals, hence overland to the Tombigbee just below its forks below present-day Tupelo, hence southwards along the river to Tibbee Creek. The western boundary was the Mississippi River, from the mouth of the Ohio south to an "old fields" agreed upon by the Chickasaw and Choctaw as a dividing point. The southern boundary ran from this old field location to the headwaters of Tibbee Creek, hence downstream to the Tombigbee.

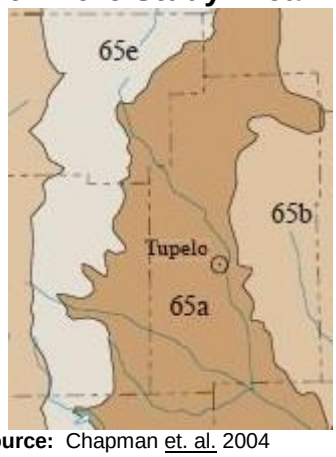
This area includes a large amount of land held as hunting grounds or otherwise lightly utilized. The Chickasaw heartlands had long been in an area west and south of present-day Tupelo MS, where the bulk of population remained until removal. This area also contained portions of the Natchez Trace in its various incarnations, and a number of lesser known trails.

Ecoregions within Study Area

We can better understand the area within which the PLSS survey was conducted by examining its regional ecological context.

The heartland area is located within the Southeastern Plains ecoregion (Ecoregion 65, in the EPA Level III classification). The study area has been subdivided into three Level IV ecoregions shown in Figure 4-1, based on a mixture of subsurface geology, soil and land cover characteristics (Chapman et.al. 2004).

Figure 4-1: Ecoregions within the Study Area



Source: Chapman et. al. 2004

Most of the study area lies within the Blackland Prairie region (65a). This is primarily defined by soils formed over the Cretaceous period Selma Group. The land is gently rolling, with numerous small streams and poorly drained areas (at least prior to Euro-American mechanized agriculture). Town Creek, the western branch of the Tombigbee River, is the primary drainage feature within the study area.

The extreme eastern portion of the study area borders on the Blackland Prairie Margins portion of the Flatwoods/Blackland Prairie Margins ecoregion (65b). This region forms a transitional zone between the Blackland Prairie (65a)

and the more forested plains and uplands that surround it. The Flatwoods portion lies farther to the east of this study area. The Blackland Prairie Margins are undulating, irregular plains, with slightly more relief than the Flatwoods, but also tend to have clayey soils that are sticky when wet, hard and cracked when dry, with generally poor drainage.

At the western boundary of the study area, a section of the Northern Hilly Gulf Coastal Plain ecoregion (65e) extends southwards to separate the Blackland Prairie and the western portion of the Blackland Prairie Margins. The ecoregion contains several north-south trending bands of sand and clay formations. This portion of the region is defined by the Pontotoc Ridge. The ridge is formed from outcroppings of marls and sands on the Ripley Formation cuesta. It is distinctive for the bright red color of the soils that have weathered out of this formation.

Correlations to Physiographic Area Delineations

The ecoregion approach (Bailey 2009; Omernik et. al. 2011) as a description of medium to large-scale environmental context has largely superseded older approaches, such as physiographic areas or watersheds. Ecoregion approaches have the advantage of considering more than geologic, soil, or terrain characteristics (Omernik and Bailey 1997).

The ecoregion concept has by now gained broad acceptance. However, this has not been achieved without difficulties. One issue has been the

competition among practitioners about methods for defining and delineating an ecoregion. An accepted definition of the concept emerged before agreement on delineation approach.

"Although the authors of this paper have employed dissimilar approaches in developing ecological regions ..., our objectives have been similar, and as we revise our understandings of the meaning of the term 'ecosystems' the products of our efforts to refine the ecoregion frameworks are tending to look more alike. In broad terms, ecological regions, at any scale, can be defined as areas with relative homogeneity in ecosystems. Our intent has been to depict regions within which the mosaic of ecosystem components (biotic and abiotic as well as terrestrial and aquatic) is different than that of adjacent regions." (Omernik and Bailey 1997: 936 - 937).

In a review of the nature and definition of ecological regions, Omernik (2004: S28) identified seven reasons for "disagreement over how to delineate ecoregions," including:

1) "disagreement on the definition of ecosystems
2) "the complexity of the nature of ecoregions and ecoregion boundaries
3) "bias toward particular characteristics
4) "inability or reluctance to embrace a holistic ecosystem concept and preoccupation with specific objectives and reductive methods
5) "disagreement on whether to use quantitative (rule based) or qualitative (weight of evidence) approaches
6) "disagreement over whether watersheds comprise ecoregions
7) "investment in existing frameworks and reluctance to change"

In the study area, ecoregions correspond closely to the older classification scheme of physiographic areas. The bulk of the study area lies in what is delineated as “the Black Belt area” in both classificatory schemes. This is helpful because much of the archeological and other cultural resource management literature on the Natchez Trace and Chickasaw Nation is couched in the older tradition. Minor discrepancies in the boundaries derived using the two approaches, including treatment of flood prone areas along streams, are below the resolution of ecoregion Level IV delineations or otherwise can be ignored for purposes of this study.

Table 4-1: Correspondences of Region Typologies (East to West)

Ecoregion	Physiographic Region
Blackland Prairie Margins portion of the Flatwoods/Blackland Prairie Margins (65b).	Tennessee River Hills
Blackland Prairie (65a)	Black Belt or “Black Prairie”
Northern Hilly Gulf Coastal Plain (65e)	Pontotoc Ridge

The study area lies within three physiographic areas, using the older Raisz delineation (Kelley 1973: 5-7). The far northeastern corner of the state lies within the **Tennessee River Hills** area, a relatively rugged range of hills along the ridgeline between the Tennessee and the Tombigbee rivers. This is an area of significant relief with heavily dissected uplands and narrow stream valleys. Soils are relatively infertile, with pockets of high fertility in the narrow stream bottoms.

West of the eastern fork of the Tombigbee this shifts into a broadly defined **Black Belt** area. The Black Belt is a gently rolling area lower in elevation than the surrounding areas. The area is generally composed of rich, thick black soil

generated from the underlying Selma chalk formation. This is especially well suited for corn and cotton, and for pasturage. The southern end of this physiographic area contains the famous Black Prairie, well known in Southern agricultural history. This will be discussed in more detail below, but at this level of description it is important to recognize that the Black Prairie is not fully coterminous with the Black Belt. The prairie tapers out into isolated open areas surrounded increasingly by upland forest around the heart of the Chickasaw homeland.

West of the Black Belt is the **Pontotoc Ridge** physiographic area. This narrow belt of ridgeline is known for fertile reddish soils that can be quite productive for cotton or corn, but which require soil conservation practices to prevent heavy erosion due to the sandy nature of the soils and the sharp relief.

These physiographic areas were defined on broad similarities of soils tied to deep underlying geologic formations. But due to the aforementioned relief, they also correspond to major drainage basins (Kelley 1973: 14, Fig. 2). The eastern half of the Tennessee Hills formation drains eastward to the Tennessee, while the western half drains westward and southwards into the Tombigbee. The Black Belt lies on the western banks of the Tombigbee in this area, while the Pontotoc Ridge separates the watershed between the Tombigbee and the westward-flowing tributaries of the Mississippi.

Forests, Prairies, and Other Land Cover

By some estimates, the entire State of Mississippi was more than 90% forested when de Soto entered the area. "Except for a few clearings where the Indians practiced subsistence agriculture, the salt grass marshes along the Gulf Coast, and the open grasslands in the northeast prairie on the Mississippi Black Belt, the entire state was covered with forest. De Soto encountered little difficulty on his journey across the state because the trees were well spaced, large, and their canopies shade out the underbrush. Early settlers in the state have remarked that it was possible to ride a horse full gallop through the woods." (Kelley 1973: 15-16)

Figure 4-2: Example of Growth at Edge of Clearing, Powhite Park VA

SOURCE: Author

Both my personal experience growing up in this area and my reading of surveyor field notes and other early explorers' accounts (such as Bartram 1928/1955) suggest this is probably too sanguine a description of the vegetative cover in many locales. The mild climate and extensive availability of water meant that heavy underbrush would leap up wherever sunlight reached the ground along streams and trails, in marshy areas not conducive to hardwood stands, and at blow downs and other natural disruptions of the upper tree canopy. Only deep in undisturbed forest would this have been an appropriate description.

Kelley (1973: 15-19, Fig. 3) provides a summary of forest types within Mississippi based on a US Forest Service classification. Within the Chickasaw heartlands, the primary vegetative land cover types would have been a mix of Oak-Hickory and Prairie. Oak-Hickory is a hardwood predominant upland type, with limited admixture of pine and other softwood species. It was predominantly found along the northern portions of the Black Belt, and as clusters of timber within the Black Prairie. The Prairie itself was largely open land covered with short grass species such as blue stem, with cane breaks and timber cover along streams and in isolated clumps (Ward 1987). The bottoms of the Tombigbee and its larger tributaries held Oak-Gum-Cypress forest, a type adapted to swamp and intermittently flooded bottomland. The uplands to either side of the heartlands were predominantly covered in Oak-Pine forest, a type comprised of upwards of half oaks, with an admixture of loblolly and long-leaf pine.

The name “Black Prairie” is to some extent a misnomer. When one hears the term “prairie”, one normally thinks of open, rolling grasslands with the occasional tree restricted to river banks. In contrast, this area was at the time of survey perhaps better described as savannah or open forest. The primary characteristic of savannah land cover is that tree canopy does not typically close, leaving areas open to the sunshine. “Savannas are defined based on vegetation structure, the central concept being a discontinuous tree cover in a continuous grass understory.” (Ratnam et.al. 2011: 653) The southern extension of the ecoregion in central Alabama was perhaps more open (Rostlund 1957, Barone 2005), but in the northern portions relatively widely spaced upland hardwoods such as various oaks or hickory were increasingly predominant. A remnant portion of the northern Black Prairie is preserved at the Pulliam Prairie site in Chickasaw County MS (Campbell and Seymour 2011). Some historical archaeology work has emphasized the importance of “cedar glades” within this area, as discussed in the next section.

Impressions On Travelers

It seems appropriate to examine the impressions that the area would have been made on the surveyors when they looked up from their instruments, as they worked their way through the former Chickasaw homeland. Fortunately, several articulate travelers recorded their impressions of the area and its inhabitants.

Figure 4-3: Area of Remnant Black Prairie, Oktibbeha Co. MS

Source: Mississippi Entomological Museum (McGown et. al. 2011)

Impressions of the Region

Thomas Nairne (1988) documented his visit to the Chickasaw in 1708. He described the approach from the east:

> "Most of the way [along the Lower Creek Trading Path westward from Charles Town] continued to be miserable barren stony uneven land, untill I arrived within 20 miles of the Chicasaws, and then we had been done with sand, stones and pines, the Country being pleasant open forests of oak chesnuts and hickery so intermixt with savannas as if it were a made landscape. These savanas are not perfectly levell, like our's in Carolina, but full of gentle Ascents, which yet are not too steep for the plough, on the Top of these knowlls live the Chicasaws, their houses a Gunn or pistole shot asunder, with their improved ground peach and plum trees about them." (1988: 57 – 58)

Rev. Adam Hodgson, a Scottish traveler in 1821, recorded his impressions of the same area. After crossing Bear Creek in northeast Mississippi heading northeast, the terrain changed.

> "[W]e came to the summit of a hill, from which we had an extensive view of the country below us. The surface was broken into lofty ridges, among which a river wound its course; and the mass of forest which lay between us and a very distant horizon, exhibited not trace of animated existence, but a solitary cabin and one patch of Indian corn.... to us, emerging into light from the recesses of think woods, in which for many days, our eyes had seldom been able to range beyond a narrow circle of a few hundred yards, it imparted sensations of cheerfulness which it would be difficult to describe." (Hodgson 1823: 285)

One wonders how he managed to miss the savannah extent of the Black Prairie region, though elsewhere he mentions wide savannas near the Mississippi. "We had a delightful ride (from the Trace to Elliot Mission) along our Indian Path, through a forest of fine oaks; which, within ten or twelve miles of Yaloo Busha (River), was occasionally interspersed with small natural prairies, and assumed the appearance of an English park." (Hodgson 1823: 273.) (In fairness, this confusion may be due to his editor, who seems to have cut down and substantially rearranged the Reverend's series of letters for publication.)

Nairne along with other early travelers commented on a frequently encountered aspect of the Black Prairie region, which has become an important detail of recent archeological work because an important identification marker for Chickasaw groups is their utilization of these fossilized shells as temper in pottery:

> "The Land here is a thinn mold on Topp of a red stiff Clay and white Marle. The Curiosity which I observed most was to see Oyster shells every where spread over the Old Fields and savanas, as plentifully as if it were on Island by the sea, espeacially on the declining sides of hills, where the rains had made gullys there were great beds of them, some deep, some nigher the surface.... The Chicasaws beat them to pieces and mix them with clay to make Earthernware." (Nairne 1988: 59)

Most travelers stuck to the major trails and settlements, and so their commentary does not systematically cover all the terrain types that the surveyors would have encountered within the study area. A few did describe areas other than forest and savanna, though.

> "Soon after breakfast, we crossed a swamp [on the Natchez Trace], which had been held up in terrorem before us for some days; and took the precaution of passing it in company with some gentlemen who were acquainted with its intricacies. Our prudence, however, was unnecessary; as the dry weather had rendered it far less difficult and troublesome, than several which we had previously crossed along. In winter, it must be almost impassable.... The bottom is a stiff clay; and horses sometimes stick so fast that they cannot be extricated, but are left to die.
>
> "Although the weather for some days had been remarkably dry, we had frequently to dismount several times in an hour, to drive our horses through creeks and streams, which would have embarrassed a Leicestershire Fen-hunter. One of my companions told me, that when travelling the route last spring, he had to swim his horse seven times in the course of a mile...." (Hodgson 1823: 284)

Impressions of the Trails

In the Chickasaw territory and surroundings, land travel was typically along well-established trails. These were not always well-marked, and the differences between a major trail and local paths was not always obvious.

> "Our course was through the woods, along a blazed path about a foot broad. ... [I]t was necessary to procure a guide...." (Hodgson 1823: 272.)

> "Our course the whole day, was along an Indian path, about twelve or fourteen inches broad, through woods which protected us from the hot sun.... It was twice crossed by hunter's paths, a little narrower than itself; and we were admonished, that if we deviated into these, we should perhaps come to no habitation for 100 or 150 miles. Cow-paths which had occasionally misled us, particularly in the swamps, are found only near the settlements...." (Hodgson 1823: 282)

With few exceptions, however, these routes were not passable by wagons. Even the famous Natchez Trace was not that impressive. "We were now in the high road from Huntsville to Knoxville, which is really a road, the Kentucky trace being little more than a broad grass path." (Hodgson 1823: 198; emphasis in original) Figure 4-4 illustrates a well-traveled foot trail through similar forest terrain, though obviously not an old-growth situation.

Figure 4-4: Example of Foot Trail through Forested Area, Powhite Park, Richmond VA

SOURCE: Author

It should be noted that the Chickasaw heartland offered little opportunity for water transportation. Except for a very few larger rivers on the periphery, including the Mississippi, Yazoo, and Tombigbee rivers, streams were too narrow and winding to be suitable for traffic. Cotton Gin Port, located about one mile below the forks of the Tombigbee in what is now Monroe County MS, was considered the head of navigation on the river (Leftwich 1903, Elliott and Wells 2003). It was founded at the site of the uppermost ford on the river. An early survey (Gaines 1808) for establishing the route for what became Gaines' Trace between Muscle Shoals on the Tennessee to Cotton Gin Port described the east fork of the Tombigbee as impassable to boats due to the large number of blow downs and mats of vegetation debris left by spring floods. (Old Town Creek, so frequently mentioned in this study, comprises the western branch of Tombigbee.)

Known Utilization By Chickasaws

Much recent archeological work has involved debates around the apparent affinity for the Chickasaw for the Blackland Prairie, and shifting patterns of utilization by the Chickasaw over time.

There has recently been some controversy regarding the impacts of forest cover on protohistoric and historic settlement patterns within the upper Black Belt. Initial investigations of settlement pattern (Ward 1987; Johnson, Galloway, and Belokon 1989) seemed to show a strong correlation between upland portions of the Black Prairie and individual settlements. This was deemed

unusual and “most striking” (Johnson, Galloway, and Belokon 1989: 51), since the general pattern of Native American settlement in the southeast was settlement on terraces along streams but above flood level.

One hypothesis to explain this preference was dubbed the “Cedar Glade Hypothesis”, and referred to the assumption that clumps of Red Cedar (*Juniperus virginiana*) that occur on thin soils on upland ridges throughout the Prairie (Johnson, Galloway, and Belokon 1989; Campbell and Seymour 2011: 258) provide a preferred browse resource for white-tailed deer, a major source for the Chickasaw of food and hides for commercial trade. This rationale was subsequently challenged (Peacock and Miller 1990) on grounds that survey notes and other sources fail to indicate that cedar was as common in the area during Chickasaw occupancy as it is today, and that deer do not have a strong preference for cedar browse if anything else is available.

Johnson (1990) attempted to refute these challenges by exploring the extent of alleged bias against sap-filled trees by early surveyors.

> “Cedar glades are one component of a settlement strategy model which emphasizes access to several resources including arable bottom land. They are, however, an important component in that the focus of the settlement strategy on shallow soils is explained on the basis of the proposition that cedar glade resources, including cedars and grasses, may have been a prehistoric phenomenon. Peacock and Miller present two arguments against the prehistoric occurrence of cedar glades in the Black Prairie. The first is the witness tree data. Cedar is conspicuously rare in the record of trees blazed to mark section corners by the original land surveyors in the prairie.... Bourdo (1956: 760-761) outlines two major sources of bias. Surveyors tended to select trees which were easy to mark (smooth bark and sap which was not sticky), and they favored trees which they thought to be long lived.... Pines are similarly under-represented in

> survey notes in the Loess Bluffs and North Central Hills to the west in Mississippi....
>
> "In spite of the difficulty in marking them ... cedars do show up in the land survey notes. Since they did grow in the Black Prairie, it seems reasonable that glades would have been present in areas where thin soils overlay the chalk, given the strength of that association in the prairie today. Peacock and Miller argue that thin prairie soils are the result of historic erosion caused by land mismanagement.... The question is, how much of the erosion is historic and how much is prehistoric." (Johnson 1990: 60 – 61)

Peacock (1992) reexamined the survey data and concluded that widespread cedar groves are a relatively late characteristic, due to erosion of upland soils because of Euro-American agricultural practices.

Southeastern Native American groups, including the Chickasaw, by the time of European contact were primarily agricultural (Marshall 1973: 72 – 74), relying on both harvesting naturally occurring plants such as grapes, plums, and various nuts, and upon the produce of their gardens. Marshall notes "Each household had a small corn field tended by the women and children. Between the grain hills Indian farmers planted melons, pumpkins, sunflowers, beans, peas, and tobacco." In addition, the meat of buffalo, deer and bear were important food sources, and were also exploited for trade. Rabbits, fish, turkeys, and smaller birds were also supplements to the diet.

James Adair was an English trader among the Chickasaw in the mid 1700s. He provided a great deal of information about Native American subsistence, despite a distressing habit of lumping together all the southeastern tribes into generic descriptions of "the Indians". It is reasonable to assume that

much of the pattern of agriculture he described was at least in part continued after the shift to individual farmsteads forty years later:

> “Every dwelling-house has a small field pretty close to it: and ... there they plant a variety of large and small beans, peas, and the smaller sort of Indian corn.... Around this small farm, they fasten stakes in the ground, and tie a couple of long split hiccory, or white oak-sapplings, at proper distances to keep off the horses.... Their large fields lie quite open with regard to fencing, and they believe it to be agreeable to the best rules of oeconomy.... The women however tether the horses with tough young bark-ropes, and confine the swine in convenient penns, from the time the provisions are planted, till they are gathered in....
>
> “Corn is their chief produce, and main dependance. Of this they have three sorts; one of which hath been already mentioned. The second sort is yellow and flinty, which they call ‘hommony-corn.’ The third is the largest, of a very white and soft grain, termed ‘bread-corn.’ In July, when the chesnuts and corn are green and full grown, they half boil the former, and [make a boiled bread of a mixture of the two]. They have another sort of boiled bread, which is mixed with beans, or potatoes.... The thin cakes mixt with bear's oil, were formerly baked on thin broad stones placed over a fire, or on broad earthen bottoms fit for such a use: but now they use kettles....
>
> “The French of West-Florida, and the English colonists, got from the Indians different sorts of beans and peas, with which they were before entirely unacquainted. And they plant a sort of small tobacco, which the French and English have not... The women plant also pompions, and different sorts of melons, in separate fields, at a considerable distance from the town, where each owner raises an high scaffold, to overlook this favourite part of their vegetable possessions....
>
> “They commonly have pretty good crops, which is owing to the richness of the soil; for they often let the weeds out-grow the corn, before they begin to be in earnest with their work, owing to their laziness and unskillfulness in planting: and this method is general through all those nations that work separately in their own fields, which in a great measure checks the growth of their crops. Besides, they are so desirous of having multum in parvo, without much sweating, that they plant the corn-hills so close, as to thereby choak up the field. They plant their corn in straight rows, putting five or six grains into one hole, about two inches distant. They cover them with clay in the form of a small hill. Each row is a yard asunder, and in the vacant ground they plant pumpkins, water-melons,

marsh-mallows, sunflowers, and sundry sorts of beans and peas, the last two of which yield a large increase.

"They have a great deal of fruit, and they dry such kinds as will bear it. At the fall of the leaf, they gather a number of hiccory-nuts.... It is surprising to see the great variety of dishes they make out of wild flesh, corn, beans, peas, potatoes, pompions, dried fruits, herbs and roots. They can diversify their courses, as much as the English, or perhaps the French cooks: and in either of the ways they dress their food, it is grateful to a wholesome stomach.

"Their old fields abound with larger strawberries than I have seen in any part of the world; insomuch, that in the proper season, one may gather a hat-full, in the space of two or three yards square. They have a sort of wild potatoes, which grow plentifully in their rich low lands, from South-Carolina to the Mississippi, and partly serve them instead of bread, either in the woods a hunting, or at home when the foregoing summer's crop fails them. They have a small vine, which twines, chiefly round the watry alder and the hogs 'feed' often upon the grapes.... There grows a long flag, in shallow ponds, and on the edges of running waters, with an ever-green, broad, round leaf, a little indented where it joins the stalk; it bears only one leaf, that always floats on the surface of the water, and affords plenty of cooling small nuts, which make a sweet-tasted, and favourite bread, when mixed with Indian corn flour. It is a sort of marsh-mallows...." (Adair 1775: 406 – 410)

This pattern of agriculture shows great continuity with what is known of Mississippian period (c. 800 AD – c. 1500 AD) Native American agriculture (Wessel 1977; Scarry and Steponiatis 1997; Wasselkov 1997; Doolittle 2000). One conspicuous absence from Adair's account, however, is the acorn. This is surprising because of its widespread utilization in earlier periods and because of the oak tree's importance in the forest cover in the Black Prairie. One possible explanation is that the Chickasaw and other tribes were growing hogs and cattle, which ran unfenced through the forests and grazed on acorns and other elements of mast on the forest floor. (Mast is comprised of nuts such as acorns and other vegetation – sprouts, twigs, and bark – edible by livestock or deer.)

“They abounded with hogs, which made very firm streaked bacon, and much preferable to that in the English settlements chiefly owing to the acorns and hiccory-nuts they feed on.” (Adair 1775: 414)

American observers noted a substantial change in Chickasaw subsistence patterns in the early 19th Century (Atkinson 2004; Gibson 1973: 85 – 86). Around 1794 began a significant change in Chickasaw settlement patterns. “‘Setting out’ [involved] establishing discrete family farmsteads outside the old towns.... Initially stock raising seems to have been the primary reason for ‘setting out’.” (Atkinson 2004: 183) Gibson quotes Indian Agent James Allen in 1830 as claiming the buffalo and bear were gone, and deer diminished so much that Indians were “compelled to subsist by a different means than that of the chase. They have a plenty of Horses of superior quality.... They have large herds of cattle, swine, sheep and goats, and poultry of every description.... Cotton, beef, and pork are the principal articles for exportation.”

This may have been an exaggeration, since the tribes were long noted as active gardeners. William Bartram (1928/1955: 400) provides the following generalized description of Southeastern towns, based on his celebrated travels in the period just after the American Revolution:

> “An Indian town is generally so situated, as to be convenient for procuring game, secure from sudden invasion, having a large district of excellent arable land adjoining, or in its vicinity, if possible on an isthmus betwixt two waters, or where the doubling of a river forms a peninsula. Such a situation generally comprises a sufficient body of excellent land for planting Corn, Potatoes, Beans, Squash, Pumpkins, Citruls, Melons, &c.

and is taken in with a small expense and trouble of fencing, to secure the crops from the invasions of predatory animals...."

Historic Southeastern Indians were also known to practice sophisticated horticulture, above and beyond simple farming. Adair notes a widespread practice of transplanting at least one wild species. "There is a species of tea, that grows spontaneously, and in great plenty, along the sea-coast of the two Carolinas, Georgia, and East and West-Florida, which we call Yopon, or Cussena: the Indians transplant, and are extremely fond of it...." (1775: 46) This was used for the celebrated "black drink" purgative, important in ceremonials and medicine.

The Chickasaw especially were widely credited for introducing into the Southeast a species of plum (*Prunus angustifolia* Marshall) that still bears their name (USDA 2013). The "Chickasaw plum" (which is also referred to as the Cherokee plum, as well as by other tribal names, depending on where it is encountered) is at present widespread and naturalized across the Southeastern US, but it has "a natural range that extends from the eastern slopes of the Rocky Mountains eastwards only as far as the Mississippi River." (Doolittle 2000: 65) William Bartram (1928: 57) commented on the 'Chickasaw plum' that "I never saw it wild in the forests, but always in old deserted Indian plantations. I suppose it to have been brought from the S. W. beyond the Mississippi by the Chickasaws." Nairne (1988: 60) commented on the cultivation in 1708 of "plums, red, Blew, and yellow. Each house hath by it a grove of these plum trees, for it seems they bear best, when run up in thickets 4 or 5 foot asunder."

Another important contribution to agriculture by the Chickasaw was breeding the once celebrated “Chickasaw horse.” This breed, along with very similar horses among the Choctaw (Lemon 1977; Carson 1995), were an important part of tribal culture. Initially they were for use by tribal members, but they soon became important trade items as their characteristics became widely known as Euro-American traders brought them back to the coastal areas.

It is unclear when or from where the Chickasaw acquired horses. A recent encyclopedia of horse breeds says of the breed, “The first horses of the Chickasaw Indians of Tennessee and North Carolina [sic] were captured from the members of 1539 expedition of DeSoto. These, small, short-coupled, well-muscled horses were popular with early colonists for general-purpose use although not for distance running. The Chickasaw Horse was utilized in cross-breeding to develop the early colonial quarter-mile horse, and it is one of the ancestors of the modern Quarter Horse” (Van Vleck 1990: 55).

Others disagree with this origin. Bernard Romans thought they came from the west. “Horses and cattle thrive well in this nation, their breed of the former was once famous, being descended from some Arabian horses brought from Spain to Mexico, but of late they have so mixed them with meaner kinds, as to cause them to degenerate much” (1775: 62 – 63). Morgan (1996: 129 – 135) likewise doesn’t accept the idea that they originated with horses accompanying de Soto or other Spanish expeditions into the southeast, but thinks they were

traded eastward from Spanish settlements in Mexico by Caddo and other intermediary tribes.

The Chickasaw Horse accompanied the tribe into Indian Territory during Removal, and apparently continued to be bred until the early 20th Century. A revival of the breed is being attempted using similar breeds as a starting point, but may not have any of the original breed in its bloodlines (Lemon 1977; Sponenberg 2011).

In the historic period, the Chickasaw had large herds of livestock, including their horses. Rev. Adam Hodgson, traveling through the area in 1821 visited one homestead where he observed “200 very fine cattle, which at sunset were coming up as usual, of their own accord, from different parts of the surrounding forest, where they have a boundless and luxuriant range.... [His Native American host] had chosen this situation, he said, for its retirement (in some directions he had no neighbors for fifty or a hundred miles), and because it afforded him excellent pasturage and water for his cattle” (Hodgson 1823: 278). (Guice 2010: 13 states that this informant was Noah Wall, a celebrated early Euro American settler who was at one time proprietor of a stand on the Natchez Trace on the border between the Chickasaw and Choctaw. One of his half-breed sons was later to be signatory on the final Choctaw cession treaty. If so, Hodgson was mistaken as to his host’s ethnicity. Possibly Guice meant instead that this was one of Noah’s sons.) The next day, at another homestead he noted “a herd of cattle was coming up to be milked” (1823: 280).

The adoption of livestock by the Chickasaw is also largely undocumented. As already mentioned several times in earlier sections, the Chickasaw people around 1794 made significant changes in settlement pattern during the “setting out” period. Writing in 1775, Bernard Romans indicated that “they begin to have the knowledge of keeping cattle.... The knowledge ... is borrowed from the traders among them” (1962: 68). These traders were ostensibly curtailed by the Proclamation Act of 1763 (Meinig 1986: 284-288), which attempted to limit their settlement.

> “[T]hey begin to have the knowledge of keeping cattle; but at present they enjoy little or no fresh meats while at home, but in the hunting season in the woods, it is almost the only food they make use of .... The knowledge they have of cattle keeping is borrowed from the traders among them, who, notwithstanding the ordinance against settling on Indian grounds, have many of the plantations, and raise cattle and hogs.... “(Romans 1775: 68)

Dr. Rush Nutt describes several settlements in 1805 as having substantial livestock raising activities.

> “[A] small village call'd Chu.gutl.la.so, containing six comfortable Cabins inhabited by Chactaws & Chickasaws. This village is on the head waters of Hoolky (running in Tombigbee) in the most fertile part of the country, watered by a number of fine springs, they have their fields fenced with a worm fence, raise a plenty of hogs & cattle.” (Jennings 1947: 42)

Nutt provides one of the most convincing examples of the “setting out” changes:

> “[N]ot more than 8 families remain in or near the village [of Pontatock], they have settled 50 or more miles round promiscuously through their country. The land near this village Is level & well Watered. The timber, black oak white Do hickory & post oak, soil a thin dark gray colour. Most of those Indians have horses, cattle & hogs, & have settled out for the benefit of their stock.... For the convenience of the range, water & timber all

the Indians have removed out of long-town, & settled In different parts of the country; & have turned their attention to farming, manufacturing & raising of stock." (Jennings 1947: 42 – 43)

By this time, the needs of livestock husbandry might override other subsistence concerns in the choice of settlement location, as Nutt describes:

"[T]here is a settlement of Chickasaws, on a small creek a branch of Tallahatchee, called Oak.tock.o.pul.Io containing 10 families. The country around Oaktockopullo is high broken pine land, very little fit for cultivation. The Indians have settled it for the benefit of range, as they have horses, cattle & hogs." (Jennings 1947: 45)

At least some Euro American travelers thought the Chickasaw to be accomplished agriculturalists:

"On the trace through the Chickasaw nation, in the neighborhood of McIntosh's (named after a British Agent reside there before the American revolution) observed a horse grist mill, large fields well fenced and cultivated, abundance of horses, cows and hogs, corn and provisions in great plenty. There we bought from the Indians the best cured and sweetest bacon we found on the whole road. There are a great many white people in this neighborhood, among whom the Agent acts as a Magistrate according to the laws of the United States. The half breeds called Colberts have great property in cultivated lands and negroes in this nation." (Rev. Patrick Wilson in 1803, quoted in Hawthorn and Sabino 2001: 6)

How "Natural" Was This Landscape?

Interpretation of landscape features from historic sources, especially when the focus is on vegetation or land forms, runs a risk of falling into a trap. There is a tendency to define a strong dichotomy between modern landscapes strongly impacted by Euro-American (for North America, at least) cultural practices and an idealized historic natural landscape considered to be more or less "pristine" (Denevan 1992). This has already been encountered in discussion of cedar

glades in the Black Prairie region and in “presettlement” or “prehistoric” vegetation studies.

In fact, the area that became the Southeastern United States was not “an Eden” because “the Eden of Genesis was untouched ... [but] the South had been both extensively and intensively managed by the first Southerners” for many years before the Euro-Americans forced them out (Kirby 2008: 74).

Applicability to Understanding Indian-White Relations

Recent attacks on the nature-society dichotomy have attempted to break down the ‘othering’ of nature within Western societies. This combined with invidious comparisons and an aesthetic appreciation for the exotic that Said identifies as ‘orientalism’ (Said 1979; Pálsson 1996) demonstrates the linkage of the guiding tropes identified for Indian-White relations during the period of study back to the differing uses of the conception of nature-society used consciously or unconsciously by contemporary Euro-Americans in their assessment of Native Americans.

Trivially, the challenges to the classical dichotomy are directly relevant to these perceptions of Native Americans, due to the embedding of the mainstream of Euro-American thought on these matters within an Enlightenment episteme of environmentalism. However, there is a more subtle insight to be gained from this effort, regarding the apparent inconsistencies and contradictions held by key participants. How, for example, could both philanthropists and Indian-haters

agree that dispossession of the Native American of their land was “good”? The strong dichotomy of nature versus civility/culture/society gives an answer.

The Native American was to greater or lesser extent excluded from the realm of civility. Whether conceived of as noble savage or ignoble, these societies were placed within nature. In so doing, the Euro-American ethnocentrically (and conveniently) eliminated Native American cultural and social achievements from the realm of the social.

The results of this de-socialization of Native American groups were two-fold. First, it allowed the imperialist ideology behind the acquisition of land to remain unquestioned. For some, no justification for acquiring native land by any available means was needed, but for more tender consciences like Jefferson it was essential that “meaningful” claims by Native Americans to land be denigrated. This worked by refusing to recognize native utilization of land for subsistence or for extractive activities such as the fur trade as being comparable to the intensive and sedentary European utilization. The communal ownership of most native groups was also invoked as ‘proof’ that natives did not improve the land. By the time that any neutral assessment of native claims to ownership would have overwhelmingly sided with the natives, e.g. in the old southwest among the Five Civilized Tribes, it was too late -- there were no neutrals capable of such an assessment.

A second consequence is the perspective on the Native American individual that placed the native in a no-win situation vis-à-vis their white

benefactors. The savage is embedded in nature, not (quite) an animal but certainly not fully human/mature/civilized. According to environmentalist concepts, the savage should be capable of adopting the status of civility through emulating his betters and striving to acquire the obviously superior white culture. However, this process of improvement is only ideal; in practice, the savage is handicapped by being entangled too closely with nature. Communal land ownership and the perceived indolence of native life combine to obstruct the perfection of the savage. Only by being stripped of his land and society can the savage progress. And, stubbornness and indolence has put the savage at risk; the inevitable progress of white society threatens to overcome the savage -- through military force, land pressure, and loss of hunting grounds.

Extent of Modification of the Natural Landscape

If we utilize the Sauerian notion of a natural landscape as one that does not show the impacts of human culture, then Northeast Mississippi as first encountered by Europeans was clearly not natural. Given the relative paucity of information, it is hard to clarify exactly in what manner successive Native American populations had impacted the landscape, but multiple millennia of occupation would have shaped the vegetative cover and other features of the environment to some extent. The concept of a “natural sphere of causation” (Fischer-Kowalski and Weisz 1999; see earlier discussion in Chapter 2), with relatively modest contributions by humans and a predominance of the rest of nature seems to fit this low-impact occupancy scenario.

By the time of Removal, the Chickasaw would have further modified the landscape. Extensive exploitation of large mammals, adoption of corn and cotton agriculture, expansion of garden plots to include European imports such as fruit trees, and free range livestock herding would all have had significant impacts on preexisting vegetative cover. Long term occupancy at relative density would have left old fields that were returning to unmanaged vegetation. The concept of a “cultural sphere of causation” (Fischer-Kowalski and Weisz 1999), with substantial contributions by humans and a relative unimportance of the rest of nature seems to fit this medium-impact occupancy scenario.

CHAPTER 5 -- INSIGHTS INTO IMPOSITION OF THE PLSS GRID

The step-by-step traverse of the townships and sections defined in the PLSS field notes is in some sense a fabrication, yet it provides insight into several aspects of the practicalities of setting the corners that define the PLSS grid. The field notes turned in by the deputy surveyors are at best a “rational reconstruction” of their activities, with the raw minutia of survey activity – fore-shots, back-shots, meanders, and adjustments of bearing and distance along a just-surveyed line – not included. (It might be possible that a few field books or personal journals created by surveyors survived in some archive or family attic, but to date I have been unable to locate any for the study area.) This supporting detail was not required as a deliverable under contracting practices of the time, and most were undoubtedly discarded once the official documentation was approved by the Surveyor.

The Contracting Process

Within the project study area, seven individuals received contracts as Deputy Surveyors as shown in the following summary table derived from the Bureau of Land Management GLO Records website. (Within the project study area, this title was given to the contractor responsible for a particular survey. At other times and for other places, this title may instead refer to a government official reporting to the Surveyor General or other higher official.) Only two

individuals performed both township perimeter and interior subdivision surveys; the others specialized in one or the other type.

Table 5-1: Deputy Surveyors Active within Study Area

Deputy Surveyor	Townships	Interiors
Bailey, Edmund J.		4
Drake, James W.	1	
Edmondson, Andrew J.	4	
Fant, William B.	1	1
Hodges, James		4
Jones, John D.		4
Sampson, Thomas	13	1
Thomson, John	3	

SOURCE: http://www.glorecords.blm.gov/details/survey/default.aspx ; last accessed 05/04/2013

This does not exactly match the more orderly pattern described by Burt (1997: 159 – 162) and other historians of the PLSS. This is due to a recurring conceptual mismatch between townships as polygons and the actual units of work, the sides of townships. (More about this in the following section of this chapter.) The major discrepancy was the participation of Andrew J. Edmondson in four township perimeter surveys within the study area, which was not evident from Burt's cell-based tabulations.

Table 5.2, below, summarizes available data on survey contracts within the study area. The immediate source is the Bureau of Land Management Web site for "General Land Office Records," though some of the data is also available as annotation on the individual township plats. This data gives the appearance that multiple township boundaries were contracted through the same legal agreement, based on the contract dates. The process of contracting was not investigated beyond this level of detail, which was primarily intended to provide provenance for the field notes.

Table 5-2: Survey Contracts within Study Area

Township	Side	Notes DM-ID	Plat DM-ID	Deputy Surveyor	Contract Date	Start Date	Complete Date	Approved Date
T008SR005E	E	70880	70878	James W. Drake	10/21/1833	01/08/1834	n/a	01/09/1835
T008SR005E	S	70879	70878	John Thomson	08/08/1833	09/10/1833	n/a	01/09/1835
T008SR005E	Subd	70881	70878	Thomas Sampson	10/26/1833	06/01/1834	n/a	01/09/1835
T008SR006E	E	149718	70938	William B. Fant	n/a	01/01/1834	n/a	08/19/1835
T008SR006E	S	70939	70938	John Thomson	08/07/1833	09/01/1833	n/a	08/19/1835
T008SR006E	Subd	70941	70938	William B. Fant	10/31/1833	03/31/1834	04/07/1834	08/19/1835
T009SR004E	N	70823	70822	John Thomson	08/07/1833	09/01/1833	n/a	09/01/1834
T009SR004E	W	70824	70822	Andrew J. Edmondson	10/22/1833	12/01/1833	n/a	09/01/1834
T009SR004E	S, E	70825	70822	Thomas Sampson	10/26/1833	11/04/1833	n/a	09/01/1834
T009SR004E	Subd	70826	70822	James Hodges	11/20/1833	12/01/1833	n/a	09/01/1834
T009SR005E	S, E	70884	70882	Thomas Sampson	10/26/1833	12/01/1833	n/a	09/03/1834
T009SR005E	Subd	70885	70882	John D. Jones	10/28/1833	12/01/1833	n/a	09/03/1834
T009SR006E	S, E	70944	70942	Thomas Sampson	10/26/1833	11/04/1833	n/a	06/24/1835
T009SR006E	Subd	70945	70942	Edmund J. Bailey	02/22/1834	05/06/1834	05/13/1834	06/24/1835
T010SR004E	W	70828	70827	Andrew J. Edmondson	10/22/1833	12/01/1833	n/a	09/01/1834
T010SR004E	S, E	70829	70827	Thomas Sampson	10/26/1833	11/26/1833	11/28/1833	09/01/1834
T010SR004E	Subd	70830	70827	James Hodges	11/20/1833	12/01/1833	n/a	09/01/1834
T010SR005E	S, E	70887	70886	Thomas Sampson	10/26/1833	11/24/1833	11/29/1833	09/03/1834
T010SR005E	Subd	70887	70886	John D. Jones	10/28/1833	12/01/1833	n/a	09/03/1834
T010SR006E	S	70947	70946	Thomas Sampson	10/26/1833	12/09/1833	n/a	06/24/1835
T010SR006E	E	149716	70946	Thomas Sampson	n/a	12/09/1833	n/a	06/24/1835
T010SR006E	Subd	70948	70946	Edmund J. Bailey	02/22/1834	04/27/1834	05/05/1834	06/24/1835
T011SR004E	W	70832	70831	Andrew J. Edmondson	10/22/1833	12/01/1833	n/a	01/09/1835
T011SR004E	SE	70833	70831	Thomas Sampson	10/26/1833	12/14/1833	12/18/1833	01/09/1835
T011SR004E	Subd	70834	70831	James Hodges	11/20/1833	03/01/1834	n/a	01/09/1835
T011SR005E	SE	70890	70889	Thomas Sampson	10/26/1833	12/17/1833	n/a	01/09/1835
T011SR005E	Subd	70891	70889	John D. Jones	10/28/1833	12/01/1833	n/a	01/09/1835
T011SR006E	SE	70950	70949	Thomas Sampson	10/26/1833	12/01/1833	n/a	06/25/1834
T011SR006E	Subd	70951	70949	Edmund J. Bailey	02/22/1834	04/18/1834	04/26/1834	06/25/1834
T012SR004E	W	70836	70835	Andrew J. Edmondson	10/22/1833	12/01/1833	n/a	01/09/1835
T012SR004E	SE	70837	70835	Thomas Sampson	10/26/1833	12/17/1833	n/a	01/09/1835
T012SR004E	Subd	70838	70835	James Hodges	11/20/1833	03/01/1834	n/a	01/09/1835
T012SR005E	SE	70893	70892	Thomas Sampson	10/26/1833	12/29/1833	12/30/1833	01/09/1835
T012SR005E	Subd	70894	70892	John D. Jones	10/28/1833	03/01/1834	n/a	01/09/1835
T012SR006E	SE	70953	70952	Thomas Sampson	10/26/1833	02/04/1834	n/a	n/a
T012SR006E	Subd	70954	70952	Edmund J. Bailey	02/22/1834	04/06/1834	04/16/1834	n/a

SOURCE: http://www.glorecords.blm.gov/details/survey/default.aspx ; last accessed 05/04/2013

This information does put to rest one concern with the project research design. Multiple surveyors were represented within the study area, so any individual biases towards inclusion or omission of Chickasaw cultural features should not greatly affect the findings.

One other important element of the contract summary data should be highlighted, to help with interpretation of the field notes. Nine of the thirty-six surveys within the study area include both some indication of commencement date and completion date. (Interpretation of commencement date is ambiguous. Some values appear to represent start of the overall contract rather than work on the indicated township sides. This concern is less evident when a completion date is provided.) From this subset, the following rough guidelines can be derived:

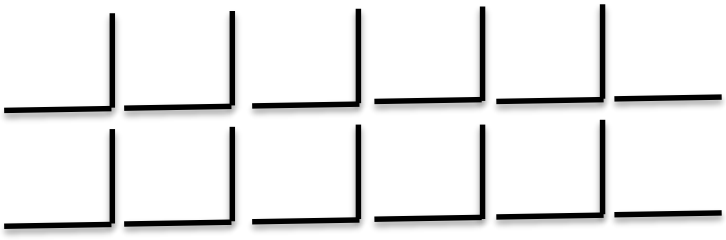
- When two township boundaries, the southern and eastern sides, are included in the contract, the crew took from 2 to 6 days to complete their fieldwork. (Longer duration is associated with the extent of swampy ground to be surveyed.)
- When interior section boundaries were to be surveyed, the crew took eight days for three out of four townships (the fourth took nine days).

The implication is that crews did not spend much time in the area being surveyed. If a feature was not obvious from the path of the survey party, it would not be picked up on subsequent visits.

The Sequence Of Subdivision Survey

The survey of township perimeters was recorded in field notes in a straightforward sequence. In general, only the southern and the eastern boundaries were surveyed for each township within the study area. (The choice of which two boundaries to survey may be an artifact of the location in the southeastern quadrant of the survey as defined by the baseline -- the Tennessee state line -- and the Principal Meridian.) The reason is that, if survey is performed systematically and sequentially, the northern and western boundaries of a township (and of sections within a township) will already have been surveyed.

Figure 5-1: General Pattern of Boundary Survey



It appears on circumstantial evidence that the general pattern of working "the far sides" of a township or section became reified as the North and West sides in many later official documents and commentaries. This originated at an early date – "The principle for running the Township and Range lines in a direction from the Basis lines, is recognized in the law of the 10th May, 1800, as it requires the Townships to be closed at the North-West angle, because it is presumed, the district lay West of the Basis Meridian, and North of the Basis

Parallel." (Fitz 1832: 6) As was previously noted, the survey practice within the "District South of Tennessee", comprising what is now Mississippi and Alabama, was transitional between early practice in the Ohio Territory and later practice in the Old Northwest and the Trans-Mississippi West. One difference is that present-day Mississippi contains five Principal Meridians, when most subsequent states required only one or two. The Chickasaw Survey added a distinctive feature in that – apparently to economize by using the recently completed state boundary survey between Tennessee and Mississippi as a Base Line – the survey direction was all oriented south of the base line. Price (1976) documents the contentious history of this boundary line, which explains why a small portion of the state of Tennessee lies within the PLSS.

The sequence of survey within the interior sections of a township is more complicated. First, the exterior section boundaries are coincident with township boundaries, which would have already been surveyed. Second, the numbering sequence of townships dating back to the Land Act of 1796 (Johnson 1976: 53-55) lends opportunity for confusion due to the "boustrophedon" numbering system (also referred to as "switchback", "serpentine", or "alternating").

This boustrophedon sequence was mandated in Section Two of the Land Act, which requires that "the sections shall be numbered respectively, beginning with the number one, in the northeast section, and proceeding west and east alternately, through the township with progressive numbers, till the thirty-sixth be completed." This approach is labeled boustrophedon, a term from linguistics

which refers to the path of an ox when plowing back and forth within a field. (Linguists apply this to forms of writing, such as certain archaic Greek inscriptions, in which the written characters alternate direction on each line.) C. Albert White, the pre-eminent historian of the PLSS, has traced this stipulation to an amendment to the Land Act of 1796 offered by Senator Humphrey Marshall of Kentucky (White 2001), but can offer no reason for the change. The initial pattern of section numbering ran bottom to top and right to left, with Section 1 at the southeast corner of the township and Section 7 adjacent to it.

The township subdivision surveys within the project study area generally followed the standard pattern. A few minor discrepancies were found in the notes (e.g. a direction recorded as east when it should be south) but these were apparently not egregious enough for the District Surveyor to reject the work.

Production Of Field Notes

Notes were transcribed into a standardized format as a contractual deliverable. All the notes examined in this research – both township perimeter and section subdivision – utilize the same form. These were not preprinted, but the column layout is standardized enough that blank forms may have been provided to each deputy. White (1983: 275) reproduces a set of standardized field note “specimens” dated May 1832 and developed by Gideon Fitz. The actual notes used within the project study area are quite similar, but distinct in format from these exemplars.

(I am uncertain as to when the standard terminology changed from “field books” to “field notes.” For purposes of this research the two terms may be used interchangeably.)

Regardless of their exact format, field notes were prepared based on detailed instructions:

AS TO FIELD BOOKS

21st. You [the Surveyor General] are to furnish your Deputy Surveyors with a printed specimen form of field book, which is to be so constructed as to exhibit every particular required either by law or instruction, so as to admit of a perfect topographical exhibition of the country, and accompany such form with special instructions on every point in relation to which it can be presumed that instructions are necessary.

In the field book, the number of miles, chains, and links, run on a line, are to be exhibited in a column, which is to be added up at the foot of each page, and carried forward from page to page, so as to form at the conclusion of the book the aggregate of miles, chains, and links, run in the township or fractional township.

The Act of Congress approved 18th of May, 1796, (Land Laws, new edition, page 420,) requires that "... These field books shall be returned to the Surveyor General, who shall thereupon cause a description of the whole lands surveyed to be made out, and transmitted to the Officers who may superintend the sales. He shall also cause a fair plat to be made of the townships and fractional parts of townships contained in the said lands, describing the subdivisions thereof, and the marks of the corners. This plat shall be recorded in books to be kept for that purpose; a copy thereof shall be kept open at the Surveyor General's Office, for public information, and other copies sent to the places of sale, and to the Secretary of the Treasury."

As the protraction of the surveys at the Office of the Surveyor General, from the field books furnished by his Deputies, is the test of the accuracy or incorrectness of the survey, the greatest caution is to be observed in making such protractions.

The field books are to indicate the examination and approval thereof, (or disapproval, as the case may be,) by the Surveyor General, with the

> date of such examination and approval, under his own proper signature; also, the date of the contract, the quarter of the year in which the land was surveyed, and payment made therefor.
>
> The field books are to be signed by the Deputy Surveyor, and also by the chain-men, marker, and flag-bearers, employed in the survey. (Elijah Heyward, GLO Commissioner, to Gideon Fitz, Surveyor General for the District South of Tennessee, 28 July 1831, quoted in White 1983: 260)

These instructions were, with minor deviations, those followed by the Deputy Surveyors in preparing the field notes for the project study area. The actual contracts have not been examined, so these minor variations may have been part of the contract stipulations.

Production Of Township Plats

Field notes were primarily the prerequisite for creating the most important legal description of the township, the plat map. The notes were supposed to be available for consultation if desired, but all the important information to be considered by a prospective purchaser was to be transcribed onto the township plat map. Bound sets of these maps were the primary research tool at each land office.

Plat production was initiated as part of the Land Ordinance of 1785, but because this was an administrative task performed by government clerks rather than part of the contractual deliverables from surveyors little documentation exists for the processes or technical standards used in their production.

The following instructions were provided in 1831 for preparation of plats, around the time of survey of the project study area:

In the preparation of the township plats, it is requisite that they exhibit a perfect delineation of the country, as represented in the field notes of the survey.

1st. The plats are to be so constructed as to indicate, both by protraction and by figures, the courses and distances of all lines, viz: The exact distance between the posts planted at the corners of each section or fractional section, and the courses of the lines where, from any cause, they vary from the cardinal points; also, the precise delineation, by courses and distances, of private claims, reservations, and other tracts of land not conforming to sectional lines.

2d. Whenever the continuation of a surveyed line is interrupted by an impassable swamp, or from any other cause, the distance of the line actually run, between the starting and finishing posts, is to be truly represented be the platting, and also by figures.

3d. The distance on a surveyed line, at the points where streams cross the same, is to be indicated by figures, and the general course of such streams, where they are not navigable, between such different points of intersection, is to be delineated on the plat, as nearly as the same can be conjectured. The courses and distances of the meanders of navigable streams are to be truly delineated, and also represented by figures on the plat opposite the delineation, wherever it is practicable so to do; and where the same are too numerous to admit of their exhibition by figures on the plat, in that mode, the same are required to be exhibited in a detached tabular form, either on the face of the plat, or connected therewith, as may be found most expedient. The width of all water- courses, rivers, creeks, &c., is to be represented in figures on the plat.

4th. The plat is to exhibit the received names of all rivers, creeks, lakes, swamps, prairies, hills, mountains, and other natural objects, and the surveyors should be instructed never to give original names to such objects, where names have heretofore been given. All lakes or ponds of sufficient magnitude to justify such expense are to be meandered and platted agreeably to courses and distances, which are also to be exhibited by figures. In passing such ponds or lakes as are not to be meandered, offsets are to be taken, which offsets are to be carefully noted on the plat, to show that the distance across has been correctly ascertained. Such ponds or lakes are to be exhibited on the plat as accurately as practicable, from careful ocular observation, to be made by the Deputy and noted in his field book.

5th. Swamps are to be represented in the ordinary method, by slightly shaded black lines and dots, and the outlines of the same should be distinctly exhibited.

6th. Prairies are to be represented by slightly shaded green lines and dots, and the outlines of the same to be distinctly exhibited.

7th. The plats should also exhibit, as far as practicable, all mines, salt springs, salt licks, and mill seats; also, towns, villages, and settlements, and the names of the same; also, forges, factories, cotton gins, and all other such items of information; also, the general course of travelled roads and tracks, denoting the place to which they may lead.

8th. The exterior lines of the township plat should be double the thickness of the sectional lines, and both of them should be in black ink. The lines denoting the quarter sections and the subdivisions of fractional sections should be in red.

9th. The quantities of the subdivisions of fractional sections are to be indicated by red figures, within the respective subdivisions. The numbers and quantities of the sections and fractional sections are to be exhibited in black figures, at the centre of each, as nearly as practicable; and in cases where the marks and figures on the plat are too numerous to admit of the convenient exhibition of the quantities in that way, the quantity of each section and fractional section is to be exhibited in a neat tabular statement, on the right side of the plat; and where there are private claims in the township, the quantities of such claims are to be exhibited under a separate head in the tabular statement, which is to exhibit separate totals of public lands and private claims; where any private claim, Indian or other Reservation, &c., is exhibited, the name of the confirmee or reservee must be given; also, such other reference as will clearly identify the tract, with the Report by which it was confirmed, or the Treaty, &c., under which the individual claims the title. (Elijah Heyward, GLO Commissioner, to Gideon Fitz, Surveyor General for the District South of Tennessee, 28 July 1831, quoted in White 1983: 257)

Plats were broadly similar in format throughout the territory south of the Tennessee River, and this format carried over to some extent to later surveys – at least as regards the map graphics. The plat map was drawn on a sheet approximately 18 by 22 inches, at a scale of 2 inches to the mile (1:31,680). (A byproduct of the conversion of plats to digital format by BLM has been the loss of

metadata describing the original image. These dimensions are estimates based on map pixel measurements made of the scaleless Mr.Sid images from the BLM website, and assuming the two-inch-to-the-mile source scale was used in this area as elsewhere. This is an example of why tracking down the source documents is always worthwhile when interpreting digital archives.)

CHAPTER 6 -- DESCRIPTION OF THE STUDY AREA IN PLSS DOCUMENTS

The original survey data, despite the regional extent of the resulting spatial grid, was in effect a micro-sampling of the portion of the Earth's surface that was covered. As a result, many medium to large scale features were not remarked upon, if observed at all. The primary aspects of the study area described in the notes or plats, therefore, are features that impacted the survey party's ability to cover their assigned area. These included aspects of terrain such as wetlands or streams, and vegetation and related land cover details.

Indications Of Terrain From Survey Source Documents

Hydrographic features and various types of wetlands are the only indications of terrain that were consistently recorded in the survey data. Stretches of prairie are indicated, but (with the possible exception of the Old Fields near present-day Tupelo) there is no indication in the notes that these form a single regional feature. (The corresponding plats frequently do show these seemingly isolated features connected up into large areas of presumably consistent land cover. It is an open question as to which representation is more suitable.) Otherwise land is occasionally given a description as "high ground", especially in contrast to adjacent swampy bottomlands, or "gently rolling." In summary, except for the soggy areas one would be unable to describe the study area terrain from the survey data alone.

One problem is that major terrain features such as the Black Prairie or Pontotoc Ridge are not visible at the scale of the survey. Given its description in both contemporary travel descriptions and in later environmental research (as discussed in Chapter 4), the Black Prairie might have been expected to have made more of an impression on the survey parties. It can be identified by applying prior expectations and epistemological categories to the details of the survey documents but it would not leap out as more than a localized structure from field notes.

"Prairie" is shown as a physiographic area in plats but not systematically connected into larger structures. In the notes it is difficult to distinguish between "prairie" and "old fields" when some specific area is called out (this difficulty of classification was apparently felt by the surveyors and is not just a retrospective imposition on the data, as the occasional reference to "enter[ing] a prairie or old field" in the notes.

Table 6-1: Examples of Descriptions of Land from Survey Notes

Description	Location
Very hilly generally open woods	Due East between Secs 9 & 16 T009SR004E
Enter pretty Hcky flat	Due South between Secs 9 & 10 T009SR004E
Land broken 3d rate.	Due South between Secs 34 and 35 T008SR006E
Land gently rolling 3d rate.	Due South between Secs 32 and 33 T008SR006E
Leave Hky flat & sort of Prairie	Due East between Sect 5 & 8 T009SR004E

The recognition of “prairie” terrain helps identify a difference of approach between the survey field notes and the township plats derived from them. The presence of quasi-prairie areas that for some reason were not explicitly designated prairies can be derived from various aspects of the field notes. There were several corners placed within non-forested areas, as indicated by (a) larger than typical distances to the witness trees, up to several chains from the post, and/or (b) selection of very large or small diameter trees, and/or (c) selection of unusual species. This conclusion is based on merely impressionistic evidence and would require a larger study area and a more focused analysis to confirm.

Wetlands also created problematic categorization in the survey data. Many variations on “swamp” are encountered in notes. It is not clear when the surveyors were trying to make a systematic distinction vs. simply varying the language, or describing better-or-worse conditions of the “same” category of physiographic area.

Table 6-2: Examples of Descriptions of Swampy Land from Survey Notes

Description	Location
In bottom	Due East between Secs 3 & 10 T009SR004E
Leave Swamp land wet	Due South between Secs 8 & 9 T009SR004E
The land Swamp & covered with water.	Due East between Sect 23 & 26 T008SR005E
The whole lies in a wet Swamp.	South between Sect 34 & 35 T008SR005E
The land all a deep swamp.	Due South between Secs 23 & 24 T008SR005E
The land a boggy Swamp	Due South between Sec 7 & 8 T008SR005E
Land low 2 rate.	Due East between Secs 18 & 19 T008SR006E
To Swamp. Land dry & good	Due South between Secs 1 & 2 T009SR004E

"Swamp" is also problematically represented on the township plats. Within the project study area, four variations of the swamp symbology called for above were noted, with more than one shown on a single plat. These plats contain no legend so it is impossible to tell whether the cartographer intended to indicate a degree of swampiness, or simply varied the hand-drafted symbolization unintentionally while drafting the plat (possibly indicating an interruption in the plat production process).

Only a few streams are given a proper name within the study area. Some of the major tributaries of the Tombigbee are named, but not most of the smaller streams. Streams with "received names" are generally located around the Council House and associated settlement (see next chapter for a discussion of these and other cultural features).

The following stream names were found in the PLSS plats or (rarely) within the field notes within the project study area:

Table 6-3: Streams Named in Survey Notes or Plats within Study Area

Contemporary Name	Present-Day Name
Chook-ah-tonk-chie	??
Chowappah Creek	Chiwapa Creek
Levi Colbert's Stream	??
Old Town Creek	Town Creek
Pontotoc Creek	Pontotoc Creek
Tally-bin-ili Creek	Tallabinnela Creek

(NOTE: As a former resident of Monroe County MS, near Cotton Gin Port, I grew up understanding the western branch of the Tombigbee River to be the old

Town Creek as opposed to the newer creek channel; from the PLSS data I now understand it to be the creek flowing by Old Town.)

Only a few other terrain features of any kind are named. Aside from the "Old Fields" only one other land use feature is named -- "Levi Colbert's prairie", which I interpret as an old field associated with this influential chief. Only one terrain feature ("Levi Colbert's stream") is given an English name; all others are (transcriptions of) Chickasaw.

Indications Of Land Cover From Survey Source Documents

Land cover – vegetation and other features, man-made or "natural" -- has not been systematically analyzed in this study, since the emphasis has been on identification of cultural elements. Data certainly exists within the PLSS source documents for such an analysis in future, and indeed this has been the primary utilization of the PLSS data in the past (see Chapter 2) . At this time, only a few preliminary observations have been made as part of extracting cultural references.

Tree distances within areas designated as "prairie" are not as extreme as might be expected, supporting the description of the area as savannah rather than the stereotypical high prairie of Illinois or the Great Plains. For example, the witness trees along section lines in known areas of prairie in T012SR005E, were:

Table 6-4: Examples of Witness Trees in a Prairie

Line	Corner	Distance from Corner		Tree Dia.	Species
		Links	Feet		
Between Sec. 7 & 16	¼ S	50	33.00	6 in.	Hickory
Between Sec. 7 & 16	¼ S	85	56.10	8 in.	Post Oak
Between Sec. 7 & 16	Corner	n/a	n/a	n/a	Erected Mound
Between Sec. 17 & 16	¼ S	10	6.60	10 in.	Black Jack
Between Sec. 17 & 16	¼ S	21	13.86	8 in.	Black Jack
Between Sec. 17 & 16	Corner	10	6.60	10 in.	Black Jack
Between Sec. 17 & 16	Corner	45	29.70	8 in.	Post Oak
Between Sec. 17 & 16	Corner	20	13.20	12 in.	Post Oak
Between Sec. 17 & 16	Corner	35	23.10	5 in.	Black Jack

In contrast, most bearing trees are from 5 to 40 links (a link is one one-hundredth of a survey chain, or 7.92 inches in length) away from the corresponding corner. There is wide variation in these distances, so this can be no more than an indication of possible future research. However, the use of a mound instead of a post is a clear indicator that the survey party could find no suitable timber near that location for cutting posts.

In a few circumstances, the witness tree choices have been taken as proxies of human activity. These involve choices of plum or peach trees, neither of which is native to northeast Mississippi. These could be indicators of an “improvement”, or possibly an old field situation. There is some possibility that the specific plants were “escapees” from cultivation – plums could readily be the results of fruit being consumed and the seeds discarded at some distance from the source plant.

Other interesting observations relative to vegetation in the study area:

- Cedars or pines are not noted in the field notes for this area.
- Neither the field notes nor the plats contain any indication of fire impacts, either anthropomorphic or natural. Also, no indications were noted of blow downs or other disturbances.

CHAPTER 7 -- CULTURAL ELEMENTS IN PLSS DOCUMENTS

The most important category of entries in the PLSS documents for purposes of reconstructing the Chickasaw cultural landscape is, by definition, cultural features. Although the entire landscape bears some imprint of human utilization, entries explicitly documenting human activity are the most revealing evidence regarding Chickasaw occupancy.

This chapter discusses the references to cultural elements encountered during this research. References are cross-referenced to other sources of information about cultural resources, Chickasaw and Euro-American, in order to identify possible gaps in documentation. We would have no way of recognizing a spurious recordation of Chickasaw occupancy, but we can potentially spot omission of a known instance of such occupancy.

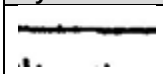
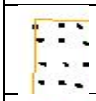
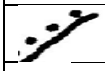
Sources For Illustrations In This Chapter

Throughout this chapter are illustrations of various instances of cultural entries. These are deliberately termed “illustrations”, because despite their essentially cartographic nature they do not contain the necessary appurtenances of a well-formed general map (Robinson and Sale 1969; MacEachren 2004; Wood and Krygier 2005). This level of formality was consciously avoided due to the large number of such illustrations and their intended, illustrative purpose.

Indeed, the full paraphernalia of title block, legend, etc. tend to interfere with the interpretation of the illustrations when included.

This process resulted in a series of illustrations of different scales and sizes, but with consistent symbology. Table 7-1, below, can therefore serve as a generic legend for these illustrations:

Table 7-1: Symbology Frequently Encountered in Illustrations

Symbol	Definition	Comments
	Linework from scanned township plat.	The plats do not demonstrate much consistent variation in linework. The same line is used for many types of feature.
	Point feature representing a cultural entry derived from observations in field notes.	In most illustrations, no attempt was made to distinguish the type of cultural feature graphically. The map tended to get too cluttered for use.
	Yellow – digitized boundary of a prairie or field. Black – corresponding border and stipple area fill from scanned plat.	In normal use, these two representations of the boundary would overlap. Having zoomed in tightly to show all the detail in this source illustration, a digitizing error shows up.
	Blue – digitized boundary of a swamp. Black – corresponding border and stipple area fill from scanned plat.	
	Dark Blue – digitized course of a stream. Black – corresponding stream course from scanned plat.	
	Yellow – digitized boundary of a field. Black – corresponding stipple area fill from scanned plat.	A field on a plat may or may not have an enclosing border. A regular pattern of simple stippling is typical.
	Red text – GIS generated polygon label for PLSS townships	Townships were not labeled on plats, since a plat covered one township.
	Black – the combination of solid and dashed line indicates a small path.	
	Black – The thick single line sometimes represents a major road.	
	Black – Dual thick black line occasionally represents a major road. Dark Blue Gray -- digitized course of a road.	
	Black – Rectangular house/cabin representation, with unusual annotation	

These illustrations were derived from the GIS archive constructed for this project. The Graphical User Interface that is part of Esri's ArcMap software was used to compose the illustration as the results of a geospatial search of the data

archive. The graphic display was then copied into a raster file (usually in *.JPG format) using the Snip-It utility included in the Microsoft Windows 8.1 operating system. These raster files were inserted into this document as a figure.

Categories Of Cultural Entries Encountered

The field notes for the fifteen townships within the project study area included a total of 295 references to cultural elements. (These were transcribed and used to create point features within the GIS archive, from which this summary table and the illustrations in this chapter were created.) The frequency of different cultural elements is shown in Table 7-2, below:

Table 7-2: Counts of Cultural Entries in Study Area, by Township

Township, Chickasaw Survey	House or Cabin	"Improve-ment" Edges	Cow Lick	Field Edges	Old Field Edges	Paths	Roads	Fences	Total	Summary Statement Only
T08SR05E		3					4		7	
T08SR06E				2			10		12	
T09SR04E				2	2	6	3		13	
T09SR05E	1	19		2	5	3	18		48	3
T09SR06E		2				1			3	
T10SR04E	2			25	16	3	20		66	
T10SR05E		2			23	3	9		37	12
T10SR06E									0	
T11SR04E						1	10	1	12	
T11SR05E		2					8		10	
T11SR06E	5	4		4			4		17	
T12SR04E			1	7	4		18		30	
T12SR05E	1	1		1			8		11	
T12SR06E	1			6	1		15		23	
Total	**10**	**33**	**1**	**49**	**51**	**17**	**127**	**1**	**289**	**15**

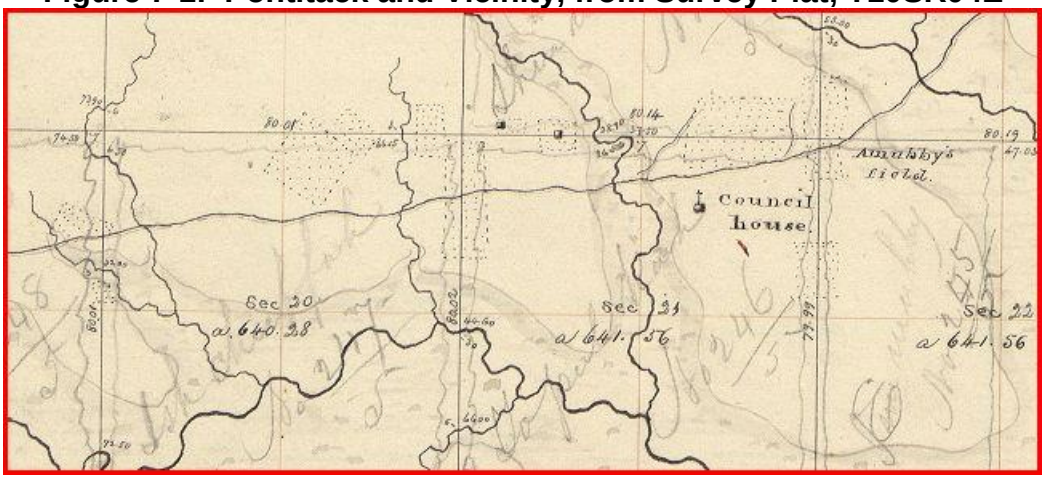
As might be expected, the largest category of features (50%) was roads, including “traces” and “paths”. This in one sense overstates the situation, since a single road feature such as the Natchez Trace would be encountered multiple times as it crossed multiple section lines within a township. Also well represented are fields, though these may also include several entries for the same field (if the survey line enters and then exits a field, both events are typically recorded). Only a small number of structures were indicated, even though the category groups cabins, houses, and “field houses” together. Some additional ambiguity exists in two categories – “improvements” are not usually further specified, though in a few instances the entry specifies “cabin and improvements”; and in sixteen sections the summary statement mentioned fields, old fields, etc. whether or not any were specifically recorded. (Summary mentions were not locatable, and were excluded from the totals in the table.)

The spatial distribution generally corresponds to expectations, with fields around the Old Fields and near the Council House settlements as documented in the PLSS source data. However, the overall distribution indicates that the center of settlement by the time of Removal had decisively shifted westward from the late 18th Century settlements around the Old Town location. More evidence of fields and cabins had been expected throughout the area, based on the “setting out” movement discussed earlier.

Settlements

Only one formal Chickasaw settlement was included in the study area. The Chickasaw settlement of Pontitack was built in the western portion, around Sections 19 – 22 of T10SR04E, where the Council House was erected in 1820 (Atkinson 2004: 214-215). This was the Chickasaw town, not the later American town of very similar name founded a few miles to the northwest following the cession treaty to hold the Land Office (Silver 1944). This was by far the most densely settled area within the study area. Interestingly, the settlement is not given a name on the plats or in the field notes – identification with the Pontitack community is based on the presence of the Council House.

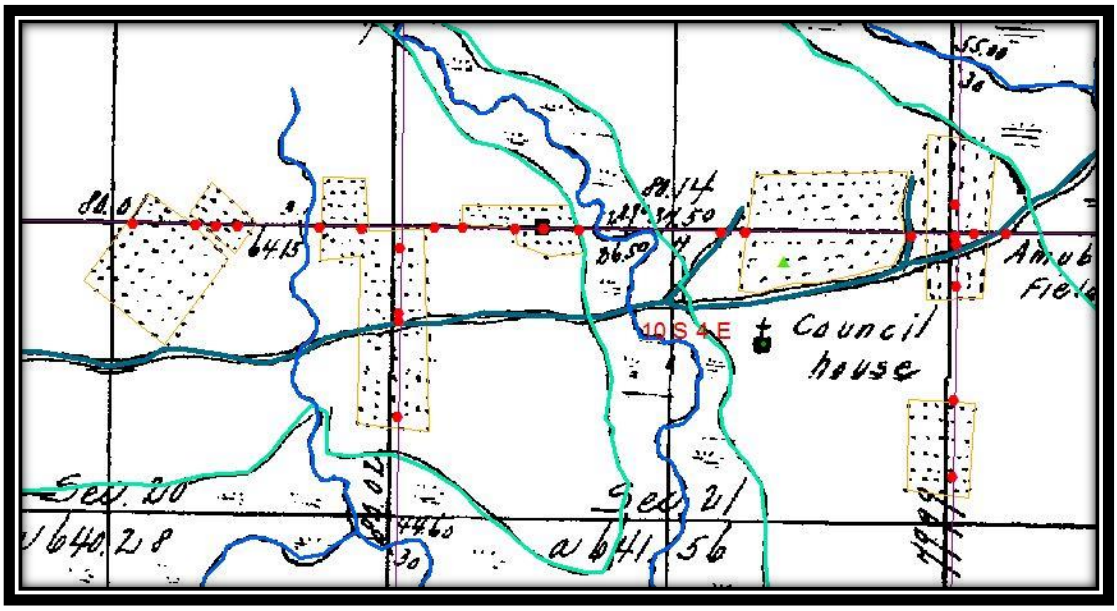
Figure 7-1: Pontitack and Vicinity, from Survey Plat, T10SR04E



It is also interesting that several historic properties are not indicated by name in the settlement. John McIntosh, 1st British "commissary" to the Chickasaw, established c. 1765 "a homestead on the Natchez Trace about twelve miles west of the nearest prairie town (Old or Big Town) and on the north side of 'Paontitack' (present-day Pontotoc) Creek ... in present-day Pontotoc

County." Also, "[an important chief of the] Chickasaw, Paya Mattaha, had a plantation by 1771 located just north of McIntosh's commissary...." These were "undoubtedly the origin of the Chickasaw settlement known as 'Pontitack' by the turn of the nineteenth century." (Atkinson 2004: 91) The same is true of "Factor's Town" in the northwest quarter of Section 28, T08SR06E. The archeological site inventory for this site, designated 22-Le-544, describes it as containing "village site, mound, possibly an inn" but the PLSS source data only notes the route of the Natchez Trace in this area.

Figure 7-2: Pontitack Field Complex from GIS Archive, T10SR04E



Most of the other recently-founded settlements like Holkey were a few miles to the west of the study area. Tokshish was located in Section 16 of T11SR3E, Holkey and the first Chickasaw Agency (as discussed in Chapter 1), was also roughly within T11S R3E.

(Interestingly, the new American town of Pontotoc, still extant, is located on the plats only through indirect evidence. First, a handwritten annotation has been added for “Land Office”, which was located one-half mile east of the center of the present-day town (Atkinson 2004: 232). The only other indication of settlement in the area is an indication of “Love’s old place”. However, several roads with names including Pontotoc are shown converging on the locale. See the next section for further discussion of roads and paths.)

Densities of settlement support the “setting out” model of settlement pattern, though a few clusters may indicate either groups of households or multiple fields belonging to a single, more affluent household. When the owner/occupant is named, the field complex belonged to an important member of the community, such as one of the Colbert brothers who were so important in the negotiations leading up to removal.

Farms and Other Sites

A number of smaller settlement sites were mentioned in the field notes or shown on the township plats. Ten structures were indicated in the notes, including the Council House, but also houses, cabins, and “field houses” (utility structures at fields, used to store equipment and produce and to provide temporary shelter). Thirty-three observations of “improvements”, fifty-five “fields, and thirty-four “old fields” were also found. This corresponds roughly to sixteen improvements, twenty-eight fields and seventeen old fields – it is not always clear if an observation of a field edge for example is part of a known feature or

something new. The estimate is made based on assuming an entry for entering the feature and a corresponding entry for exiting at the other side. (The same problem precludes any area calculations since the polygonal field could vary widely in shape, from a near perfect rectangle to a blob-like area, and because the survey line crossed the field arbitrarily.)

The few structures identified in the PLSS material are almost all are associated with one or more fields. In the most typical configuration, such as at Levi Colbert's establishment in a natural prairie in the center of T12SR06E (Figure 7.3, below), the structure is within the boundaries of the field. However, many fields are shown without any indication of where the farmers lived or how they accessed the field.

In a few areas, such as Sec. 7, 8, 18, & 17 of T12SR4E along "Chook-ah-tonk-chie" Creek, several houses are identified somewhat independent of fields (including one identified as "Colberts"). (See Figure 7-4, below.)

The illustration in Figure 7-4 also shows the problems in interpreting the area symbology used by the draftsman on township plats – it seems clear that the rectangle at "Samples" and the rectangle along the Natchez Trace east of "Colberts" are intended to represent fields, but how should we interpret the oval area shown between them? I have interpreted it as a "prairie".

Figure 7-3: Fields and Structures of Levi Colbert, T12SR6E

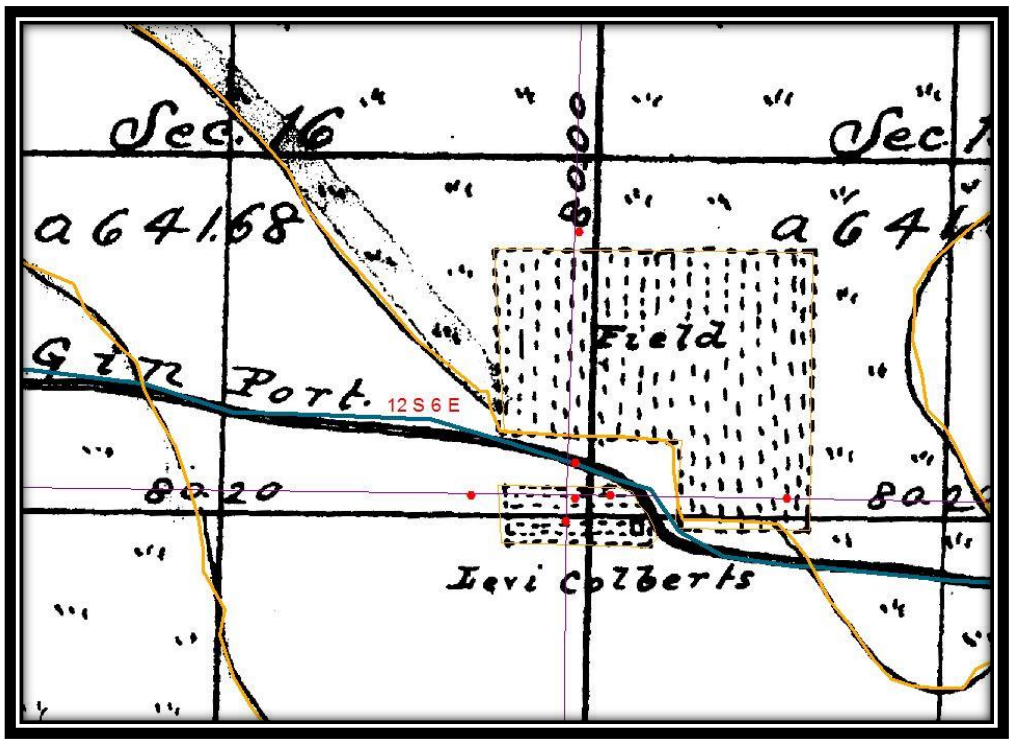
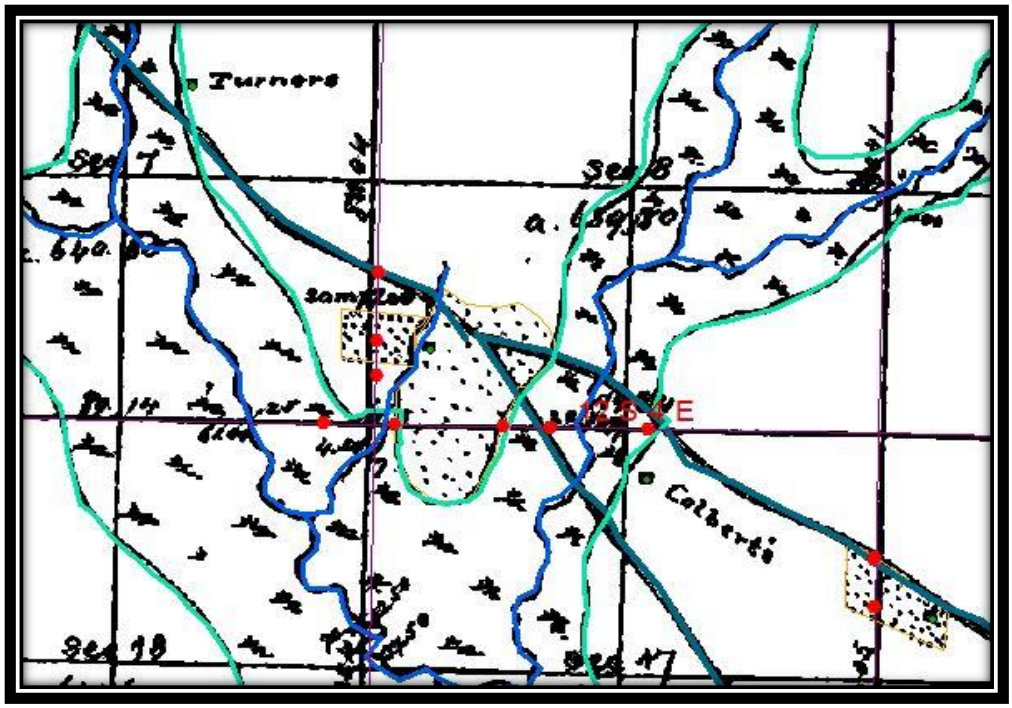


Figure 7-4: Houses Independent of Fields, T12SR04E



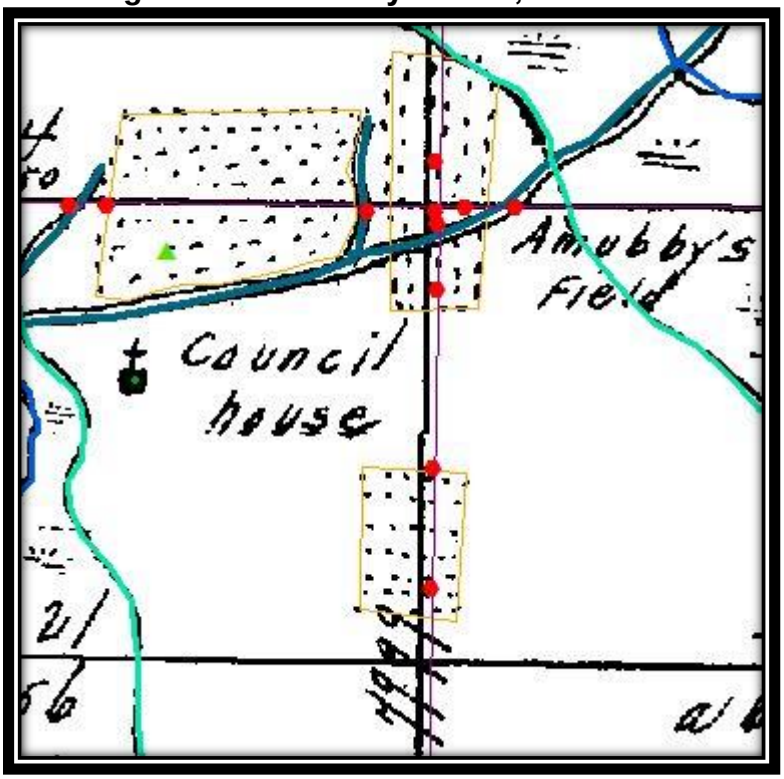
Fields are the most common areal cultural feature encountered in the PLSS source data. As has been discussed previously, there is some potential overlap among the substantially modified areas labeled “fields”, the formerly utilized areas described as “old fields”, and the presumptively unmodified areas labeled “prairies”. Many observations are distinctly classified, reflecting the surveyor’s judgment as to the origin of the landscape feature being recorded. In other cases, however, the notes indicate uncertainty, for example “entered old fields or prairie”. This ambiguity is frequent in the section summaries, added after completing boundary survey for each section, in which the land may be described as “Rest [after first 60 chs] prairie & old fields” (for Section 28, T09SR05E) or equivalent. The source data provides no obvious way of systematically distinguishing except to take the entry at face value.

A second issue is that in many summary statements for sections, the surveyor noted the presence of old fields within the square mile of the section without recording any along its perimeter. This may be a perfectly reasonable way of indicating that the survey party saw but did not pass through actual old fields, but may be no more than a casual assignment of an open area to cultural activity. Again, there is nothing in the PLSS data to let us second-guess the recorder.

The notes sometimes help interpret indefinite boundaries or configuration of plat features. Amubby’s Field, lying around the corner of Sec. 16, 15, 21, & 22 of T10SR04E just east of the Council House (shown in Figure 7-5, below), is

unusual in several respects. It is one of only a few fields identified by owner within the study area (the others belong to Levi and to George Colbert). On the plat, the feature looks like a single field split by the Natchez Trace. In the field notes, there is an apparent division into two fields. Also, the field notes indicate that the northern extent of the field is drawn about twice as long as it should be. The mapped area extends about 700 feet farther north than the field notes indicate, all the way to the swamp along the creek.

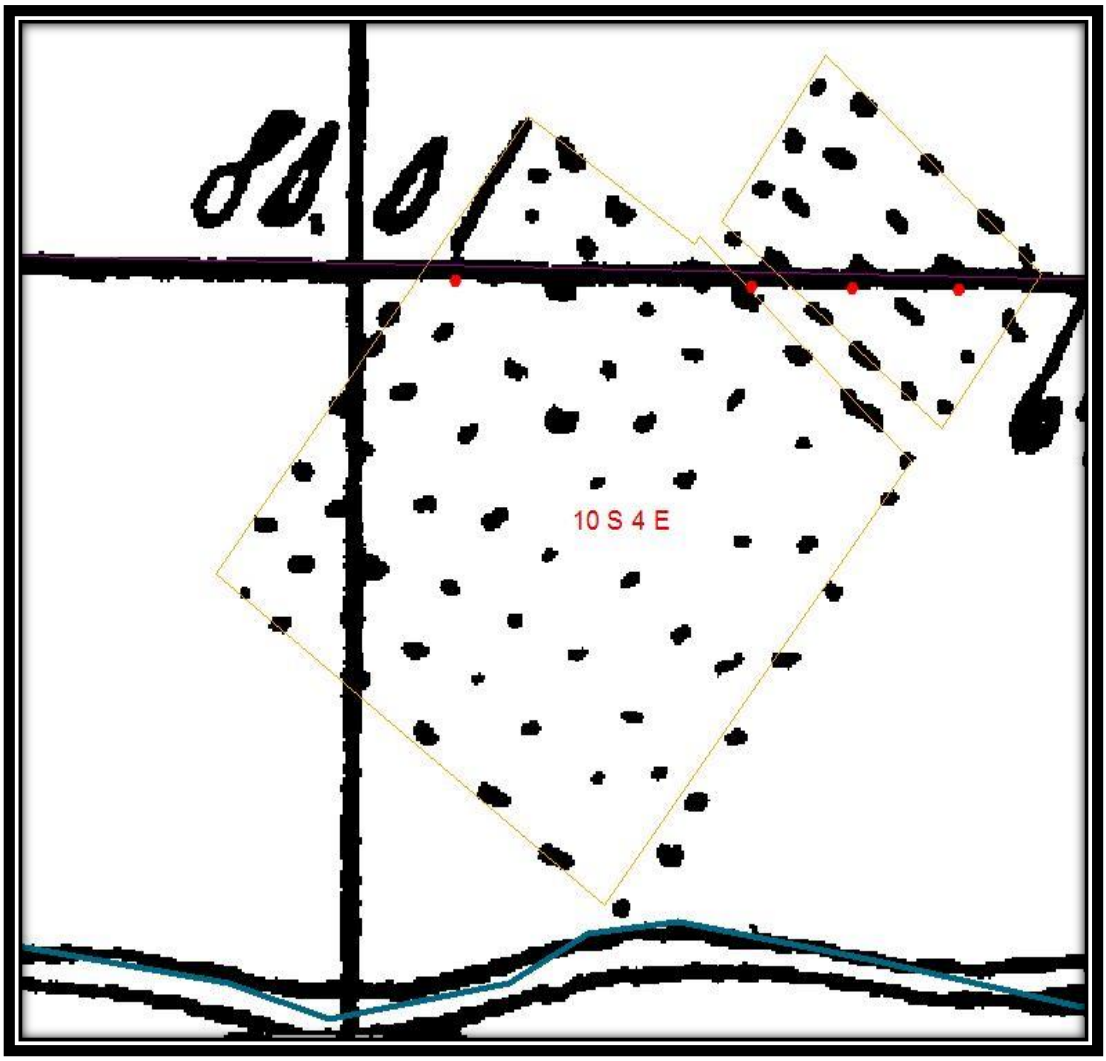
Figure 7-5: Amubby's Field, T10SR04E



Another example of clarification is found in the field complex west of the Council House. (See Figure 7-1 and 7-2, above for overview and Figure 7-6

below for a detail.) On the plat all the fields appear identical. The notes indicates that the upper end of the offset field is an “old field”.

Figure 7-6: Misalignment between Field Boundaries in Plat and Field Notes, T10SR04E



There is sometimes much additional detail about occupancy on the township plat maps than is available from the field notes, especially regarding the total perimeter of a field or old field. The survey party typically noted when they entered and exited a field (though there are several examples where the

entrance was noted but not any exit, or vice versa) – but otherwise didn't give any indication of its size or orientation. The plats, in contrast, show neatly rectangular fields averaging about 20 acres in extent. The boundaries on the plat may also not align with the entries in the field notes, as shown in this close-up (Figure 7.6) of the field complex west of the Council House. The entry and exit observation points of the survey party for the larger field align quite well with the boundaries digitized from the plat, but the corresponding points for the smaller adjacent field show substantial mismatch.

There can be substantial differences in field inventory between plats and field notes. For example, in Section 20, T08SR05E, the plat shows a large field astraddle of the southwest section corner and a small field some 350 feet north of it, but the field notes only contain a single entry indicating entry into the larger field. In contrast, the field notes along the boundary between Sections 20 and 29 of T08SR06E indicate entry and exit of a large field, 726 feet wide at the transit, but the township plat shows nothing. (These examples are not illustrated.)

The vexing category of "improvements" also clouds the question of the extent of Chickasaw land use. In modern usage it normally refers to the ensemble of buildings, other structures, and landscape features such as orchards that "improve on" the "raw" land, as when the tax assessor refers to "land and improvements". This usage is apparently relevant in this context, since at least once the field notes refer to "cabin and improvements". Since fields are a relatively frequent category in the notes, I am tentatively interpreting this to mean

outbuildings, corrals, and other adjuncts to the farmstead. Unfortunately, none of this is definitive, so the category has not been merged into other possibilities. All the data indicates for certain is that the location in question has obvious indications of human utilization of a more-or-less permanent nature.

Routes, Trails and Other Transportation Features

A number of roads, traces, or paths were noted in the PLSS source data within the project study area. The most dense transportation network was located west of the study area, connecting old and new Pontotoc, Tockshish, and the other towns. However, since residents in this new center of Chickasaw occupancy were interacting with Americans such as those on the upper Tombigbee River through the gateway settlement of Cotton Gin Port, a number of regional routes passed through the study area.

Roads are often given descriptive attributes in the notes. Some are referenced as “public roads”, presumably to contrast with farm roads. This notation is only used when the name of the road is not given. Both roads and paths are often given the label of “plain”, though it is not clear what distinction is being made – presumably all road features are plainly distinguishable or they would not have been mentioned. The terms “trail” or “trace” are only used as part of a proper name such as the Natchez Trace.

Many more important routes have names recorded. The following names for roads were encountered on the plats or in field notes for the study area (with due correction for slight variations, including flipping the origin and destination):

Table 7-3: Names of Roads and Trails in PLSS Sources

Recorded Name	Source
Old Natchez Trace	Notes & Plats
Old Road from Cotton Gin to Memphis	Notes
Reynoldsburg Road	Notes
Road from Bolivar Ten. to Cotton Gin Port	Notes & Plats
Road from Memphis to Cotton Gin Port	Notes
Road from Otocopolco to Council House	Notes
Road from Pontotoc to Cotton Gin Port	Notes & Plats
Road from the King's to Tokshish	Notes
Road from Tokshish	Notes & Plats
Road from Tokshish to Cotton Gin Port	Notes
Road from Tokshish to the King's	Notes
Road to Cotton Gin Port	Notes

Three roads or traces of regional importance pass through the study area and are documented in the PLSS source material. These include:

Natchez Trace

The Natchez Trace is the most widely known early road in Mississippi (Davis 1995), and its history need not be explored in depth here. William Myer (1924) in his inventory of early trails in the Southeast identified this as #19. The Trace ran from Nashville TN to Natchez MS, including traversing the project study area in a generally north-south direction. It presumably began as a loosely connected set of prehistoric trails and game paths. As the flatboat trade became increasingly important, through traffic became common as flatboat men walked

home after taking flatboats of products of the Ohio Valley to market on the lower Mississippi River. There were few alternative land routes below Nashville, so a series of travelers marked out the best route and made limited improvements. (Myers 1960)

The early trails were little more than footpaths. The US Government, however, saw the strategic importance of improving this route. "General Wilkinson, commander of the United States Army, concluded a treaty of October 24, 1801, with the Chickasaw ..., and another treaty with the Choctaw, on the 17th of December, 1801, whereby the consent of these Indians was obtained to the opening of a wagon road through their lands. By act of Congress April 21, 1806, the President was authorized to open a road ..., a distance of about 500 miles, the Indians being allowed the privileges of operating ferries and collecting toll for the same along the route." (Myer 1924: 812)

The Trace for a time, roughly from the 1790s through the 1820s, was an important regional transportation route. Stands and other accommodations opened to support travelers (Guice 2010, Myers 1960, Phelps 1949, 1962), especially after regular mail delivery began traversing the route. However, changes of settlement pattern and transportation flows within the wider region soon relegated the Natchez Trace to secondary importance.

> By 1821 the Natchez mail completely by-passed the Chickasaw Nation. After that it ran from Nashville through Florence, Alabama, and Columbus, Mississippi, from thence to Pigeon Roost, and from there down the Trace to Natchez. Soon most travelers followed this route, and naturally the stands within the Chickasaw territory experienced a steady decline in

> activity.... Because of alternate roads and the improvement of steamboats, the Natchez Trace after 1825 ceased to exist as a thoroughfare that connected the historic port cities on the Mississippi and the Cumberland. For decades, however, settlers relied on sections of the Trace for local travel, and until this day many of the stands live on in folklore and legend. (Guice 2010: 24)

References in the field notes are potentially confusing regarding the Natchez Trace. In some areas, the survey party was unsure whether a road was part of the celebrated relic. In other areas, there are gaps of missing reference to any road, which might indicate it had declined almost to invisibility in that area. Further, several alternative routes might all be labeled with this name.

(The modern-day Natchez Trace Parkway is not considered in this research, because its relationship to any of the routes of period roadways is extremely general. (Jennings 1944, Phelps 1965, Elliott 2007) Identifiable portions of the old road were incorporated into the park grounds when possible, but the route was laid out based on the then-new concept of the automotive parkway.)

The Road from Cotton Gin Port to Bolivar, Tennessee

Another important contemporary road ran between Cotton Gin Port, at the forks of the Tombigbee River on the southeast boundary of Chickasaw Country, and Bolivar, Tennessee, on the lower Tennessee River. A key portion of this lies within the project study area, including the location from which it branched off from the Natchez Trace and headed more northerly towards Bolivar.

Myer (1924: 815 - 816) described the role of this route within the region.

> The great trail, known in west Tennessee as the Chickasaw Trail, and designated West Tennessee Chickasaw Trail by us to distinguish it from the Middle Tennessee Chickasaw Trail or Natchez Trace (No. 19), connected west Tennessee with the Chickasaw and Choctaw settlements in Mississippi and Alabama. It ran from the populous region around Cisco, in a southwesterly direction, to the old fortified Indian town near Bolivar, where it connected with the Bolivar and Memphis Trail (No. 11) and reached Memphis and the southwest by that route. The West Tennessee Chickasaw Trail itself went southward from Bolivar along the Pontotoc Ridge, by the present site of Ripley, Miss., to the ancient Chickasaw town of Pontotoc. Thence it led to the Tombigbee at Columbus, Miss., over Trail 120.

This provided a somewhat roundabout but more dependable route from the Chickasaw heartland to the Mississippi River near present-day Memphis. It bypassed many portions of river bottoms of the many smaller streams flowing southwestwardly to the Mississippi River, with their seasonal flooding. Portions of this route are therefore identified in the PLSS source documents as the "Old Road from Cotton Gin to Memphis."

(I have been unable to determine what Myer was referring to as the "old fortified Indian town" near Bolivar. It is possible that this trail originated in prehistoric times to provide access to this site, but more likely it and the site are simply coincident due to the physiographic feature of the Pontotoc Ridge providing a convenient north-south travel corridor.)

<u>The Road from Cotton Gin Port to Pontotoc</u>

This road provided the primary route between the new Chickasaw settlements and areas to the east or south. Myers did not identify it individually,

but it seems to be shown in simplified route on his summary maps. There is nothing in these sources to indicate whether this route was newly created to provide access to American settlements at Cotton Gin Port, or was a reuse of more ancient routes.

Other Roads, Trails, and Paths

There are a number of other named routes in the project study area, as indicated in the table above. For most of these, little further information is available outside the PLSS source documents. The following points of clarification summarize the available data:

1. Tockshish has already been discussed as a recently-settled Chickasaw settlement west of the study area. The routes associated with this place presumably were thought of as providing access to this settlement, even though they might also serve other communities.

2. Otocopolco is a smaller hamlet located further west than the other Chickasaw settlements previously discussed. Dr. Rush Nutt, in his travel diary of 1804 says: "[T]here is a settlement of Chickasaws, on a small creek a branch of Tallahatchee, called Oak.tock.o.pul.Io containing 10 families. The country around Oaktockopullo is high broken pine land, very little fit for cultivation. The Indians have settled it for the benefit of range, as they have horses, cattle & hogs" (Jennings 1947: 45).

3. The “King” held an important but largely ceremonial role as leader of the tribe (Atkinson 2004: 27 – 28). (The title “King” was a long-standing English imposition of Western terminology on a little-understood Chickasaw role perhaps better translated as “great chief”. The tribe had a loosely defined dual head, with the “King” as a peace chief counterbalancing a senior war chief. (Swanton 1926)) Ishtehotopa, the last holder of this position, lived in T07SR03E prior to removal, based on annotation on that township plat.

4. Reynoldsburg was an American settlement on the lower Tennessee River, located a few miles north of the present-day I-40 bridge (Smith 2001). At some time, a trail split off from the Natchez Trace near the Chickasaw Old Towns and ran more northerly, to provide more direct access to the lower Duck and Tennessee rivers without having to go to Nashville and then to the northwest.

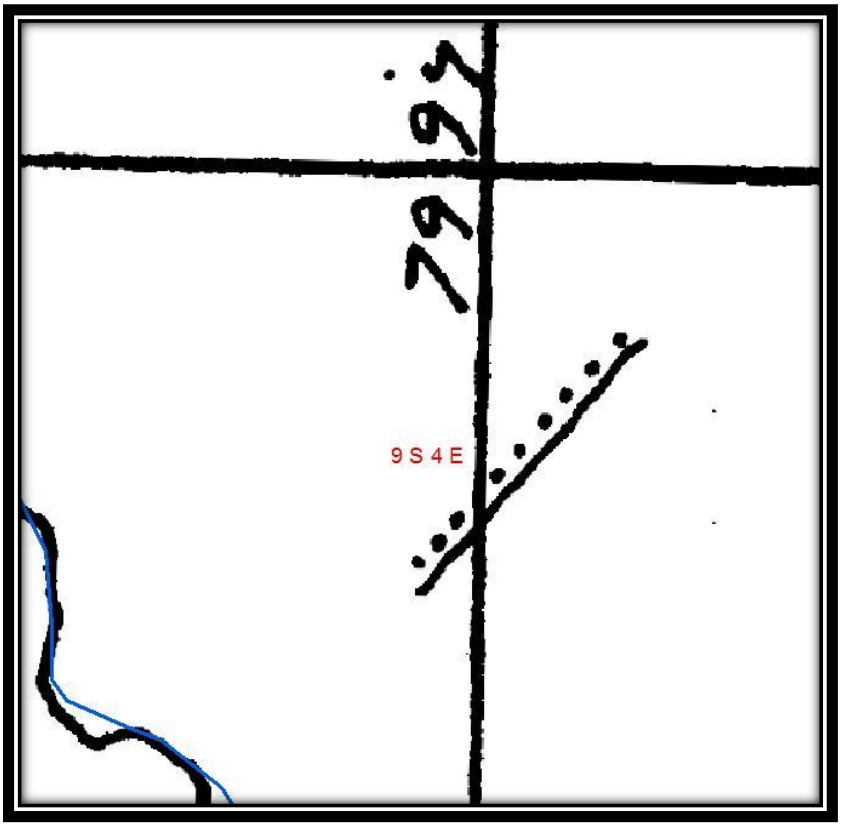
In addition to these named roads, a number of references were recorded to smaller paths. There is not normally any indication as to where these led. There is limited indication of relative importance, as in “wide path” or “plain path”.

Connectivity of representations of the major roads is good, though names sometimes vary. Lesser paths show up and stop, which may indicate that they served strictly local areas.

The plat maps give much detail about roads and trails not available in the field notes. It is intriguing to speculate on the extent to which this indicates local knowledge on the part of the cartographer as opposed to a simple desire to

indicate connectivity of e.g. paths by drawing a “path-like line” connecting the entries along the section boundaries. (See Figure 7-7.)

Figure 7-7: Trail Fragment Shown on Plats, T09SR04E



In many entries, the recorder was not certain of the identity of the road. The entry may say “supposed to be the old Natchez Trace”. Other times the recorder was apparently confident of the identity. This uncertainty seems most prevalent around the Natchez Trace, possibly reflecting its declining importance as a transportation route.

Trails are very unevenly handled by the field notes. For example the Natchez Trace in T08SR06E is picked up virtually every time it crosses a section

boundary within the township (10 out of 12 crossings). But only a few miles west, in the eastern sections of T08SR05E, a trail identified as the “Old Natchez Trace” on the plats is almost completely omitted (only noted 3 out of 7 crossings). In this situation it may be that the old road is disappearing back into the forest through disuse.

Even an important trail like the Natchez Trace can be incompletely represented. In Section 6 of T09SR06E (the northwest corner) there is no indication of the trace. There is a gap from (approximately) the southwest quarter of Section 1 T09SR05E across Section 6 T09SR06E and into the southeast quarter of Section 30 T08SR06E. This gap leaves out the intersection with the “Old Natchez Trace” shown as running N-S through T08SR05E. From the south it appears that this western branch is the only route of the Trace and only examining the PLSS records for T08SR06E indicate differently.

A major route existed at this time from Cotton Gin Port to Memphis, but does not show up by name in this study area. It was supposed to run through the Old Fields area. (Possibly by this time it had swung westwardly to the new centers at Holkey and Pontotoc, so it might be the road “to Pontatok” already discussed.)

Older trails that led to the Chickasaw have apparently dwindled in importance, or have been merged into these larger trails. There is no mention in the PLSS source data of the Upper Creek Trading Path, for instance, which once connected the Chickasaw to Charleston, SC.

Other Indications of Human Utilization

Two other singular types of cultural activity were recorded within the study area that do not fit comfortably into the previous categories. Once the surveyor recorded crossing a “fine fence”, though without any indication of what was on either side, or where the other sides of the presumptive enclosure might have been located. At another location, the surveyor recorded a “cow lick”, presumably a location at which various herbivores found an outcrop of clay or other soil that satisfied their urge for salt. (This is not certain to be used by cattle – there were Eastern bison in this area within historic times, so it could have been originated by these wild animals. Regardless, cattle and horses were likely to continue its exploitation as they replaced other large herbivores in the area.)

Ethnicity Of Cultural Elements

No cultural elements except roads were unambiguously identified in the PLSS source documents for the study area as belonging to any ethnic groups other than Chickasaws. This was surprising, given the known intrusions into the Chickasaw territory by Euro-Americans – welcomed or unwelcomed – prior to final cessions. The area just west of the study area would have produced documentation of substantial Euro-American presence – the recently abandoned Chickasaw Agency, the mixed settlements around Holkey and Tockshish, and the new town of Pontotoc all included White, mixed-blood, and Choctaw settlers as well as Black slaves and freemen.

This negative finding itself is interesting. Perhaps White squatters had not pushed far off the major roads or away from these clusters of settlement – or perhaps they had simply not chosen to settle in this study area in any density.

Few features had their owner identified. Those included:

- Fields belonging to Levi Colbert.
- Fields belonging to George Colbert.
- A road leading to George Colbert's homestead.
- Fields belonging to "Amubby" or Ama-tubbe.
- Turner's [place]
- Sample's [place]

The Colberts were half-breed brothers with very successful business interests and much political influence within the Chickasaw Nation (Atkinson 2004). Levi (also known as "Itawamba") was principal chief from 1816 until his death in 1834. George ran the lucrative Natchez Trace ferry across the Tennessee River in northwest Alabama, so apparently had multiple holdings within the Chickasaw territory. "Amubby" may be "Im-mub-bee", who was granted a section of land in Article 10 of the supplemental 1834 treaty (Perry 2012). Martini (1970: 5) gives the name as "Emmubby" and says "Emmubby was a lesser-known chief who is first mentioned in 1821, when traveler Adam Hodgson stopped at his home. Emmubby was murdered by a white man in the fall of 1837". Turner and Sample have not yet been identified, but may be non-Chickasaw.

"English" surnames are not enough to determine ethnicity; the Chickasaw were transitioning at this time from traditional naming practices towards Euro-

American pairings of given name and family surname (Perry 2012). For an especially ambiguous example, “Sto Pia Ellis” received a patent for two sections of land. I interpret this as containing an English surname “Ellis” along with the (possibly) Chickasaw element (which, given the vagaries of then-current clerical practices and/or possible cultural borrowing, might also be an attempt at the English name “Sophia”).

CHAPTER 8 -- THE QUESTION OF ERASURES IN THE SURVEY DATA

Inspection of the field notes and township plats can reveal only what the surveyors (and clerks/draftsmen) actually wrote down as part of the official record. Critical discourse analysis teaches us that what has been omitted or "erased" from the record may be equally important (see Chapter 2 for a brief discussion of this methodology and its potential utilization in this research).

We cannot assess the extent of such omissions from the PLSS data sources without some knowledge of what features should have been documented by the surveyors. To assess the degree to which Chickasaw cultural activity within the study area existed to be potentially observed by surveyors and thus potentially noted within the PLSS source documents, independently compiled inventories of Chickasaw cultural resources were integrated into the GIS database. A combination of visual inspection and automated geospatial search for nearby features was used to assess the mismatch between the two sets of data.

This chapter summarizes the results of this comparison. It starts with descriptions of the non-PLSS inventories utilized for comparison to cultural features identified within the PLSS source data, and summarizes the degree to which the surveyors noted known Chickasaw landscape elements and the extent of their identification of otherwise unknown elements.

Independently Developed Inventories

Little work has been done on Chickasaw cultural geography that is specific enough in either inventory or location to support the detailed comparisons needed to identify surveyor omissions. The potentially most useful work was done by Don Martini, a Natchez Trace Park Guide in the 1970s, who compiled a number of historical studies on Chickasaw occupation. He produced a "Historical Map of the Chickasaw Nation, 1836" (Martini 1970), which was apparently a compilation of working notes towards a never-finished history of the Chickasaw. The typescript and accompanying sketch map contain some useful information about individuals, but unfortunately contains no more than general locational information. Atkinson's (2004) detailed history of the Chickasaw summarized multiple archeological and historical investigations, but again provides little site-specific detail for late period occupation.

More useful, if used with due consideration of their intended purpose, are inventories of archeological sites. The Chickasaw Nation provided two data sets for the project study area that summarized archeological investigation relative to Chickasaw occupancy, including:

- An extract of the state archeological site files from Mississippi Department of Archives and History (MDAH), produced by Wendy Cegielski for her masters thesis research (Cegielski 2010).

- A site inventory file created by Brad Lieb for his doctoral research (2008) on Natchez Indian residency among the Chickasaw in the late 18th Century.

There are three challenges in using the archeological site inventory as a cross-reference to the cultural elements noted in the PLSS source documents. First, deciding that a "site" exists at a particular location during archeological survey is a highly subjective process. There is no agreed-upon threshold of artifacts which a site must produce, so some sites may be defined based on a single artifact. This raises doubts regarding the intensity at which human occupancy occurred, so that even if exactly contemporary with land survey the "site" might not have been perceivable by surveyors, or not considered important enough to mention.

A second, related issue is that it is challenging to delineate boundaries of a site during survey (or even excavation). The archeologist uses a combination of surface find distribution, terrain features, prior experience, and intuition – in effect, the archeological equivalent of Sauer's "'morphologic eye', a spontaneous and critical attention to form and pattern" (Sauer 1956). The point location provided in these inventories, then, is an estimated centroid of a subjectively defined area of occupancy, and can for most types of sites be taken as no more than a rough guide to location. (The exception is when structure foundations or such are still visible to the archeologist, not to be expected within the project study area.)

A third issue lies in the difficulty of assigning an unexcavated site to a particular archeological culture or time period. Cegielski (2008) describes at some length the difficulty an archeologist faces in selecting Chickasaw sites from the MDAH inventory, much less assigning them to particular time periods of Chickasaw history. There are relatively few artifact types that clearly identify Chickasaw occupancy vs. some other group such as the Natchez refugees (Lieb 2008) or nearby Choctaw. For purposes of this project, the assignments made by (or at least accepted by) Cegielski and Lieb are taken as given.

In summary, then, a scattering of archeological sites may represent a single community from the perspective of the land surveyors. Further, many of the signs of occupancy most visible to the land surveyors -- including fields, cabins, and similar improvements – may leave few if any physical artifacts or other indications after almost two centuries for the present-day archeologist to locate. Therefore we can expect only a rough correspondence between site inventory and PLSS survey notations.

A third category of quasi-independent inventory was identified in an unexpected source. The township plats, drafted to summarize the field notes for validating the survey work and for use in land offices, turned out – at least within the project study area – to be more than a clerical summation of surveyors' observations. Several times it became obvious that the draftsman had access to additional data, whether personal knowledge, questioning of survey party members, or other sources. The result is that there are features recorded on the

plats not indicated in the field notes (and occasionally vice versa), and labels on features not known or recorded in the field.

A final category of inventory is provided by the process intended to reimburse individual Chickasaw families for the differential value of their "improvements" (which, it should be noted, does not necessarily match the definition used in the field notes). The Treaty of Pontotoc, the final cession treaty, was amended by a supplemental treaty of May 24, 1834. (Atkinson 2004: 230 – 231; Perry 2012) These treaties stipulated that heads of households (including Chickasaw women) were to be issued patents to the land on which their residence was located, or other agreed-upon locations if two claimants lived in the same section or other circumstances required a replacement patent. Perry (2012: 12 – 13, table slightly reorganized here) summarizes the final allocation scheme: "Reservations granted were confined to where the claiming parties lived or to be contiguous or adjoining [the patent lists do show "residences" in sections where Chickasaws likely lived or had improvements where their reservations were assigned]."

Table 8-1: Patent Allocation Rules

Category	Allocation
Indian heads of families, more than 10 persons	4 sections
Indian heads of families, from 5 to 9 persons	3 sections
Indian heads of families, less than 5 persons	2 sections
Heads having Indian families (Heads could be "whites")	4 sections
Families with 10 or more slaves, additional	1 section
Families with less than 10 slaves, additional	½ section
Male or female Chickasaws (no family) over 21 years old	1 section each
Male & female under 21 years, father dead, mother remarried, no parents	½ section

The Chickasaw patentee was not expected to stay on the land (indeed most were approved in 1840 after many Chickasaw had already gone to Indian Territory), so these patents are in many ways different from the equivalent document issued to an American purchaser. First, the allocation had to be approved by at least one of a small group of Chickasaw chiefs, to protect the individual's best interests. Further, the land was to be sold at the GLO land office with the proceeds being delivered to the individual holding the patent instead of going into the pool of revenues set up for the tribe. (Young 1961: 114-137; Atkinson 2004; Perry 2012; Paige et.al. 2010) (Unlike many other treaties, the Chickasaw Tribe negotiated a deal in the treaty whereby they received a portion of the revenues from the land sales, but had to pay for and organize their own removal. Thus, the Chickasaw Removal, though still involving much hardship, was much less terrible than that of the Cherokee and other southeastern groups.)

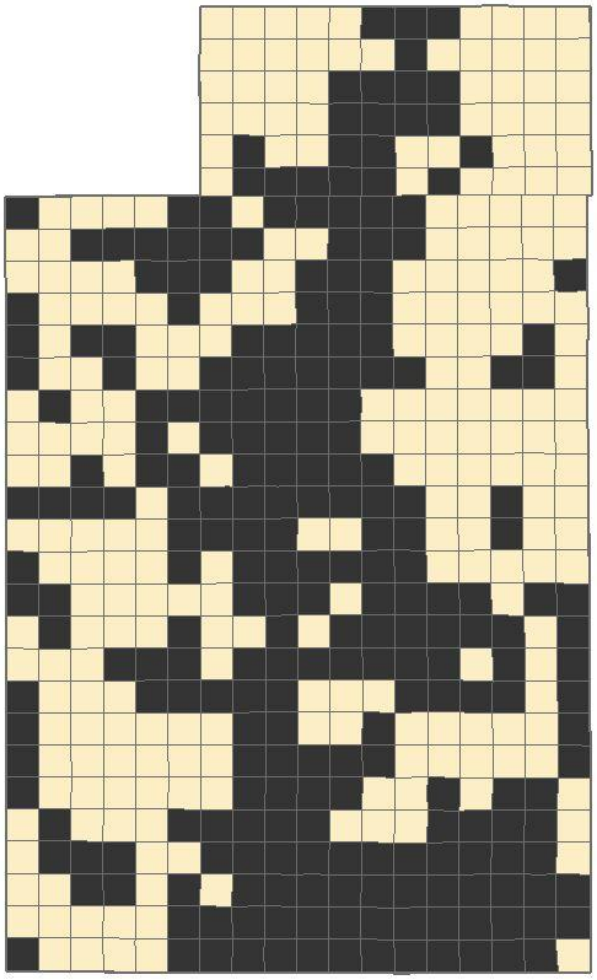
The Division of Historic Preservation of the Chickasaw Nation in Oklahoma has compiled an index to the Chickasaw patents, using the Bureau of Land Management databases. (This database indexes the patents issued. The original lists of Chickasaws approved for patents are housed in the National Archives and Records Administration, Atlanta Regional Office. I am not aware of any effort to cross-reference the two data sets.) This index for the project study area was provided for this research, and is summarized in the following table:

Table 8-2: Count of Chickasaw Patents within Study Area, by Township

Township	Number of Sections Patented
008S - 005E	13.00
008S - 006E	8.50
009S - 004E	15.00
009S - 005E	27.00
009S - 006E	7.00
010S - 004E	14.50
010S - 005E	30.25
010S - 006E	6.00
011S - 004E	12.00
011S - 005E	23.00
011S - 006E	21.00
012S - 004E	11.00
012S - 005E	31.00
012S - 006E	28.50

The spatial distribution of these patents within the project study area is shown in Figure 8-1, below. The black shading indicates that at least a portion of the section was patented to someone identified as a Chickasaw. (As noted above, a fraction of a section might be included in a patent; the section may therefore be covered partially or wholly by one or more patents, though most typically a section was patented in its entirety to a single patentee.)

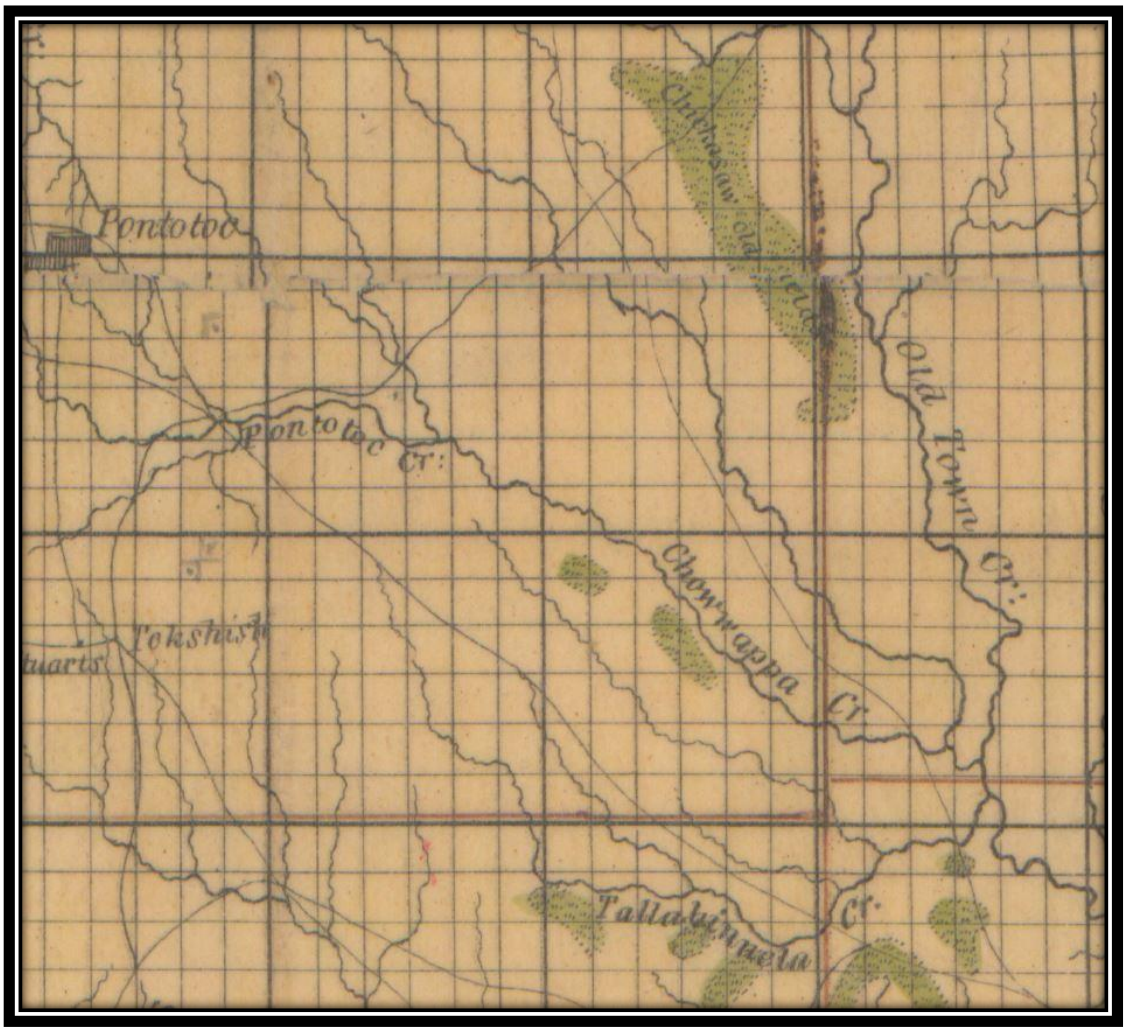
Figure 8-1: Sections Containing Chickasaw Patents (in Black) within Study Area



Although at too regional a scale to be suitable as a cross-reference for specific surveyor observations, Henry Lusher's map (1834) of the lands recently ceded by the Chickasaws is helpful for checking roads and broad locations of features such as the Old Town. However, this must be used with caution because Lusher was one of the clerks at the Pontotoc Land Office and therefore was presumably creator of some of the township plats being used as sources for

this research. An excerpt of this map covering the survey area is included as Figure 8-2, below. (There is an unfortunate area of damage, possibly from an old fold line, at the top of this excerpt just below Pontotoc. This creates an artificial offset in the survey grid and other features.)

Figure 8-2: Portion of Lusher Map for Study Area



This excerpt from Lusher's map shows several trails and settlements we would expect. It also shows the Chickasaw Old Fields as roughly co-extensive

with a large prairie. It provides names of several creeks, as already noted from survey data. Interestingly, it includes a name for the important tributary to Old Town Creek, Chowwappa Creek, not found in the survey sources.

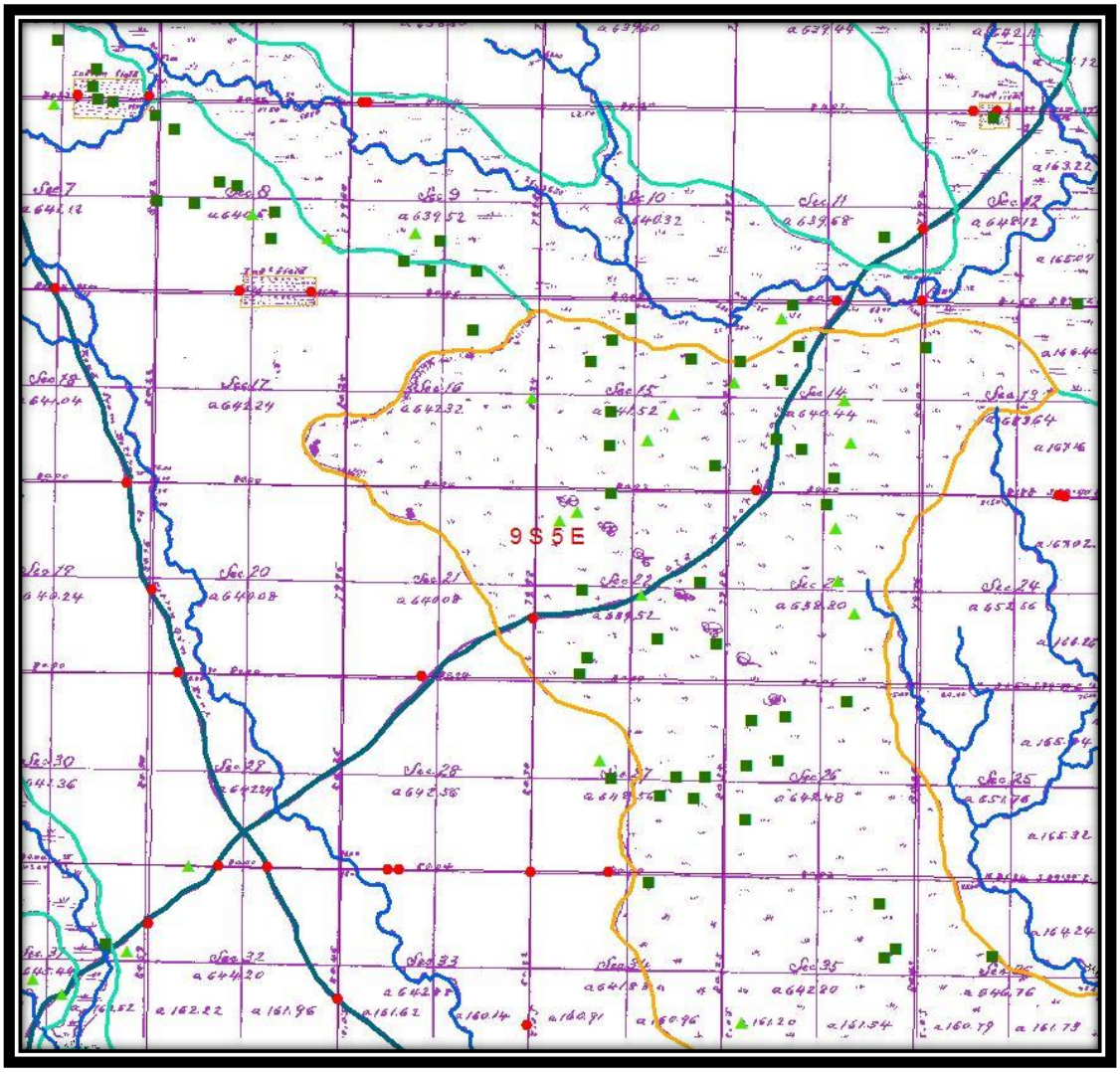
Patterns Of Inscriptions And Omission

There is no obvious pattern of omission evident in the PLSS source data when it is compared to independently compiled inventories. Certainly not every archeological site, even those classified as including “late Chickasaw” occupancy, correspond to some entry in the survey data, but this should not have been expected given the variation in defining features between the two data sets. Also, there is comparatively little archeological work done on Chickasaw occupancy after the “setting out” period in the 1790s. The focus of research has been on the period of intense colonial interaction during the early to mid 1700s, or on exploration of Chickasaw origins. Most of the sites would have been effectively invisible to surveyors. The mention of the Chickasaw Old Fields on Lusher’s map is perhaps best interpreted as labeling a feature widely know of, even though it no longer had immediate relevance to Chickasaw occupancy.

The Old Fields area illustrates the extent to which archeology and land survey corroborate one another. In Figure 8-3, below, the northern end of this prairie is shown in yellow. The archeological inventories are shown as green points (squares for MDAH data; triangles for Lieb’s supplemental data).

Observations from the PLSS field notes are shown as red points, with trails and fields from the plats added to the scanned plat map used as background.

Figure 8-3: Northern Portion of Chickasaw Old Fields, R09ST05E



There is good correspondence in two locations on the northern edge of the study area. On the boundary between Sections 6 and 7, in the northwest corner of this figure, a cluster of archeological sites falls within a clearly marked “Indian field”. The field note observations and the delineation on the plat also

correspond almost exactly. Something similar occurs on the boundary between Sections 1 and 12, in the northeast corner of this figure. A smaller field is shown to contain a tight cluster of archeological sites having excellent correspondence between plat and notes.

The rest of the figure, however, shows almost no correspondence beyond the clustering of archeological sites in anticipated proximity to swampy lowlands along major creeks and within the prairie land cover. This figure was created to capture the bulk of the archeological materials, in general associated with the seven Chickasaw towns of the colonial era. There are 47 known archeological sites within this same area (36 in MDAH list), ranging from isolated finds through a site (22-LE-520) identified as the center of “Chukalisa” or the “Big Town” of the mid-1700s in the NW Quarter of Section 15. (It is important to note that only five of these are flagged as possibly Historic.)

Almost all of these sites are therefore associated with town sites that were effectively abandoned around 1800. None of these contained any more substantial structures than a possible council house; most consisted of a relatively small number of cabins and surrounding outbuildings. American style log cabins only came into wide use by the Chickasaw as part of the “setting out” phase of occupancy. Even the heaviest construction of such facilities – thatched with prairie grasses and using a mix of logs for structural elements, saplings or cane for interwoven wall mats, and plastered heavily with clay – would have

moldered into near invisibility by the time the surveyors came through around 1834.

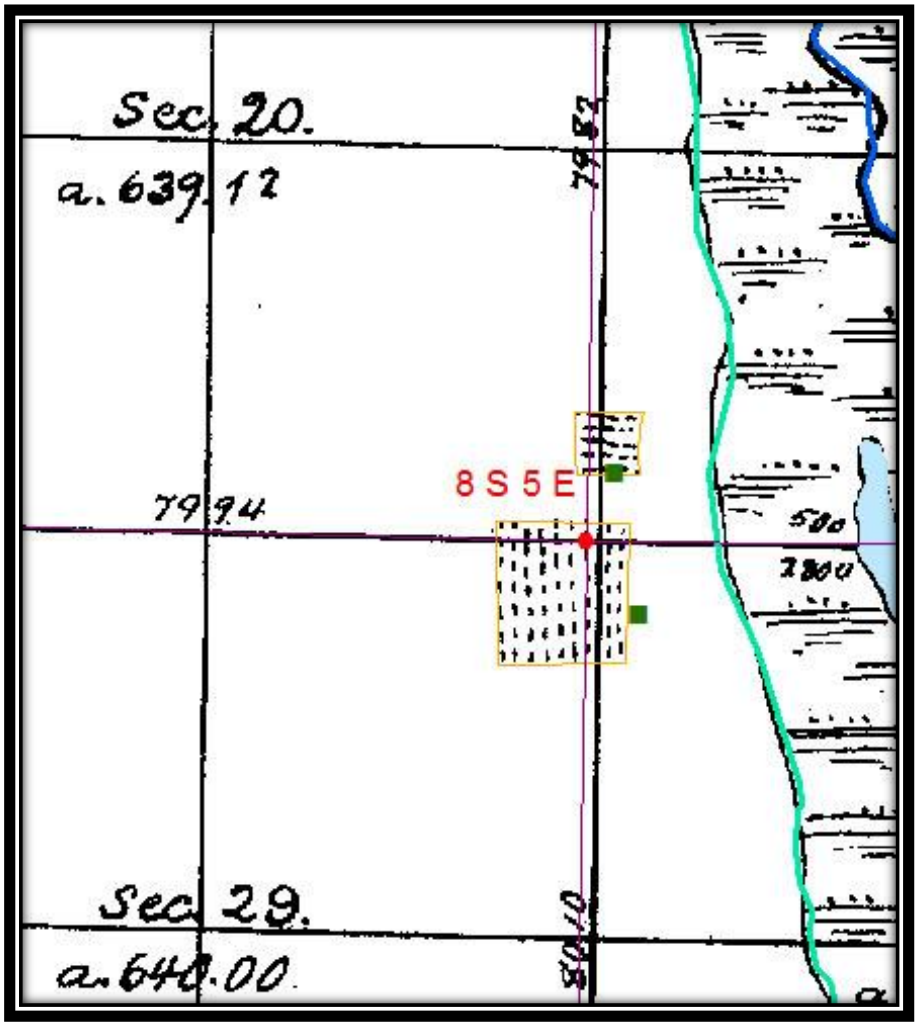
They are not discernible in the archeological site inventory, but there should have been some cabins still in the area for observation by the surveyors. The savannah-like “prairie” would give the greatest possible visibility to the surveyors. Contemporaries indicate that the old town sites were not completely abandoned. Nutt visited the site in 1805.

> In the same prairie is Big Town (Chagulliso), a high and beautiful situation, was formerly the residence of the whole nation. But at present not more than 8 or 10 families remain In the old fields. They have settled out & made tolerable farms with worm fences.... In the year 1797 the whole nation was contained (or nearly so) In these old towns, but by the advice of the agent & other officers of government, they have settled out.... (Jennings 1947: 43)

If these cabins were still present, whether still inhabited or derelict for 30 years, why might the surveyors have failed to comment on them? The first point to remember is that they were following an arbitrary mile-square pattern that had no relationship to any local landscape features. Low density land use could very simply have been missed by the crews running the section lines. A small cabin or field would be effectively invisible beyond a few hundred feet. Likewise the paths providing access to various elements of land use for an isolated farmstead would not be very impressive, and could have simply been ignored by survey crews or dismissed as cattle paths.

Figure 8.4 contains fields mentioned in the notes only in a section summary, but shown clearly on the plat. Two archeological sites are also shown to fall apparently within the two fields.

Figure 8-4: Good Agreement of Sources, T08SR5E



The GIS analytic function “near” was used to search the two archeological site inventories for sites within a quarter-mile radius of each cultural entry from

the field notes. This distance was chosen based on an estimate of maximum possible visibility of a then-extant structure or other feature. There was no expectation that a land surveyor would notice archeological sites representing previous occupancy other than “old fields” (though in other areas of the Chickasaw cessions they did indicate large prehistoric mound sites). The use of archeological sites in this research is based on the possibility of a site corresponding to a cabin or improvement extant at the time of land survey. So, if (a) the occupancy was discernible to the land surveyors circa 1834 and (b) it was close enough to be seen from the perimeter of the PLSS sections being laid out, then it is reasonable to expect the field notes to mention it.

Table 8.3, below, indicates the degree of match between the cultural references in the PLSS field notes and the archeological inventory. We find a poor correspondence between the two data sets. Only 75 (26%) of observations of cultural elements lie within a quarter-mile of an archeological site associated with the Chickasaw. (These matches involve only 27% of the MDAH sites lying within the study area, and 35% of Lieb’s site inventory.) In addition to difficulties already mentioned, this low correlation may indicate two factors for future research. First, re-running the near analysis with an inventory of all known sites might turn up a greater correlation – though it would be an open question as to the extent this meaningfully indicated heretofore misclassified occupancy. Second, one could omit the fields and old fields in the observations, which

though most prevalent in the PLSS field notes are the least likely Chickasaw cultural activity to be visible during archeological survey.

Another indicator of omission in the PLSS source data would be differential or dismissive phrasing of the observations recorded. Discourse analysis has sensitized the researcher to the importance of such patterns. However, no such patterns are noted. The adjective “Indian” is assigned in some observations and omitted in others. Beyond this, there does not appear to be any difference in recordation practices. This conclusion would be firmer if the project study area had included any features identifiable as non-Chickasaw, because then we could compare how the two were described. The impression left by the cultural observations within the study area is of a terse, neutral, and generic bureaucratic nomenclature, which extended from physical landscape features such as “swamps” to the “Indian improvements”.

Table 8-3: Archeological Sites within Quarter-Mile of PLSS Cultural References

ID	Site ID	Distance from Site (ft.)	Site Src	Township	Survey Line	Dir	Reference from PLSS	Feature Type	MDAH Site ID	MDAH Description	MDAH Comment
6	42	493.81	MDAH	T008SR005E, Chickasaw	Between Secs 28 & 29	S	Left Indian Improvement	Improve.	22-Le-645		3 Chickasaw graves reported from near site.
6	41	602.11	MDAH	T008SR005E, Chickasaw	Between Secs 28 & 29	S	Left Indian Improvement	Improve.	22-Le-646		
18	2	1024.15	MDAH	T008SR006E, Chickasaw	Between Secs 28 & 29	S	To old Natchez trace	Road	22-Le-544	Village site, mound, possibly inn-locally known as "Factor Town"	Lithics, sherds
30	63	504.38	Lieb	T009SR004E, Chickasaw	5th Mile, Eastern Boundary	S	Cross path & enter dry pond	Path			
30	62	1275.79	Lieb	T009SR004E, Chickasaw	5th Mile, Eastern Boundary	S	Cross path & enter dry pond	Path			
42	4	576.53	MDAH	T009SR005E, Chickasaw	Between Secs 1 & 12	E	Indian Improvement	Improve.	22-Le-638	Located on a natural hill in Yonaba Creek bottom. No artifacts recovered, but survey conditions were poor.	2 Chickasaw burials with trade goods reported by collector.
43	4	184.30	MDAH	T009SR005E, Chickasaw	Between Secs 1 & 12	E	Left Same [Indian Improvement]	Improve.	22-Le-638	Located on a natural hill in Yonaba Creek bottom. No artifacts recovered, but survey conditions were poor.	2 Chickasaw burials with trade goods reported by collector.
44	6	1129.65	MDAH	T009SR005E, Chickasaw	Between Secs 11 & 12	S	To public road, supposed to be the old Natchez Trace	Road	22-Le-640		
45 *	8	1279.88	MDAH	T009SR005E, Chickasaw	Between Secs 11 & 12	S	First 25 chs swamp, next 55 Indian old field	Old Fields	22-Le-642		Burial and European trade goods reported.

Table 8-3 (continued): Archeological Sites within Quarter-Mile of PLSS Cultural References

ID	Site ID	Distance from Site (ft.)	Site Src	Township	Survey Line	Dir	Reference from PLSS	Feature Type	MDAH Site ID	MDAH Description	MDAH Comment
46	7	1198.48	MDAH	T009SR005E, Chickasaw	Between Secs 11 & 14	E	To public road N E & S W	Road	22-Le-926		Baldwin Plain var. Ridge, Wilson Plain var. Wilson, flake
55	143	1145.26	MDAH	T009SR005E, Chickasaw	Between Secs 27 & 34	E	To public road bearing N E & S W	Road	22-Le-1021		20 glass fragments, 9 nails (1 cut), 1 milk glass fragment, 4 flakes, 1 Fort Payne chert drill, 1 gear fragment, 1 core fragment, 2 brick fragments
59	64	818.14	Lieb	T009SR005E, Chickasaw	Between Secs 29 & 32	E	To Natchez Trace	Road			
63	61	949.80	Lieb	T009SR005E, Chickasaw	Between Secs 31 & 32	S	Public road N E & SW	Road			
63	49	1308.68	MDAH	T009SR005E, Chickasaw	Between Secs 31 & 32	S	Public road N E & SW	Road	22-Le-657		
66 *	132	725.35	MDAH	T009SR005E, Chickasaw	Between Secs 35 & 36	S	Rest [after first 10 chs] old fields	Old Fields	22-Le-597		Sherds including: Ridge Plain, Madison point in process
70	83	1259.53	Lieb	T009SR005E, Chickasaw	Between Secs 6 & 7	E	Public road bears NW	Road			
71	83	726.58	Lieb	T009SR005E, Chickasaw	Between Secs 6 & 7	E	Indian house & improvement	House			
71	46	553.24	MDAH	T009SR005E, Chickasaw	Between Secs 6 & 7	E	Indian house & improvement	House	22-Le-694		
71	44	468.88	MDAH	T009SR005E, Chickasaw	Between Secs 6 & 7	E	Indian house & improvement	House	22-Le-693		Chickasaw and later historic materials.
71	43	876.81	MDAH	T009SR005E, Chickasaw	Between Secs 6 & 7	E	Indian house & improvement	House	22-Le-692		Midden reported.

Table 8-3 (continued): Archeological Sites within Quarter-Mile of PLSS Cultural References

ID	Site ID	Distance from Site (ft.)	Site Src	Township	Survey Line	Dir	Reference from PLSS	Feature Type	MDAH Site ID	MDAH Description	MDAH Comment
71	45	989.98	MDAH	T009SR005E, Chickasaw	Between Secs 6 & 7	E	Indian house & improvement	House	22-Le-695	May be a small group of Chickasaw houses	
72	83	726.58	Lieb	T009SR005E, Chickasaw	Between Secs 6 & 7	E	Indian house & improvement	Improve.			
72	46	553.24	MDAH	T009SR005E, Chickasaw	Between Secs 6 & 7	E	Indian house & improvement	Improve.	22-Le-694		
72	44	468.88	MDAH	T009SR005E, Chickasaw	Between Secs 6 & 7	E	Indian house & improvement	Improve.	22-Le-693		Chickasaw and later historic materials.
72	43	876.81	MDAH	T009SR005E, Chickasaw	Between Secs 6 & 7	E	Indian house & improvement	Improve.	22-Le-692		Midden reported.
72	45	989.98	MDAH	T009SR005E, Chickasaw	Between Secs 6 & 7	E	Indian house & improvement	Improve.	22-Le-695	May be a small group of Chickasaw houses	
73	161	1131.61	MDAH	T009SR005E, Chickasaw	Between Secs 6 & 7	E	Leave Indian improvement	Improve.	22-Le-634	Covers an entire floodplain. Localized concentration of Chickasaw artifacts suggests one or two houses. Subsurface features may have been disturbed by unscientific excavation and erosion	Chickasaw artifacts
73	159	550.10	MDAH	T009SR005E, Chickasaw	Between Secs 6 & 7	E	Leave Indian improvement	Improve.	22-Le-1026	Chickasaw Sites See Stubbs 1983	Pottery Wilson Plain n=3, 17g; Oktibbeha Plain n=3, 16g; Ridge Plain n=1, 2g; Lithics gray chert flake n=2, 17g

Table 8-3 (continued): Archeological Sites within Quarter-Mile of PLSS Cultural References											
ID	**Site ID**	**Distance from Site (ft.)**	**Site Src**	**Township**	**Survey Line**	**Dir**	**Reference from PLSS**	**Feature Type**	**MDAH Site ID**	**MDAH Description**	**MDAH Comment**
73	45	1022.73	MDAH	T009SR005E, Chickasaw	Between Secs 6 & 7	E	Leave Indian improvement	Improve.	22-Le-695	May be a small group of Chickasaw houses	
77	55	1109.02	Lieb	T009SR005E, Chickasaw	First Mile, Southern Boundary	E	To Natchez Road	Road			
77	54	743.80	Lieb	T009SR005E, Chickasaw	First Mile, Southern Boundary	E	To Natchez Road	Road			
78	55	515.37	Lieb	T009SR005E, Chickasaw	First Mile, Southern Boundary	E	To Indian Improvement	Improve.			
78	54	793.57	Lieb	T009SR005E, Chickasaw	First Mile, Southern Boundary	E	To Indian Improvement	Improve.			
79	55	469.75	Lieb	T009SR005E, Chickasaw	First Mile, Southern Boundary	E	Left Improvement	Improve.			
79	54	942.54	Lieb	T009SR005E, Chickasaw	First Mile, Southern Boundary	E	Left Improvement	Improve.			
92	84	1229.39	MDAH	T010SR004E, Chickasaw	1st Mile due South, Eastern Boundary	E	To plain road	Road	22-Po-715		Flake debris: 13 Tuscaloosa Gravel, 1 Kosciusko quartzite. Amorphous cores: 1 Tuscaloosa Gravel, 1 light gray Ft. Payne chert end scraper. 1 limestone fragments, 1 radially-fractured biface with finely serrated edges. 11 plain eroded fossil shell-tempered

Table 8-3 (continued): Archeological Sites within Quarter-Mile of PLSS Cultural References

ID	Site ID	Distance from Site (ft.)	Site Src	Township	Survey Line	Dir	Reference from PLSS	Feature Type	MDAH Site ID	MDAH Description	MDAH Comment
109	29	655.00	Lieb	T010SR004E, Chickasaw	Between Secs 16 & 21	E	To Natchez Trace bears N of E & S of W	Road			
110	29	450.76	Lieb	T010SR004E, Chickasaw	Between Secs 16 & 21	E	Enter old field	Old Fields			
111	29	1236.76	Lieb	T010SR004E, Chickasaw	Between Secs 16 & 21	E	Cross the old road runs little S of E	Road			
155 *	44	1084.97	Lieb	T010SR005E, Chickasaw	Between Secs 1 & 12	E	Land rolling 3d rate prairie or old field.	Old Fields			
155 *	43	366.21	Lieb	T010SR005E, Chickasaw	Between Secs 1 & 12	E	Land rolling 3d rate prairie or old field.	Old Fields			
155 *	125	1171.28	MDAH	T010SR005E, Chickasaw	Between Secs 1 & 12	E	Land rolling 3d rate prairie or old field.	Old Fields	22-Le-836		
159	32	1175.20	Lieb	T010SR005E, Chickasaw	Between Secs 15 & 16	S	Indian old field	Old Fields			
159	106	722.58	MDAH	T010SR005E, Chickasaw	Between Secs 15 & 16	S	Indian old field	Old Fields	22-Le-620		
159	105	592.24	MDAH	T010SR005E, Chickasaw	Between Secs 15 & 16	S	Indian old field	Old Fields	22-Le-618		
159	104	835.82	MDAH	T010SR005E, Chickasaw	Between Secs 15 & 16	S	Indian old field	Old Fields	22-Le-619		
160	106	582.52	MDAH	T010SR005E, Chickasaw	Between Secs 15 & 22	E	Leave old field or prairie & Enter Swamp	Old Fields	22-Le-620		
160	105	1011.99	MDAH	T010SR005E, Chickasaw	Between Secs 15 & 22	E	Leave old field or prairie & Enter Swamp	Old Fields	22-Le-618		
161	105	829.90	MDAH	T010SR005E, Chickasaw	Between Secs 16 & 21	E	To public road bears NW & SW leading from Cotton Gin to Bolivar Ten	Road	22-Le-618		

Table 8-3 (continued): Archeological Sites within Quarter-Mile of PLSS Cultural References											
ID	**Site ID**	**Distance from Site (ft.)**	**Site Src**	**Township**	**Survey Line**	**Dir**	**Reference from PLSS**	**Feature Type**	**MDAH Site ID**	**MDAH Description**	**MDAH Comment**
161	104	1050.47	MDAH	T010SR005E, Chickasaw	Between Secs 16 & 21	E	To public road bears NW & SW leading from Cotton Gin to Bolivar Ten	Road	22-Le-619		
162	106	1260.42	MDAH	T010SR005E, Chickasaw	Between Secs 16 & 21	E	To Indian old field	Old Fields	22-Le-620		
162	105	769.76	MDAH	T010SR005E, Chickasaw	Between Secs 16 & 21	E	To Indian old field	Old Fields	22-Le-618		
162	104	1011.12	MDAH	T010SR005E, Chickasaw	Between Secs 16 & 21	E	To Indian old field	Old Fields	22-Le-619		
163 *	106	357.73	MDAH	T010SR005E, Chickasaw	Between Secs 16 & 21	E	First 60 chs ... residue old field Timber none -- Bushy, Grass, Weeds, & @	Old Fields	22-Le-620		
163 *	105	705.52	MDAH	T010SR005E, Chickasaw	Between Secs 16 & 21	E	First 60 chs ... residue old field Timber none -- Bushy, Grass, Weeds, & @	Old Fields	22-Le-618		
163 *	104	1108.76	MDAH	T010SR005E, Chickasaw	Between Secs 16 & 21	E	First 60 chs ... residue old field Timber none -- Bushy, Grass, Weeds, & @	Old Fields	22-Le-619		
166	27	236.86	Lieb	T010SR005E, Chickasaw	Between Secs 21 & 22	S	To public road bears NW & SW	Road			
166	28	1143.60	Lieb	T010SR005E, Chickasaw	Between Secs 21 & 22	S	To public road bears NW & SW	Road			
169	21	634.71	Lieb	T010SR005E, Chickasaw	Between Secs 22 & 27	E	To public road from Cotton Gin to Bolivar	Road			
169	108	1075.58	MDAH	T010SR005E, Chickasaw	Between Secs 22 & 27	E	To public road from Cotton Gin to Bolivar	Road	22-Le-902		Wilson, Oktibbeha, Ridge sherds, sheet copper...

Table 8-3 (continued): Archeological Sites within Quarter-Mile of PLSS Cultural References

ID	Site ID	Distance from Site (ft.)	Site Src	Township	Survey Line	Dir	Reference from PLSS	Feature Type	MDAH Site ID	MDAH Description	MDAH Comment
172	14	904.49	Lieb	T010SR005E, Chickasaw	Between Secs 27 & 34	E	To public road SW & NW from Cotton Gin to Bolivar	Road			
172	11	216.71	Lieb	T010SR005E, Chickasaw	Between Secs 27 & 34	E	To public road SW & NW from Cotton Gin to Bolivar	Road			
176	14	1284.51	Lieb	T010SR005E, Chickasaw	Between Secs 34 & 35	S	Leave Swamp & Enter old field	Old Fields			
176	11	952.37	Lieb	T010SR005E, Chickasaw	Between Secs 34 & 35	S	Leave Swamp & Enter old field	Old Fields			
176	10	828.71	Lieb	T010SR005E, Chickasaw	Between Secs 34 & 35	S	Leave Swamp & Enter old field	Old Fields			
182	93	408.74	MDAH	T010SR005E, Chickasaw	Between Secs 7 & 18	E	Enter Indian old field	Old Fields	22-Le-679	Chickasaw	
183 *	95	1019.02	MDAH	T010SR005E, Chickasaw	Between Secs 7 & 18	E	First 45 chs ... rest Indian old field No Timber -- Plum bushes, weeds, Grape & @	Old Fields	22-Le-673	Chickasaw	
183 *	94	807.96	MDAH	T010SR005E, Chickasaw	Between Secs 7 & 18	E	First 45 chs ... rest Indian old field No Timber -- Plum bushes, weeds, Grape & @	Old Fields	22-Le-674		
184 *	95	1010.64	MDAH	T010SR005E, Chickasaw	Between Secs 7 & 8	S	Land poor old field with Blackjack [cioges??] Timber Scarce, Bckjack, Post oak & @	Old Fields	22-Le-673	Chickasaw	
184 *	94	790.18	MDAH	T010SR005E, Chickasaw	Between Secs 7 & 8	S	Land poor old field with Blackjack [cioges??] Timber Scarce, Bckjack, Post oak & @	Old Fields	22-Le-674		

Table 8-3 (continued): Archeological Sites within Quarter-Mile of PLSS Cultural References											
ID	**Site ID**	**Distance from Site (ft.)**	**Site Src**	**Township**	**Survey Line**	**Dir**	**Reference from PLSS**	**Feature Type**	**MDAH Site ID**	**MDAH Description**	**MDAH Comment**
185	95	1027.29	MDAH	T010SR005E, Chickasaw	Between Secs 8 & 17	E	Leave old field	Old Fields	22-Le-673	Chickasaw	
185	94	1032.92	MDAH	T010SR005E, Chickasaw	Between Secs 8 & 17	E	Leave old field	Old Fields	22-Le-674		
187	99	648.06	MDAH	T010SR005E, Chickasaw	Between Secs 9 & 16	E	To public road, leading from Cotton Gin to Bolivar	Road	22-Le-639	Probably a small Chickasaw house site. Situated on a ridge bordering the west side of floodplain. Disturbed by cultivation and unscientific excavation.	Small Chickasaw house site
190	48	736.36	Lieb	T010SR005E, Chickasaw	First mile due South, Eastern Boundary	S	To plain Path bears N.E.	Path			
190	43	1183.28	Lieb	T010SR005E, Chickasaw	First mile due South, Eastern Boundary	S	To plain Path bears N.E.	Path			

* Location in PLSS only approximate

SOURCE: *MDAH_Chickasaw_Sites.csv*; provided by Chickasaw Nation and merged with GIS contents.

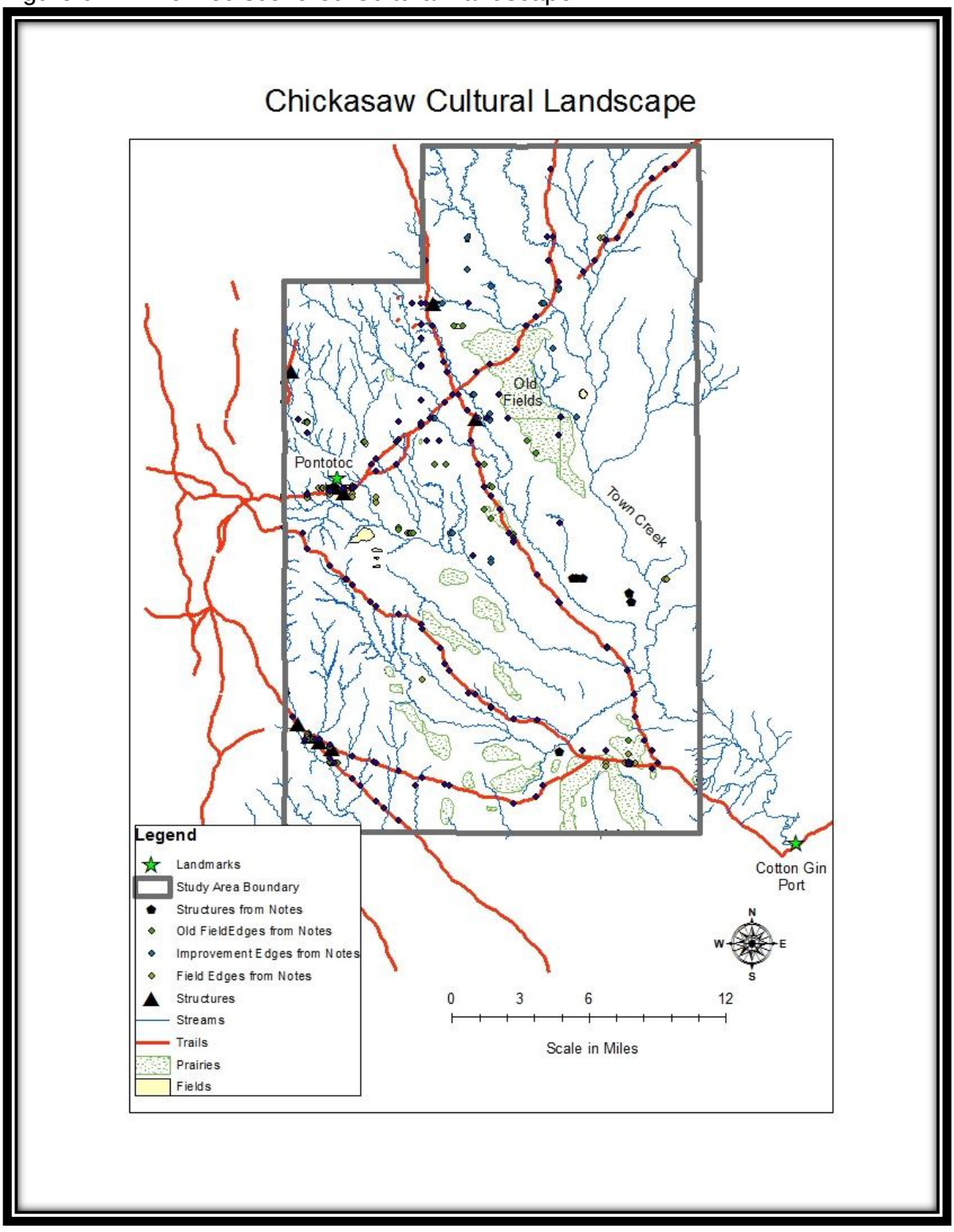
CHAPTER 9 -- THE REDISCOVERED LANDSCAPE

The Rediscovered Chickasaw Cultural Landscape

The extent of the information available to be rediscovered from the PLSS source data is summarized in Figure 9-1, below, generated from the GIS archive as a summary of findings. The resulting reconstruction indicates a sparsely occupied area, with two clusters of settlement around the Council House at old Pontitack (T10SR04E) and Levi Colbert's holdings (T12SR06E). Otherwise, explicitly Chickasaw utilization is limited to a scattering of fields, a few of which include record of houses.

The trail pattern within the study area shows a major gap in the PLSS source data that I had hoped the field notes would have covered. The roads through the area are generally noted, which gives access to relatively detailed locations at a snapshot in time. These major roads, however, are not especially indicative of the household level behavior of Chickasaws. The Natchez Trace, for example, had greatly declined in regional importance and therefore in economic and other impacts on the Chickasaw who might once have settled along it – to run stands and other accommodations, or to just socialize with travelers.

Figure 9-1: The Rediscovered Cultural Landscape



Further, it and the other roads and traces shown – for instance, the road connecting Cotton Gin Port and Memphis -- are pathways through the study area, and are only partially routed for the convenience of local inhabitants (unless they were important leaders like George Colbert). This is in some ways comparable to present-day impacts of an interstate running through a rural community – local residents may choose to utilize it for certain kinds of trips, but it is hardly relevant to travel to fields or cattle herds, or to the neighbors.

The pattern of roads has been extended one row of townships around the project study area, to indicate connectivity of trail features into their surroundings. This shows the greater intensity of Chickasaw (and American) occupation around the communities of Tockshish and new town of Pontotoc just west of the study area. Note that the gaps in roads are found in the PLSS source documents. (No effort was made to include fields and structures from those township plats.)

Assessment Of Reconstruction As Cultural Landscape

This data provides a sketchy picture of Chickasaw occupancy within the project study area. The data is, with some exceptions such as the gaps in roads, reasonably internally consistent. Further, it does not dramatically contradict other sources by omitting known specific Chickasaw activity sites. But is it adequate for reconstruction of a cultural landscape?

As discussed previously, the work of Carville Earle and Bruce Trigger help give some specificity to the ambiguous concept of cultural landscape.

Summarizing their insights gives the following checklist for assessing the completeness of this reconstructed cultural landscape.

- Does the reconstruction include “settlements, routes, and boundaries”? Do their depictions cohere as part of a society and an economy, within a “settlement system” (Earle 1975: 6)
- Does the reconstruction give any indication of “[t]he timing, rates, and sequence of change among activity sites, routes, traffic and boundaries” and the causes of these changes (Earle 1975: 6 – 7)?
- Does the reconstruction (Trigger 1968) give any indication of the following hierarchy for settlement patterns:
    - The ”individual building or structure”
    - The “manner in which these structures are arranged within single communities”
    - The “manner in which these communities are distributed over the landscape”
- Does the reconstruction (O’Brien et.al. 1984: 7) give any indication of the interaction of the culture with the ecology within which it exists?

This reconstruction does qualify, if sketchily, as a cultural landscape under these criteria. The study area is smaller than the total Chickasaw settlement area, so issues of boundary and hierarchy are masked by the scope of the research.

Trigger’s hierarchy approach points out two areas of weakness within the cultural references extracted from the PLSS source data. First, at the individual

structure level, there is insufficient evidence for the patterning of homesteads, either internal to a single establishment or among the various homesteads in a vicinity. A few associations of field and cabin probably comprise a homestead – but with no indication of associated improvements such as gardens, orchards, fences, barns, or corrals. In many other circumstances we have evidence of fields, but no indication of where the farmers lived or of field ownership.

There are also several absences from the evidence regarding agriculture. Except for a few isolated references to peaches or plums, there are no indications of what Chickasaws were growing in these fields. Likewise, except for isolated references to a fence or cow lick, there is no indication of what we know to have been extensive Chickasaw animal husbandry.

Second, the transportation network is incomplete. The sources provide good and nearly complete documentation for the regional roads – though with some surprising gaps and ambiguities. Water transport was not part of the transportation network within the study area. The missing element is the network of local paths connecting the individual farmsteads, and the cabin and fields comprising a single farmstead. These are sporadically mentioned, especially in T09SR04E, but the totality of these mentions do not hang together in a coherent network. Indeed, few of these even connect up into portions of a meaningful route (in contrast to, for example, the Natchez Trace).

Settlement hierarchy can be inferred by density of cultural activities. The study area contains two settlements, at old Pontitock and at Levi Colbert's

establishment. Except for the Council House, there are no economic specializations or other services indicated, though governance practices were undoubtedly performed at the homes of chiefs or leaders like George and Levi Colbert. Larger settlements, with American government and economic presence, were to the west of the study area, or southeast at Cotton Gin Port. The pattern and density of roads indicates these locations.

The ecological interactions of late period Chickasaw farmsteads are hinted at in the research data, and could be greatly clarified if a comprehensive landscape reconstruction were attempted. The current focus on cultural observations still provides some interesting insights:

- There is no evidence for the “cedar glade” hypothesis, which suggested preference by 18th Century Chickasaw for house sites on uplands in areas of cedar (Johnson et. al. 1989; Johnson 1990, 2000). Fields in the PLSS survey documents are adjacent to water and/or swampy areas. Houses may or may not be adjacent to fields, but do not seem to occur in the prairies where cedar glades are found.
- There is insufficient evidence for house location to comment on whether residence was still preferential for upland locations. Fields no longer had to be immediately adjacent to dwellings, because of the generally peaceful relations with surrounding groups.

CHAPTER 10 -- CONCLUSIONS

This chapter presents the conclusions to be drawn from this research project, in two parts. The first part evaluates the results relative to the research questions the project was intended to explore. The second part discusses additional insights derived from the project.

Response To Research Questions

The study explored several research questions (presented in Chapter 1). These included:

1. How well do the PLSS survey notes covering the Chickasaw heartlands in Northeast Mississippi fit the theoretical demands for conducting geographic and historic research on a complex sociotechnical body of practice?
2. How well do the PLSS notes covering the historic Chickasaw homeland support recreation of the cultural landscape of the Native American communities?

Fitness for Research Purpose

The PLSS source documents within the project study area, comprised of field notes for township perimeter and interior subdivision and corresponding township plats, are generally adequate and appropriate for the research project.

(Potential suitability for other types of source data is discussed later in this document.) This judgment is comprised of two elements.

The data fits appropriately within Munslow's (2005) evidential framework (discussed in Chapter 1, above). The individual observations inscribed in the field notes correspond to the level of "relics and traces" – in many instances within this research project, the only indication of any Chickasaw cultural activity is this set of marks on paper. The source documents collectively were compiled into archival "sources", originally for the bureaucratic purposes of the sociotechnical processes of land commoditization and sale. The bureaucratic need for completeness and verifiability imposed a high standard on the assemblage, and the internal check on field notes by compilation into township plats helps confirm the accuracy of the sources – at least within limits of the sociotechnical process in question.

This project utilized GIS and associated database management technologies to restructure the contents of this source, to develop and analyze a "body of evidence". (Technical details of this process are provided in Chapter 2, Methodology, and additional discussion of the problems encountered is provided in Appendix A, below.)

The resulting recreation of the Chickasaw cultural landscape utilizes the body of evidence and derived historical facts to produce a cartographic representation. The use of computer technology gives additional richness to this summary representation, in that any aspect of it can be "drilled down" to see the

underlying evidence and to review the analysis and restructuring upon which it is based. Ultimately, utilizing the feature level metadata used to log transactions, a researcher can trace back to the individual entry in the field notes from which a piece of evidence was originated, which facilitates verification and repeatability by other researchers.

Second, our understanding of the sociotechnical process of land survey is both foundational to and enriched by this project. The sequence of events and the technical standards expected of the deputy surveyors in the field build confidence in the relevance of the PLSS source data for our purposes, in a way that e.g. a missionary's diary does not. In addition, the cross-reference between individual entries in the field notes and the supposedly corresponding portions of the township plat has provided additional insight into the practices of inscription used in this overall process (as discussed in more detail below).

Support for Recreation of Chickasaw Cultural Landscape

The field notes do in fact provide adequate support for recreation of the Chickasaw cultural landscape, especially when used with the companion township plats. Chapter 9, above, explores the strengths and weaknesses of the data for this purpose. The two biggest issues with the data, beyond the difficulties of working with the source data (described in Appendix A, below), are that not all the detail one would have hoped for was recorded and that the observations recorded in the notes do not always cohere into an overall pattern of cultural activity.

Supplemental Research Concerns

In addition to these core research questions, the study explored explanations regarding the findings. There was a concern that the PLSS source data might present a theoretically flawed but pragmatically useful resource. Conversely, the data could be eminently satisfactory from a theoretical perspective, yet not contain sufficient detail for the pragmatic purpose of cultural landscape reconstruction. The supplemental concerns include:

1) *The suitability of PLSS source documents for creation of a research archive for historical geography research on the cultural landscape*. The data has proven suitable for this purpose, subject to caveat that (a) the entries require far more pre-processing than had been expected and (b) the surviving sources are not in the best of condition. Appendix A goes into some detail regarding these issues. A surprising finding was that neither the township plats nor the field notes alone gave the most complete picture, as discussed below.

2) *The completeness and coherence of the reconstructed landscape, in terms of internal consistency as a settlement system and in comparison to indicators of cultural activity such as cultural resource inventories and contemporary accounts*. The reconstructed cultural landscape is in general coherent and consistent with independently derived inventories, as discussed in Chapters 6 - 8. The internal consistency as a settlement system is marginal, as explored in Chapter 9. The reconstructed landscape is informative as far as it

goes. A larger study area would probably improve the overall understanding, not just add “more of the same”.

3) *The processes of inscription and suppression embodied within the survey notes and plats as documents produced within a discursive formation supporting the “land office business”.* Contrary to expectations at the beginning of this research, no evidence was found indicating any differential inscription of Chickasaw versus other cultural activity, nor of obvious suppression.

4) *The extent to which we can gain insight into Removal era settlement patterns and landscape practices of the Chickasaw Indians and their Euro-American neighbors, through utilization of this new data resource and approach.*

Additional Findings

Working thought the assembly and analysis of the data extracted from the PLSS source data identified two additional findings in areas not anticipated in the research design.

Relative Priority of Notes vs. Plats?

The general impression of commentary on the PLSS source data has been that the township plats were derivative summaries of the more detailed field notes. The intent of the General Land Office practice to create the plats “by protraction” (see Chapter 8) from the bearings and distances inscribed in the field

notes as a check on field note accuracy and completeness was apparently neglected in this judgment.

More important for this research project, township plats include much (but not all) of the cultural and physiographic information inscribed in the field notes. Further, plats in this study area contain more cultural and terrain data than do the field notes, or supplement and clarify the notes. Examples of additional plat data were given in Chapter 6 and Chapter 7, and include:

- Annotation on the plats showing owner's names not recorded in the notes
- More consistent naming of roads, and naming when notes either left the segment unnamed or provisionally identified
- Extent and configuration of fields not discernible in the field notes
- Paths and fields not recorded in the notes

Figure 10-1: Stream Details in Plat, T09SR04E

Some township plats also include far more minutia than the standard understanding of plat as summary document would lead us to expect. The compiler sometimes chose to record every stream crossing, even when bunched tightly together as between Sections 2 and 3 of T09SR04E, shown in Figure 10-1.

Was GIS Technology Essential to the Analysis?

GIS technology was essential in plotting the cultural features and in comparing them to cultural resource materials from other sources. Another important function, not considered in the initial research design, was the ability to contrast the cultural observations extracted from the field notes to what should be the corresponding features digitized from the scanned township plats, and for assembling physiographic and cultural elements digitized from adjacent plats. Mismatches between plat and notes have been discussed in several portions of this document. An example of the difficulties of edge-matching what should be continuous features across adjacent plats is given in Figure 10-2, where boundaries of a swampy lowland area do not close between T11SR04E and T11SR05E.

Figure 10-2: Discontinuous Swamp Boundary

The technology would also be essential in follow-up analysis of e.g. reconstructed land cover, assessment of soils vs. quality of land assessments, etc. The initial notion of the “archive” turned out not to be essential – the cultural landscape could have been reconstructed without the formality and completeness originally contemplated.

Suitability Of Archival Approach For Other Source Data

The research approach of transcribing the PLSS field notes into a GIS archive for analysis can be applied to other types of data sources, though it may require modification in detail to accommodate peculiarities of the sources. This section discusses issues of suitability and applicability.

Usability for Other Survey Notes or Similar Data

This approach could be applied to any "survey-like" data, not just the PLSS surveys. The fundamental requirement is that the data can be organized so as to provide a series of observations within a common locational framework, within which each observation is described by a Point of Beginning (POB), a compass bearing, and a distance between the POB and the location of the observation. Notably, this does not require use of land surveying techniques – a digital photograph collection where each photo is tagged with the X/Y location of the camera and the bearing to center of image is usable within this approach. This requires the simplifying assumption that the distance is zero, so that the

derived location becomes that of the observer rather than of that which is being observed. In analogy to the PLSS survey data, this might be interpreted as saying “there is a trail at this location at which I am making this note”.

As noted the minimal data needed for this approach includes POB, bearing, and distance of observation from POB. This requirement implies two-dimensional data, but elevation and even time could also be incorporated. The POB is a point located relative to the number of dimensions in the reference framework (i.e. an X/Y coordinate in a two-dimensional framework for the PLSS survey data, ignoring curvature of the Earth). Multiple additional dimensions – such as elevation, time, or even quasi-locational attributes such as jurisdiction – could be added to the reference framework. If so, however, it will be essential that the distance measure be expanded to include the change in each of these additional dimensions, such as elevation of the observation or slope of the bearing line.

There is an important restriction in applying this approach for drawing inferences about the overall study area, beyond what is documented on the survey traverses. Any areal inferences can only be meaningful if the set of survey observations form a rough lattice covering the area. For instance, a survey traverse might cover a linear feature such as the Natchez Trace – this data would allow inferences about surroundings only for a “short” distance to either side of the route of the Trace. There are numerous guidelines for developing a survey (in the research sense of the word, not the land

measurement sense) that adequately supports areal interpolation – many of which are discipline-specific. In terms of suitability of this specific research approach, the critical point is that the survey doesn't have to be regular or rectangular, just cover the area with a mesh of some reasonable density.

Data Considerations

This approach is based on the bearing and distance model, so it does not fit well (if at all) with data collected under other frameworks. However, it is important to recognize that this model is more flexible than it might first appear. The Point Of Beginning is the most essential data element. Other aspects of data may be derived from the source, with reasonable probability of success.

Each observation in the source data must be linked back to a known Point Of Beginning (POB). A critical underpinning to applying this approach is the cross-reference of the source observations to the set of POB points used in the analysis. The researcher must be able to consistently tie each observation to a specific POB.

The bearing from POB to observation is, contrary to initial expectations, actually fairly east to derive, even from source data that appears not to contain such data at all. For example, the bearing may be inferred from the structure of survey. In many cases, the bearing may be explicitly given, as for PLSS witness trees. A rectangular grid means consistent bearing can be derived from corner to corner, such as the PLSS survey documents. A rectangular grid is not required,

however. Many GIS tools are capable of meandering along a line without constant bearing – for example, along a roadway or stream.

Even the strict requirement that a Point Of Beginning be defined can be satisfied in several ways. Each observation may acquire a POB in several ways. For instance, in large subsets of the PLSS source data, a POB is declared for the initial observation at the start of the boundary traverse, with bearing and distance cumulative (for example, “at 30 chains from XYZ corner entered stream, at 40 chains from XYZ corner exited stream”). Another approach is to have a chain of traverses, with ending point of segment #N becoming POB for Segment #N+1. (The PLSS source data involved both approaches.)

The level of data necessary to apply this approach requires an assessment of both technical feasibility and cost effectiveness. Technically it is feasible to apply this approach to only a single observation, provided it is presented in POB – bearing – distance format. Of course, this is analogous to using an eight-pound sledgehammer to crack a nut. Hand processing of a small number of observations would be much more cost effective in most circumstances.

The other aspect of cost effectiveness has to do with the difficulties in compiling a digital archive to which this approach can be applied. Use of computer tools such as GIS and database management systems supports amassing and working with very large data sets – once you acquire them. Several cost factors must be considered, including:

- *Access to data may be quite expensive.* Travel to archives for physical examination of records is only one expense. The researcher can reduce or even eliminate the time on site at the repository by making digital or legible hard copies of source documents. However, high-resolution scanning of source documents can be quite expensive and time consuming, especially when they are fragile and in odd formats.
- *Data transcription is labor intensive, and may require extensive training.* It is important to set up quality control reviews to avoid transcription errors. Data collection staff may also have to be taught explicit coding conventions, to force some measure of standardization onto the decidedly nonstandard contents of the source documents.

Despite apparent precision, some data elements will remain irreducibly ambiguous. The research design must access these various categories of risk, and include appropriate accommodations. One major concern with historic survey data such as the PLSS is that observations e.g. tree types may not have been standardized; therefore the researcher must decide when to recode. Likewise, one must expect some degree of idiosyncratic data collection among surveyors or similar data creators even when terms are ostensibly well-defined.

Another danger in applying this approach is that researchers may assume greater accuracy than is justified, because they mistake precision for accuracy. (The surveyor may have recorded a distance to the nearest link, but have mismeasured by a full chain or more.) In generalizing from the PLSS source

data, two specific aspects of concern arise. First, the Points Of Beginning may not include exact locations, so all derived locations have to be approximate. This is more common outside the PLSS framework, where a POB may have been an arbitrarily chosen terrain feature. In addition, derived or recoded data will never be more precise than the corresponding input data ("NE" is not the same bearing as "N45E", even when the data transcription process standardizes the format).

It may well be worthwhile to build this type of digital archive and to apply this research approach, despite these potential concerns. One justification would be the richness of the observations embedded within the dry survey details, which would normally be of interest only to surveyors. (Of course, if the research focus includes the technical practices of the surveyors themselves, this data becomes central to the archive.)

Another justification for this approach would be the intent of supporting a multi-purpose research program, with possibly unanticipated data needs. Under these circumstances, the data capture steps must include all of the contents of the source documents. The resulting size and possible complexity of data resources may require the computerization of the archive.

This approach also provides a helpful side-effect. It neatly supports the need to preserve the history and sequence of research steps, for quality assurance and verification. It will also facilitate replication with different parameters or alternative computer utilities, because all such replications are known to start from the same data inputs.

APPENDICES

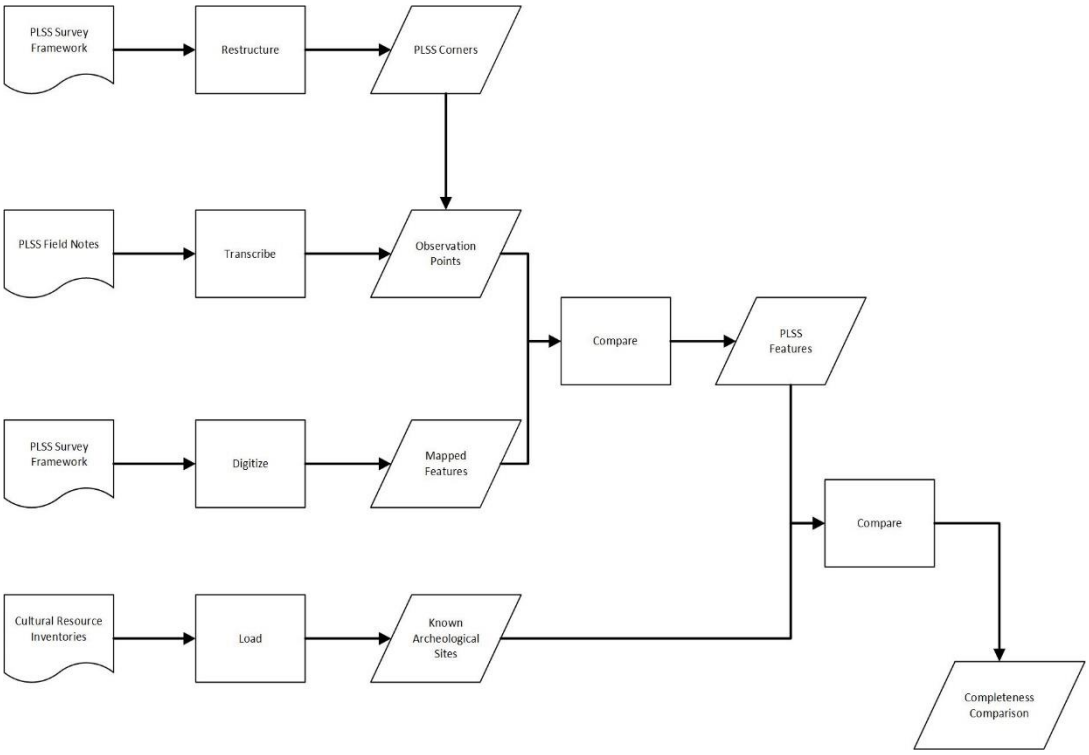
APPENDIX A -- DEVELOPING THE ARCHIVE

This appendix documents the development of the geospatial data sets utilized in this research. Data sources are described, with an emphasis on the data transformations required to utilize them. Data issues that were encountered are described and the means used to resolve them are presented. The appendix closes with a discussion of technical lessons learned and opportunities for further research.

"[T]he process of translating historical sources for use in GIS can itself be a complex, taxing work of scholarship…. it is difficult to automate, though the automation of georeferencing so that information can be quickly located and mapped is a rapidly growing field of research and software development." (Knowles 2008: 13)

Figure A-1 indicates the high-level data flows involved in moving from data sources to a completed analysis. The details of sources and processing steps are provided in the following sections.

Figure A-1: Work Flow for Creating Archive



Data Sources

The primary data for this study came from version of the original field notes and derived survey plats created to document the initial survey of the recently ceded Chickasaw heartlands in what are now western Lee and eastern Pontotoc counties, Mississippi. This data was collected during the survey of these lands into the sections of the Public Land Survey System (PLSS). Because of its historic and legal importance, this material has been preserved in local, state and Federal archives.

Field Notes – The field notes are cataloged by the National Archives and Records Administration in Microfilm Series T1240A (Field Notes From Selected General Land Office Township Surveys, Rolls 1-200) and Microfilm Series T1240B (Field Notes From Selected General Land Office Township Surveys, Rolls 201-280), Record Group 49. Field notes are preserved at the township and the section level, and describe features observed along the boundaries during survey. However, the National Archives no longer makes copies of this microfilm available.

Township Plats – The township survey plats are cataloged in Microfilm Series T1234 (Township Plats of Selected States), Record Group 49, by the National Archives and Records Administration. The plats are also downloadable from http://www.glorecords.blm.gov Bureau of Land Management, General Land Office Records. Two versions of the township plats were used for this research:

- Color, high-resolution scans were downloaded from the BLM Web site, in Mr.Sid format. These are not georeferenced and so cannot be utilized in a GIS without additional processing. Because another source was available, these were merely cataloged and used for visual comparison with GIS contents.
- The Chickasaw Nation provided a set of scanned images of these plats. The plats had been collared, which cropped the scanned image to only the cartographic map without the title, certification, or other data on the remainder of the plat sheet. They had already been

georeferenced, which converts the locations on the plats from “dumb” map page coordinates to real-world geospatial coordinates. Variations in raster format prevented ready consolidation into a composite raster image catalog within the GIS; instead each image was stored in an operating system file folder and managed independently.

Cultural Resource Inventories -- The reconstructed cultural landscape from the survey data was compared to other information sources to identify errors or omissions. These sources included data sets such as:

- Archeological survey records at the Mississippi Department of Archives and History and other institutions. This was provided by the Chickasaw Nation, and has been compiled by earlier researchers.
- Contemporary discussions of the ceded territories, including Lusher’s summary map of 1835. A scanned copy of the Lusher Map was acquired from the Mississippi Department of Archives and History.

Base Map Data – A series of GIS data files delineating county boundaries, PLSS divisions, and streams at a source scale of 1:24,000 was downloaded from public GIS data servers maintained by the State of Mississippi.

Compiling Observations from PLSS Field Notes

Field notes were transcribed into Microsoft Excel spreadsheets, matching the standard format of field notes for the project study area. One spreadsheet

was used for township boundary notes; the second for interior section boundaries.

Additional columns were added to the spreadsheet beyond what was required for the contents of the field notes. The ID column created a globally unique “dataless” identification number for each transcribed entry. (“Dataless” is a term of art from database design, and simply means that there is no meaning encoded into the value. This approach allows maximum flexibility for reorganizing the data for future analysis.) A second column stored the PDF file name that was the source of the entry. A third column stored the entry sequence on the page of notes. Another pair of columns stored the original book and page numbers assigned to the field notes by the GLO when they were received for initial storage. Together, all of these columns allow the user to trace back to the source from which the entry was recorded, to for example check the compiler’s accuracy or ability to read the often-challenging handwriting of the original clerk. An additional “Comments” column was used to note any issues with transcription. The columns in the spreadsheet are documented in Table A-1, below.

The decision was made to transcribe the notes literally, with the minor exception of segmenting the somewhat freeform notes into consistent “entries”. That is, one row in the spreadsheet might correspond to one or several rows in the notes; this was most common with section summaries and similar data. The literalness extended to matching variations in spelling, abbreviation and format – the concern was that discourse analysis might be required to identify differential

treatment of Chickasaw versus White cultural entries, so other patterns of inscription might be useful.

Table A-1: Layout of Field Notes Transcription Form

Column	Format	Definition	Comments
ID	Integer	Dataless key for identification of entry within entire database	Not part of original field notes
PDF	Text	Name of PDF copy of survey notes	Not part of original field notes
Township	Integer	Name of township	Not part of original field notes
Roll	Integer	Number of microfilm roll on which the notes are stored.	Not part of original field notes
Page	Integer	Page on microfilm roll on which the notes are stored.	Not part of original field notes
Entry	Integer	Sequential ID of entry on page; assigned by compiler	Not part of original field notes
Chains	Integer	Distance in chains along perimeter of section/township	Part of linear reference of traverse; "X happens M chains and N links from corner."
Links	Integer	Fractional distance in links along perimeter of section/township	Part of linear reference of traverse; "X happens M chains and N links from corner."
Course	Text	Bearing to bearing trees etc., from corner.	In "NxxY" format (ex. "N35E". Numeric may include fraction ("1/2"). May include punctuation.
Links	Integer	Distance in links along bearing to witness tree, from corner.	
"Bearing Trees, Crossings, Remarks, & Etc."	Text	A multipurpose comment field.	Verbatim from field notes
In	Text	Diameter of bearing tree, in Inches.	Contains fractions, e.g. “1/2”
[blank]	Text	Indicates type of post: "1/4 S" for quarter section, "BT" or "BL" for section on basis meridian, etc.	Part of markings on witness tree, posts, etc.
R	Integer	Range number to be included in marking, for section corners.	Part of markings on witness tree, posts, etc.
T	Integer	Township number to be included in marking, for section corners.	Part of markings on witness tree, posts, etc.
S	Integer	Section number to be included in marking, for section corners.	Part of markings on witness tree, posts, etc.
Chs	Integer	Validation field, indicating number of chains from origin corner.	
Links	Integer	Validation field, indicating number of fractional number of links from origin corner.	
[Comment]	Text	Notes by compiler regarding legibity, etc.	Not part of original field notes

Another problem lay in the multiple representations of the PLSS polygon in the base map data and in the transcribed data. This was resolved by using text processing and SQL database queries to calculate and load a standardized PLSS label into every relevant data set. These were structured so as to allow relational joins by attribute among the various data sets in the GIS, as follows:

1. Townships were labeled as “TnnnSRnnnE, Chickasaw”. This reads, left to right, the township number, the township direction (always “south” in the study area), the range number, the range direction (always “east”), and the survey baseline (always “Chickasaw”). Numbers were standardized in the database using three characters to support the largest numbers used anywhere in the PLSS, and padded with leading zeros when needed. For example, “T010SR005E, Chickasaw”. No space was used to separate the township portion of the identifier from the range.

2. Sections were labeled as “Section nn, TnnnSRnnnE, Chickasaw”. This reads as the section number plus the township label within which the section lies. Section numbers were not padded with leading zeros. For example, “Section 2, T010SR005E, Chickasaw”.

3. Section corners were labeled as “Direction corner of Section nn, TnnnSRnnnE, Chickasaw”. Direction was one of “Northwest”, “Southwest”, “Northeast”, or “Southeast”. For example, “Northwest corner of Section 2, T010SR005E, Chickasaw”.

This rather lengthy labeling format was chosen because it was human-readable, unambiguous, and extensible to (almost) any other area of the PLSS.

Another data issue had unanticipated consequences, and led to a significant shift in approach to the GIS data archive. As noted, the contents of the field notes were transcribed literally. The resulting file contained far more variability than expected, which defeated efforts to automate the repackaging of the field note entries into usable GIS data sets. This research was completed by manually extracting the cultural references into a separate Excel spreadsheet and manually reformatting and recoding different attributes in order to make the results usable within the GIS environment. The complete transcription process was abandoned after about 25% of the study area was completed; this was sufficient to demonstrate that the cultural entries could stand on their own for purposes of this project.

Another issue with the data had more to do with how the PLSS fabric was conceptualized than with the quality or format of the data itself. First, at the level of individual observations the relevant PLSS element is the “boundary line”; though most researchers focus instead on the polygonal “area”. The surveyors were not thinking primarily about the section but instead on the survey line they were running between adjacent sections. Second, and as a result of the sequence of surveying the section lines, there is no single Point of Beginning from which all subsequent entries within a township are displaced by bearing and distance. Instead there are multiple beginnings, not always in a consistent

sequence. The data must be manually parsed and each of the multiple points of beginning identified before the observation can be plotted using bearing and distance.

Work Flow for Assembling the Archive

The sequence of data processing steps used to assemble the archive and analyze its contents is outlined below. A GIS user should be able to replicate this activity from the description given, but not all of the trivial technical details are included. (Esri ArcGIS 10.0 and a file geodatabase were used in this research. The description that follows is couched in this tool's terminology, but other GIS technology could be used instead since only relatively common GIS operations were utilized. For example, graphical data sets are referred to as "feature classes" within a "geodatabase" repository, while tabular data sets are "tables".)

1. Create a geodatabase for the project. Standardize the projection and map units, using Mississippi State Plane East (FIPS Zone 2301) and feet. (Because the original survey work was done using feet and miles as units of linear measure, I have persisted in this usage throughout this project.)

2. Build a set of PLSS section polygons and corner points. An important step in this process is the creation of unique identifiers for corner points and polygon sides, which are later attached to entries from the field notes to identify position relative to the base feature. (Due to

problems with data quality, discussed above, four coincident section corner points were created for each of the four adjacent section polygons. Each was labeled accordingly, for example “Northwest corner of Section 2, T010SR005E, Chickasaw”.)

a. Import the PLSS framework data into the geodatabase, converting the coordinate system to match the selected standard.

b. Manually select the PLSS township polygon elements that are in the project study area.

c. Dissolve to create a Study Area Boundary polygon, to be used for clipping statewide data sets like the PLSS data acquired for the project. This both reduces requirements for data storage to only hold data actually needed, and dramatically improves processing times for subsequent steps. (Actually two versions were created – one exactly corresponded to the townships within the project study area and was used for mapping purposes, and a second version buffered outwards by one township that was used for clipping out other data. (The buffered study area was a ‘brute force’ means of dealing with issues of features lying exactly along the perimeter of the study area, since the normal means of specifying whether to include

these was not consistently working due to some of the problems with the source data.)

d. Clip PLSS section and township polygons and corner points using the study area boundary and save as new feature classes. These are what will be utilized for most subsequent operations.

e. Add PLSS labels and fix any obvious problems with section corners.

3. Import streams and other reference data into the geodatabase, converting coordinate system as needed.

4. Acquire raster image copies of the several sets of field notes for the townships and sections within the study area. Organize and index to support systematic transcription and tying entries in the archive back to the source document.

5. Acquire township plat images within the study area. Save the Mr.Sid images for visual inspection and reference. Organize the georeferenced versions into the geodatabase with consistent naming convention and format.

6. Manually digitize the raster contents to create a series of GIS feature classes that correspond to selected elements of the contents of the raster image. Create one feature class per type of feature being

digitized. (It was found useful to include selected physiographic features such as streams, swamps, and prairies, in addition to cultural elements such as fields.) Merge the data, which was collected on a township by township basis, into a continuous representation of the study area.

7. Create feature classes for each type of cultural entry in the field notes.
    a. Transcribe each entry in the field notes into a row in an Excel spreadsheet. Add standardized labels for the township, boundary, and corner to serve as Point of Beginning. Add a standard code for type of cultural feature, duplicating a record if the observation references two types (for example, “entered field with cabin”).
    b. Calculate distance from Point of Beginning in feet, from Chains and Links in the original. The formula was (Chains * 66) + (Links * 0.66). Store as “Feet”, preserving any decimal portion of the total distance (ex. “66.66” feet for “1 chain and 1 link”).
    c. Import the Excel spreadsheet into the geodatabase as a table.
    d. Join to PLSS Corner point features using the standardized corner label.
    e. Use the “Add X,Y Coordinates” tool provided by Esri in the Toolbox menu within ArcMap to load the coordinates for the

Point of Beginning into the observation. Store as “POB_X” and “POB_Y”.

f. Export the results back into Excel and clean up the temporary feature classes and tables in the geodatabase. (This could have been done within ArcMap, but using Excel allowed avoiding a challenging little programming exercise in the Python scripting language.)

g. Use Excel to calculate the approximate coordinates of each observation. The equations are (where Feet is the value calculated in step b above):

i. If Bearing is East, then X2 = POB_X + Feet and Y2 = POB_Y.
ii. If Bearing is South, then X2 = POB_X and Y2 = POB_Y - Feet.

h. Import the resulting Excel spreadsheet into the geodatabase as an event layer, and save as a permanent feature class. Set snapping environment to snap points to nearest section boundary line, to correct for any variation of the boundary line from true north-south orientation.

i. Split into feature class for each type of cultural feature. That is, export all of the “Improvements” into a separate feature class. These will be the basis for future analysis. An additional benefit

is that future uses do not have to include a filter to only include the desired types of cultural features.

8. Import the independently-derived cultural resource inventories into geodatabase. These were already in GIS formats, so only needed to be reprojected and added to the geodatabase.

9. Use “Make Near Table” tool to create a cross reference between the cultural features from field notes and the independently derived inventories. (This tool supports several criteria for the cross-reference. I used a quarter-mile search radius and set a maximum of four matches.) Export the results to Excel for further analysis and report production.

10. Bring together the three primary data sets within an ArcMap canvas for visual inspection. Add other reference data as needed. Use visual inspection for further analysis of the results.

APPENDIX B -- BIBLIOGRAPHY

Original Documents

Chickasaw Nation in Oklahoma -- The Nation provided two sets of digital files for this research, including raster images of township plats within the study area and spreadsheets of cultural resource inventories.

Township Plats

T6_R5b	Rectify T9R4E	T11R5E_BM	t13r1e	T15R2Eb
T6R6Eb	Rectify T9R5E	Rectify T11R6E	T13R2Eb	ft15r1e
T6R7Eb	T9R6E_BM	Rectify T11R7E	T13R2Eb	t15r3e
T7R5E_BM	T9R7E_BM	T11R8Eb_BM	t13r3e	t15r4e
T7R6E_BM	Rectify T10R1E	T11R9Eb_BM	t13r4e	t15r5e
Rectify T7R7E	Rectify T10R2E	FrT11R10Eb	t13r5e	t15r5e_1
T8R1E_BM	Rectify T10R3E	t12r1e_BM	t13r5e_1	T15R6Eb
T8R2E_BM	Rectify T10R4E	t12r2e	T13R6Eb	FrT15R8Eb
T8R3E_BM	Rectify T10R5E	t12r3e_BM	FrT13R7Eb	FrT16R1Eb
T8R4E_BM	Rectify T10R6E	t12r4e_BM	t14r1e	ft16r2e
Rectify T8R5E	Rectify T10R7E	t12r5e_BM	t14r2E	ft16r4e
Rectify T8R6E	Rectify T11R1E	T12R6E_BM	t14r3e	FrT16R7Eb
Rectify T8R7E	Rectify T11R2E	FrT12R7Eb	t14r4e	FrT16R8Eb
T9R1E_BM	Rectify T11R3E	FrT12R8Eb_BM	t14r5e	
T9R2E_BM	Rectify T11R4E	FrT12R9Eb_BM	T14R6E	
T9R3E_BM	Rectify T11R5E	FrT12R10Eb	FrT14R7E	

Cultural Resource Inventories

BradDateNewClusters
Cessions
LandPatents
LiebIndividualSites
MDAH_Chickasaw_sites_with_Cal
New_Boundaries
NewPlolyClustersBradDates
SurveySites1830
SurveyLines1830

Mississippi Automated Resource Information System (MARIS) -- “Download Data”. http://www.maris.state.ms.us/ . Files downloaded included:

MS_Counties.exe – County Outlines
MS_majr.exe – Major Rivers
MS_Townships.exe – PLSS Boundaries, including Survey, Township, and Section

Perry, Kirk. (2012) *Chickasaw Patents in Mississippi*. Unpublished manuscript on file with Chickasaw Nation in Oklahoma; copy provided by author.

US Bureau of Land Management (BLM), General Land Office (GLO) Records Automation. Survey Plats and Field Notes. http://www.glorecords.blm.gov/search/default.aspx?searchTabIndex=0&searchByTypeIndex=1

US National Archives and Records Administration. Microfilm Series T1234, *Township Plats of Selected States*, Record Group 49.

US National Archives and Records Administration. Microfilm Series T1240A, *Field Notes From Selected General Land Office Township Surveys*, Rolls 1-200, Record Group 49.

US National Archives and Records Administration. Microfilm Series T1240B, *Field Notes From Selected General Land Office Township Surveys*, Rolls 201-280, Record Group 49.

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2006 MA, Geography, University of Kentucky
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1979 M.P.A., Public Administration, University of Mississippi
1977 B.A., Anthropology, Mississippi State University.

PROFESSIONAL EXPERIENCE
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IT Strategy Manager
City of Richmond Dept. of Information Technology
Richmond,Virginia

2008 – 2012
Senior IT Consultant
Westin Engineering,
Rancho Cordova, California

2005- 2008
Senior Data Architect
ATOS Origin,
Business Intelligence and Integration Group
Cincinnati, Ohio

1996-2005
Executive Consultant (1998-2005)
Senior Systems Analyst (1996-1998)
PlanGraphics, Inc., Frankfort, Kentucky.

1993-1995
GIS Manager, Information Services Department
Lower Colorado River Authority, Austin, Texas.

1989-1993
(Acting) Manager, Automation Services (1992-1993)
Principal Planner, Applications Development (1989-1993)
City of Austin (TX) Department of Planning and Development.

1980-1989
Principal Research Analyst (1983-1989)
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Memphis-Shelby County (TN) Office of Planning & Development.

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Assistant Director, Northwest Mississippi Teacher Center

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Director of Planning (1975-1977)
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