

Lithic Analysis of Cade 3 (47Ve630) in Vernon County, Wisconsin



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Abstract:

Cade 3 is one of several archaeological sites located within the Cade National Register Archaeological District, located in the Bad Axe River Valley in Vernon County, Wisconsin. This site was partially excavated in the summers of 2004 and 2007 by the UW-La Crosse field methods course in Archaeology.

The focus of this paper is the description of the excavation and recovered lithic materials from Cade 3 in 2007. Projectile points were the most common diagnostic archaeological material found during the excavation. Lithic analysis includes raw material sourcing, heat treated material, and temporal range. The surface collections of projectile points from the surrounding sites are used to increase the sample size and regional perspective. The projectile points from Cade 3 and nearby surface collections (Cade 1 and Cade 2) were compared to those recovered from Cade 9 (47Ve625). The results revealed that there is evidence that this site was occupied during Middle-Late Archaic and Late Woodland period.

Introduction

This report focuses on the partial excavation of Cade 3 (47Ve630) in the summers of 2004 and 2007. Surface surveys of the sites on the western part of the Cade Archaeological District are included in the report. The Cade Archaeological District is located in Vernon County in Wisconsin's Driftless Area (see Figure 1 and 2). The Driftless Area is an island of rugged ridges and valleys surrounded by more gently rounding terrain (Theler and Boszhardt 2003: 19).

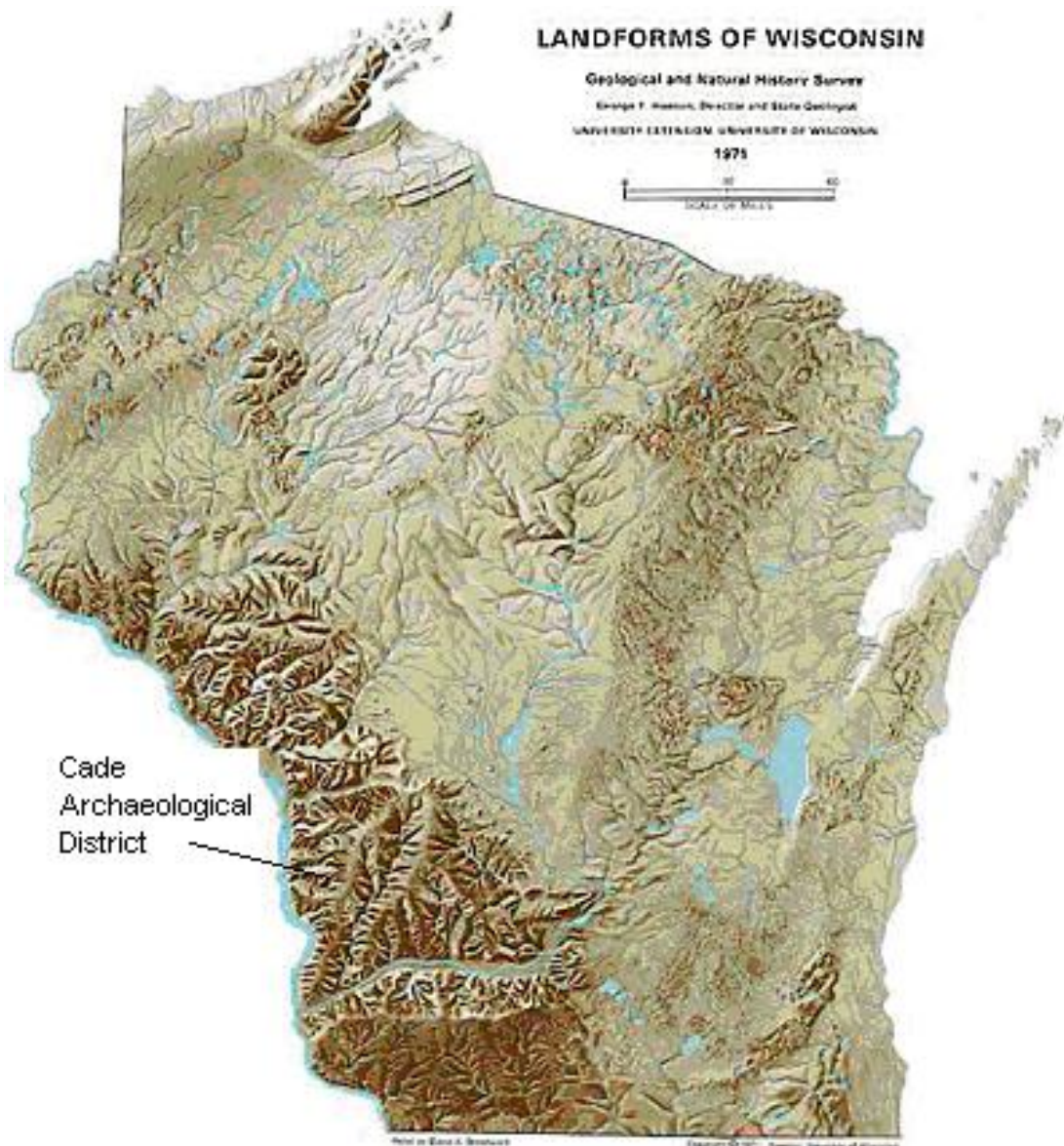


Figure 1: Location of Wisconsin's Driftless Area and Cade Archaeological District.

Mr. Loren Cade was the first to recognize the archaeological importance of certain areas on his and his father's, Mr. Chester Cade, property. Loren Cade had discovered these areas of concentrated archaeological material such as projectile points, scrapers, and pieces of pottery turned up in plowed fields. In addition to the archaeological material, he also found Late Woodland effigy mounds on his father's adjacent property. Realizing that some of this material could be interesting he started collecting and keeping record of the material that he found. Later, in the early 1980's he shared his findings with Robert F. Boszhardt at the Mississippi Valley Archaeology Center (MVAC) in La Crosse, Wisconsin.



Figure 2: Map of location of the Cade Archaeological District in Vernon County.

In the summer of 2004, a survey and excavation by the field crew from University of La Crosse were focused on the Cade 3 area which had not been systemically excavated in the past. A surface survey of the area revealed that this area could potentially be of Early Archaic age given the amount of exotic lithic material, Hixton and Cochran chert. A trench of eight 2 by 2 meter units side by side was systemically excavated (see Figure 4). The projectile points recovered were mostly Middle and Late Archaic and Woodland Honey Creek forms. In addition to the survey of Cade 3, surveys of Cade 1 and Cade 2 were conducted.

In the summer 2007, the University of La Crosse archaeological field school surveyed and excavated certain sites on the Cade farmstead. One of the sites partially excavated was Cade 3 where four 2 by 2 meter units were excavated. Recovered projectile points were mostly Durst, as well as some pieces of pottery sparsely scattered throughout the excavation. There were no features or evidence of burials found during the excavation of 2004 and 2007.

Cade 9 (47Ve625) was also partly excavated in 2007 where a trench was excavated to the base of the plow zone. This excavation revealed exotic material which would suggest an Archaic occupation. The excavation of this site revealed projectile points from the Archaic and the Late Woodland period. Four features were discovered and excavated at this site. The pottery sherds recovered at this site suggests that this site was occupied during the end of the Woodland period (Circa A.D. 1050).

Methodology

During the 2007 field school, controlled excavations were conducted at the Cade 3 and Cade 9 sites. The Cade 9 site was tested by four 2 by 2 meter units placed adjacent to each other to form a trench. The sod was removed and placed aside within the plow zone. Features were excavated using trowels. Cade 3 site was excavated in stratigraphic levels depending on the lithic deposition or indications of features.

During the summer of 2007 controlled excavations at the Cade 3 site were based on the archaeological material found during the excavation in the summer in 2004. Four two by two meter units were placed in an areas where buried archaeological components were expected based on earlier work. Since the archaeological material was found close in the surface, the units were excavated in 5, 10 and 15 cm arbitrary levels. The soil was screened through ¼ inch mesh. The artifacts that were recovered were bagged and sent to MVAC to be cleaned and catalogued.

The 2004 Cade 3 the artifacts were cleaned, cataloged, and sorted. Each of the projectile points from Cade 3 was measured with date entered into a spreadsheet for analysis (see Figure 3). The length of the points was measured when the point was complete and when the point was broken or the tip was fractured, it was noted on the spreadsheet. The width and thickness of each point was measured and added to the spreadsheet. Then the width thickness ratio was easier to calculate to determine which points are more advanced in manufacturing. When certain projectile points had stems the length, width at the notches, notch depth and notch width was also measured and recorded. After all the measurements of the projectile points were recorded, each of the points was put on a scale to find the weight in grams. The final part of the data that was added to the spreadsheet is the type of raw material of each projectile point.



Figure 3: Measurements of projectile points using calipers.

The lithic material that was recovered from the 2004 and 2007 summer excavation was cataloged and the lithic material identified. The amount and type of raw material was recorded and placed into a spreadsheet to be analyzed. The lithic material was recorded by number of lithics recovered from each level depth and by each unit. Pottery sherds and fire cracked rock (FCR) that was recovered during excavation was added to the spreadsheet.

By analyzing the lithic material and projectile points, the date and periods of site occupations were identified. The lithic material was identified to raw material, whether heat treated, and type of projectile points. Analyzing the projectile points from Cade 3, Cade 9, and Cade surface collections of Cade 1, Cade 2, and new Cade(s) in western part of district increased the sample size. Special focus is on the diagnostic artifacts recovered from Cade 3 site. Pottery sherds recovered during the excavation of Cade 3 in the summer of 2007 were few in number, these are briefly considered below.

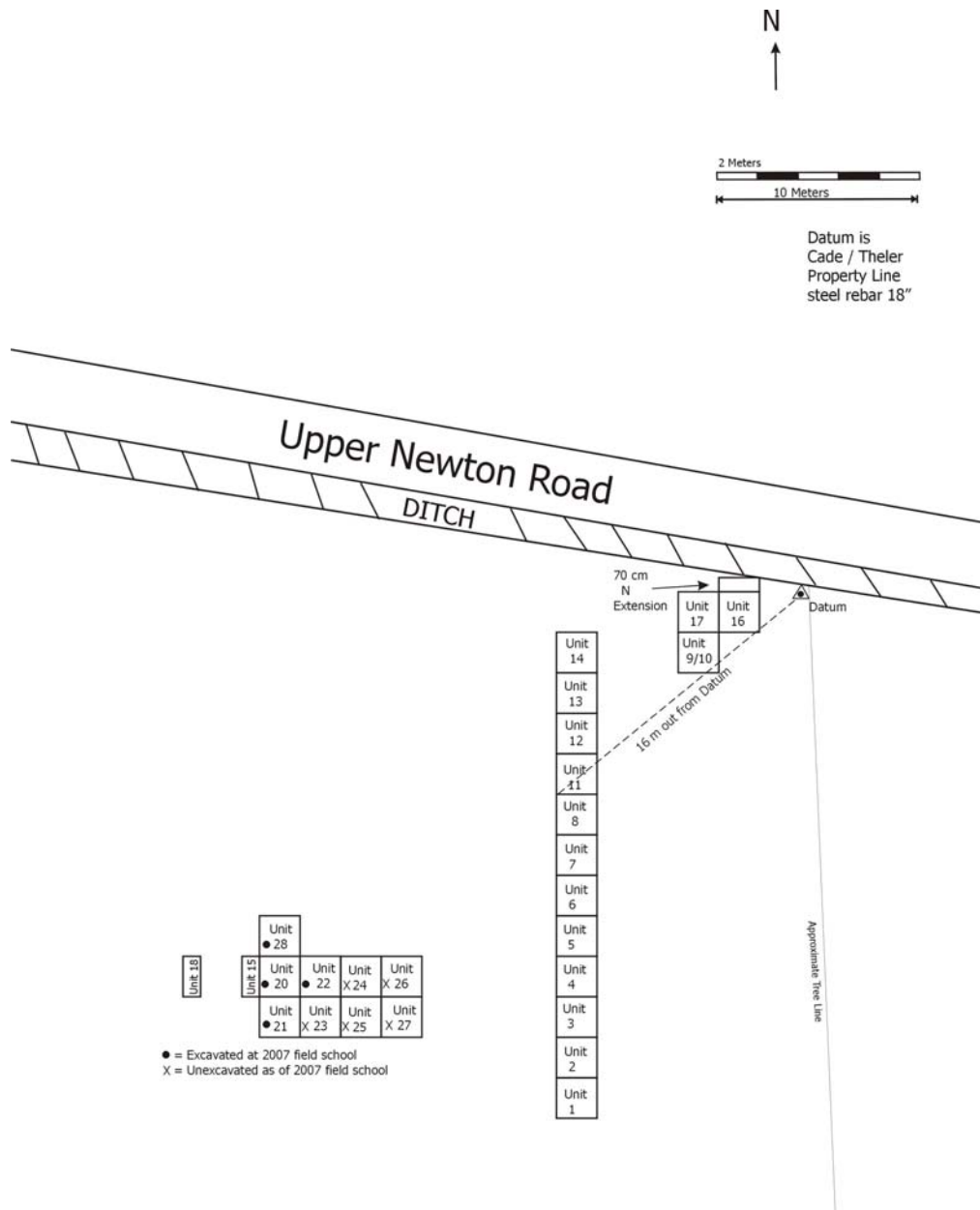


Figure 4: Excavation of Cade 3 summer of 2004 and 2007.

Projectile Points Recovered

The following sections discuss the projectile points recovered from specific sites at the Cade Archaeological District. The majority of these points are recovered from surface collections under taken during the 2004 field school survey. In the tables, the measurements of the projectile points are in millimeters and weighed in grams.

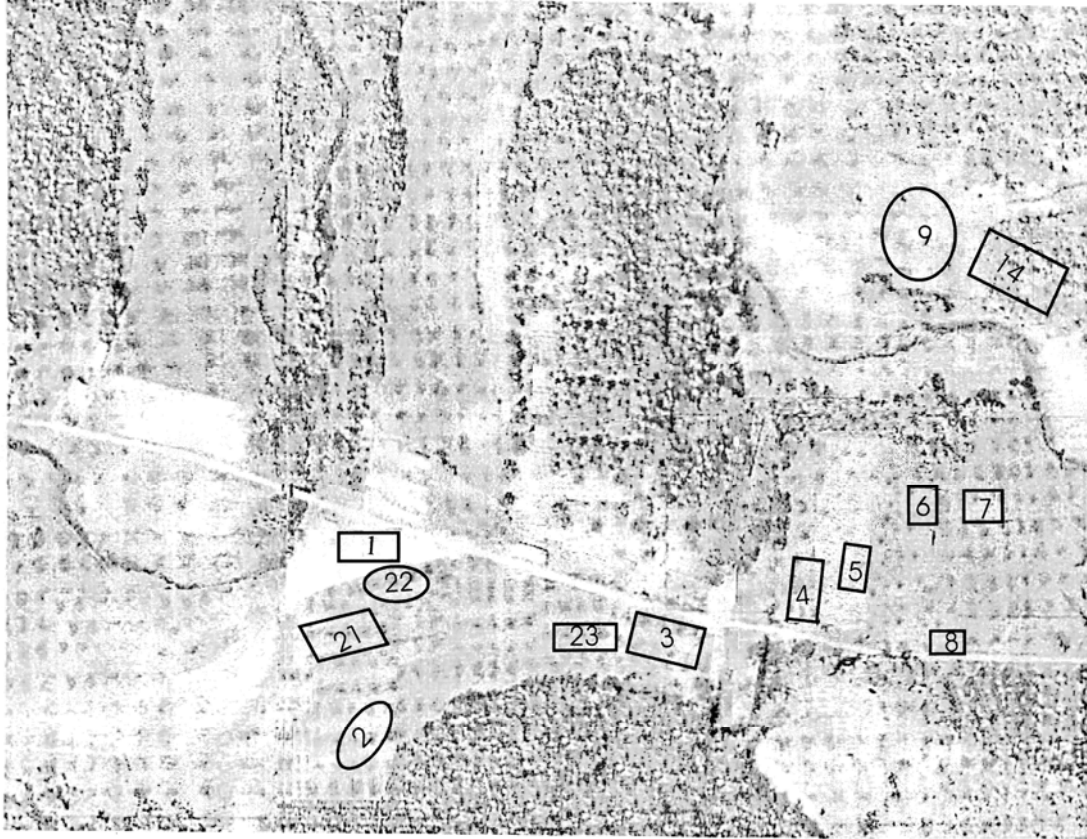


Figure 5: Map of Cade sites on and adjacent to the Loren Cade Farm.

Cade 1(47Ve645): Surface Collection

The Cade 1 site is located in the northwestern part of the Cade District. The survey of this site recovered a quantity of lithic material, but most was not diagnostic. The number of lithic debris that was recovered at this site is 290, four undecorated grit tempered pottery sherds, and seven projectile points.

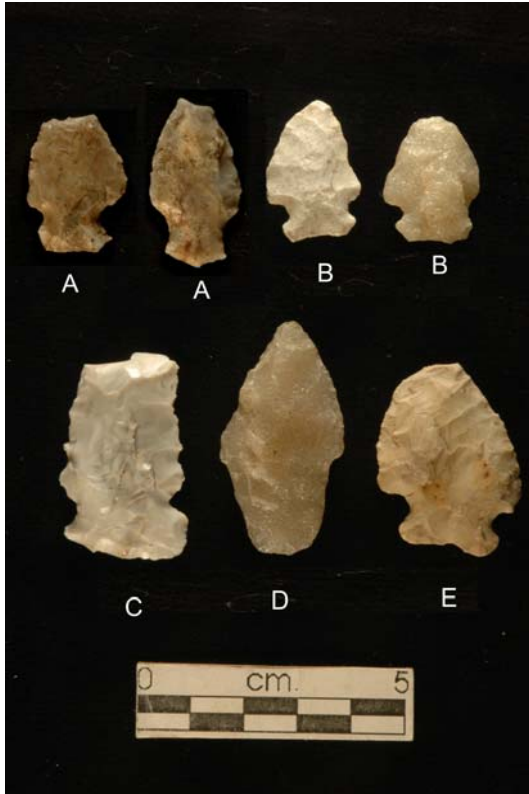


Figure 6: Projectile points recovered from the Cade 1 survey. (A) Durst, (B) Honey Creek, (C) Raddatz, (D) Kramer, (E) Archaic Corner-Notched

The recovered projectile points at this site include one Archaic Corner-notched, two Honey Creek, two Durst, one Kramer, and one Raddatz (Boszhardt 2003: 51, 57, 61 73. Local cherts were used, primarily Prairie du Chien. Two Durst and one of the Honey Creek point are made of Prairie du Chien chert. One possible Raddatz point was also made from heat-treated Prairie du Chien chert. A Kramer point and the other Honey Creek point are made of on non-local Hixton Silicified Sandstone. The Archaic Corner-notched was another projectile point made of non-local Burlington. Only three intact projectile points were recovered. The other two have either impact fractures at the tip or are broken across the mid-section. These points suggest an occupation of this site would have been around Middle-Late Archaic and then again around Late Woodland times.

Type	Portion of point	Length	Stem Length	Thickness	Width at Notches	Max Width	W/T Ratio	Material	Weight
Possible Raddatz	Base	n/a	8.4	8.1	16.4	23.0	2.84	Ht. PDC	8.6 g
Kramer	Complete	43.0	16.4	9.0	n/a	23.1	2.57	Hixton SS	8.2 g
Durst	Tip Broken	n/a	8.1	7.0	12.1	22.2	3.17	PDC	4.9 g
Durst	Tip Broken	n/a	7.4	7.0	10.6	20.1	2.87	PDC	5.2 g
Honey Creek	Complete	27.2	5.9	6.1	11.0	17.6	2.89	PDC	2.6 g
Honey Creek	Complete	24.1	6.0	6.2	12.2	18.2	2.94	Hixton SS	2.7 g
Archaic Corner-Notch	Tip Broken	36.8	9.5	7.6	15.2	26.8	3.53	Burlington	7.2 g

Table 1: The measurements of the projectile points recovered from Cade1.

Cade 2(47Ve646): Surface Collection

The Cade 2 site is located in the southwestern part of the Cade District which was surveyed during the summer of 2004 by the UW-La Crosse field school (see Figure 5). This site is located in an area which is elevated higher than the rest of the Cade sites in the area, and local history suggest that an Effigy mound was once located in here.



Figure 7: Projectile points recovered from the Cade 2 survey. (A) Honey creek, (B) Durst, (C) Raddatz.

The survey of this area recovered quantities of lithic material such as bifaces, modified flakes and projectile points. Lithic material totaled 818 items, eight pieces of undecorated grit tempered pottery sherds and ten projectile points. There were three Durst points, four Raddatz

points, one Honey Creek point, and two points bases which could not be identified (Goldstein 1998: 28; Boszhardt 2003:51,73). The raw material on the points suggests interest in Prairie du Chein chert. Two of the Durst points are made of the Prairie du Chein chert and the other Durst point is made out of Galena chert. Two of the Raddatz points are made out of heat-treated Praire du Chein chert. The other two Raddatz points are made out of heat-treated Galena chert, of the ten projectile points recovered at the Cade 2 survey only one point was recovered complete. The other points have either impact fractures, are broken across the mid-section or are a fragment of the point base. The large number of Durst and Raddatz point suggest that this site has been occupied during Middle to the Late Archaic periods.

	Portion of		Stem		Width at	Max	W/T		
Type	point	Length	Length	Thickness	Notches	Width	Ratio	Material	Weight
Raddatz	Base	n/a	10.9	7.9	17.7	25.5	3.23	Ht. PDC	11.4 g
Raddatz	Complete	55.7	10.6	8.2	15.1	21.8	2.66	Ht. Galena	10.3 g
Raddatz	Base	n/a	10.4	10.3	22.7	31.6	3.07	Ht. PDC	18.4 g
Raddatz	Base	n/a	10.8	8.5	16.4	22.8	2.68	Ht. Galena	8.9 g
Unidentified Base	Base	n/a	n/a	5.0	n/a	17.6	3.52	Ht. PDC	0.9 g
Honey creek	Tip broken	n/a	4.5	5.4	7.4	15.2	2.81	Ht. PDC	1.6 g
Durst	Tip broken	41.2	16.3	8.6	13	23.2	2.70	PDC	7.9 g
Durst	Base	n/a	13.8	6.2	13.3	16.7	2.69	Galena	1.9 g
Durst	Base	n/a	13.2	6.1	10	18.8	3.08	PDC	2.5 g
Base Broken	Mid-Section	n/a	n/a	8.9	n/a	28.4	3.19	PDC	11.0 g

Table 2: The measurements of the projectile points recovered from Cade2.

Cade 3(47Ve630): Surface Collection

Cade 3 is located at the western central portion of the Cade District (see Figure 5). Cade 3 was surveyed and partially excavated during the summer of 2004 by the UW-La Crosse field school Crew. Early survey of this site revealed that this site might contain older material than the other Cade sites due to amount of non-local material that appeared on the surface. This site received additional excavated during the summer of 2007 by the UW-La Crosse field school crew (see Appendix A).



Figure 8: Projectile points recovered from the 2004 Cade 3 excavation. (A) Honey Creek, (B) Raddatz, (C) Durst

The survey of this area recovered five projectile points and other lithic material. Most of the lithic material that was recovered was debitage such as primary flakes, secondary flakes, tertiary flakes, chunks, and shatter. Four of the five projectile points were made of Prairie du Chien chert except one Raddatz point (Ritzenthaler 1967: 24) made of Galena. There is a Durst point, two Honey Creek points, and two Raddatz points. One of the interesting things about the projectile points that were recovered as this site is that all five points were complete.

	Portion of		Stem		Width at	Max	W/T		
Type	point	Length	Length	Thickness	Notches	Width	Ratio	Material	Weight
Raddatz	Complete	48.0	8.6	7.6	7.0	23.9	3.14	PDC	9.9 g
Raddatz	Complete	39.4	7.6	5.5	6.3	21.9	3.98	Galena	5.0 g
Honey Creek	Complete	27.0	4.4	3.8	10.1	17.2	4.53	PDC	1.6 g
Honey Creek	Complete	27.0	6.6	5.8	7.7	18.2	3.14	PDC	2.0 g
Durst	Complete	30.1	7.0	7.0	9.8	16.0	2.29	PDC	3.0 g

Table 3: The measurements of the projectile points recovered during the 2004 Cade3.

2007 Summer Excavation

During the summer of 2007, a summer field crew from University of Wisconsin La Crosse was sent out survey and partially excavate sites on the Cade Archaeological District (see Figure 4). One of the sites that were believed to have archaeological value was the Cade 3 site. Four 2 by 2 meter units were placed about twelve meters west of the trench that was excavated in the summer of 2004 (see Figure 2). (See Appendix B).

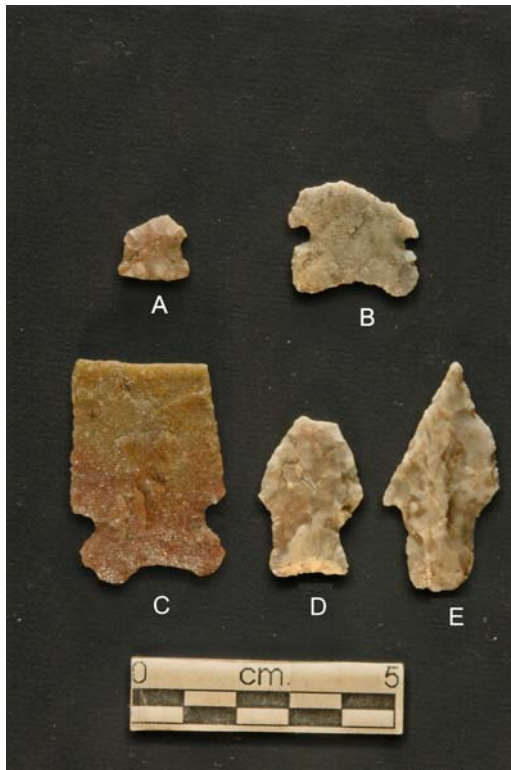


Figure 9: Projectile point recovered from Cade 3 in the summer of 2007. (A) Honey Creek, (B) Modified point into scraper, (C) Raddatz, (D) Durst, (E) Kramer.

The sod was removed by the use of skim shovels and was screened through ¼ inch mesh to recover archaeological material. After the sod was removed the units were excavated in 5 cm arbitrary levels. This was done unless a soil change was detected. Since a lot of the archeological material was located near the surface the units were excavated by the use of trowels and then the

soil was screened through ¼ inch mesh. This site was partially excavated at the end of the field school period, and the average depth that the units reached was around 60 to 70 cm below datum.



Figure 10: 2007 Summer field crew partially excavating Cade 3.

	Portion of		Stem		Width at	Max	W/T		
Type	point	Length	Length	Thickness	Notches	Width	Ratio	Material	Weight
Honey Creek	Base	n/a	5.7	5.7	10.7	11.5	2.02	Burlington	1.0 g
Modified Point	Base	n/a	10.7	5.4	17.7	24.6	4.56	PDC	2.9 g
Durst	Tip broken	n/a	7.8	7.0	11.9	19.0	2.71	PDC	4.0 g
Kramer	Complete	43.3	13.3	7.9	n/a	22.0	2.78	PDC	5.5 g
Raddatz	Base	n/a	10.9	7.6	20.5	29.0	3.82	Hixton	12.8 g

Table 4. Measurements of projectile points from recovered from 2007 Cade 3.

Cade 9 (47Ve625): Survey and Excavation

Cade 9 is located along the northern border of the Cade Archaeological District (see Figure 5). During the summer of 2007 a field school crew from UW- La Crosse was sent out to survey and partially excavate this site. Six 2 by 2 meter units were placed adjacent to one another. The sod was removed from the area and the plow zone was excavated in arbitrary levels

unless a soil color changes was identified. Four features that were identified and excavated at this site.

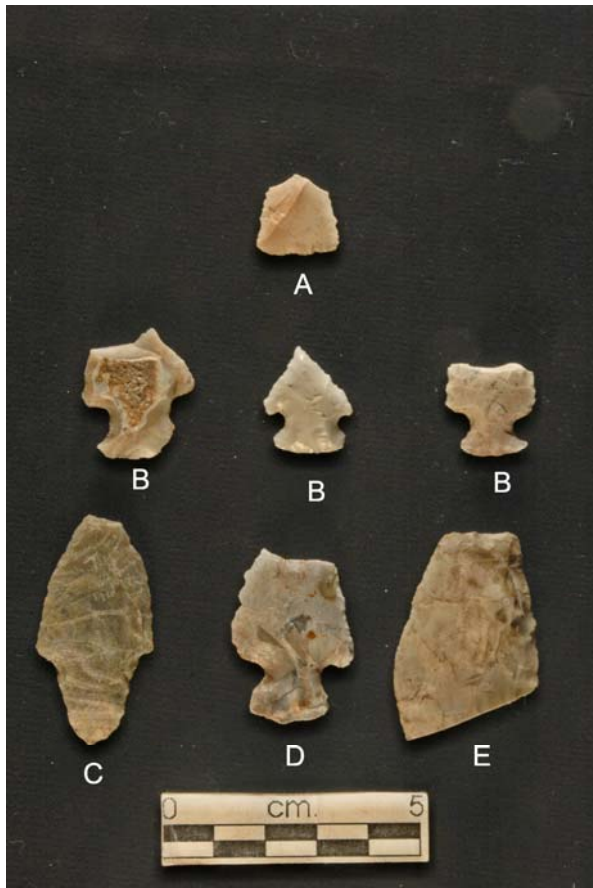


Figure 11: Projectile points recovered from the 2007 Cade 9 excavation. (A) Madison Triangular, (B) Honey Creek, (C) Waubesa Contracting stem, (D) Durst, (E) Agate Basin

Eight projectile points were recovered during this excavation. Four Honey Creek points and three are made out of Prairie du Chein chert. The other Honey Creek point is made out of Galena chert. There is one Madison Triangular point (Boszhardt 2003: 77) which is made of heat-treated Burlington chert. The heat-treatment of Burlington chert causes more fractures in the material if it is fine to fine medium texture (Rick 1978: 26). One point is an Agate Basin point (Goldstein 1998: 20; Ritzenthaler 1967: 19) which is made of Galena chert. There was one Waubesa Contracting Stem point (Ritzenthaler 1967: 27) recovered at this which is made of a

non-local material called Gunflint Silica. One Raddatz point was recovered made of an unidentified material.

	Portion		Stem		Width at	Max	W/T		
Type	of point	Length	Length	Thickness	Notches	Width	Ratio	Material	Weight
Agate Basin	Base	n/a	n/a	8.9	n/a	27.7	3.11	Galena	10.7 g
Durst/Honey Creek	Base	n/a	6.5	7.1	11.0	21.6	3.04	Galena	6.3 g
Raddatz	Base	n/a	n/a	5.3	n/a	20.2	3.81	Unknown	0.8 g
Waubesa	Broken tip	n/a	15.6	6.2	15.6	22.4	3.61	Gunflint Silica	6.3 g
Dust	Base	n/a	8.7	9.7	10.6	23.6	2.43	PDC	2.0 g
Honey Creek	Complete	21.0	5.9	5.5	9.9	16.7	3.04	PDC	1.6 g
Honey Creek	Base	n/a	6.9	6.3	8.0	17.3	2.75	PDC	3.7 g
Madison Triangular	Complete	15.4	n/a	3.5	n/a	15.8	4.51	Ht. Burlington	0.8 g

Table 5: The measurements of points recovered at the 2007 Cade 9 excavation.

Cade 21 (47Ve1308): Surface Collection

Cade 21 is a new site that was surveyed and identified by the 2004 UW-La Crosse field school crew. This site is located southeast of Cade 1 in the western portion of the Cade District (see Figure 5). During the survey of this area the field school recovered quantities of lithic material such as bi-faces, core, and modified flakes in addition to the projectile points.



Figure 12: The projectile points that were recovered from Cade 21 and Cade 22. (A) Raddatz from Cade 22, (B) Drust, (C) Archaic Side-Notched, (D) Waubesa Contracting Stem

There were three points recovered from the Cade 21 site. One was a Waubesa Contracting Stem point made out of Galena chert. An Archaic Side-Notched point (Goldstein 1998: 44) and Durst point (Goldstein 1998: 36; Ritzenthaler 1967: 25) were also recovered, both were made of heat-treated Prairie du Chien chert. These points were either broken across the mid-section or broken near the stem.

	Portion of		Stem		Width at	Max	W/T		
Type	point	Length	Length	Thickness	Notches	Width	Ratio	Material	Weight
Waubesa	Base	n/a	4.6	8.7		25.2	2.90	Galena	8.9 g
Durst	Base	n/a	13	5.2	9.7	16.1	3.10	Ht. PDC	1.9 g
Archaic Side-Notch	Base	n/a	14.2	9.2	17.5	27.7	3.01	Ht. PDC	10.7 g

Table 6: The measurements of the projectile points recovered from Cade 21.

Cade 22 (47Ve1309): Surface Collection

Cade 22 is located western boarder of the western part of the Cade District between Cade 1 and Cade 2 (see Figure 5). This area was surveyed identified as a site during the summer of

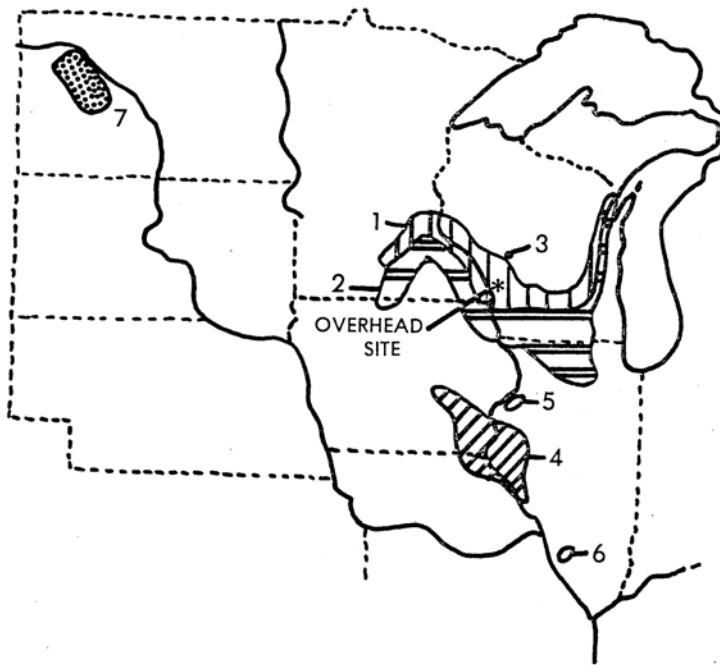
2004 by the UW-La Crosse field school crew. The survey of the area recovered a few bifaces, platform cores, and a lot of lithic debris. One projectile point were recovered and is identified as a Raddatz point. This point is made out of heat-treated Prairie du Chien chert. This point has an impact fracture which could suggest that this point could have gotten damaged during use when it hit something hard that fractured the tip, making it useless as a projectile point.

	Portion of		Stem		Width at	Max	W/T		
Type	point	Length	Length	Thickness	Notches	Width	Ratio	Material	Weight
Raddatz	Tip Broken	39	12	10.3	20.7	26.0	2.52	Ht. PDC	10.2 g

Table 7: The measurements of the projectile point recovered from Cade 22.

Raw Material Analysis

Most of the lithic material recovered during the excavations of 2004 and 2007 represents primary flakes and non heat-treated Prairie du Chien chert. The Prairie du Chien can found in southern and south-west Wisconsin. Prairie du Chien chert is found in the states that boarder Wisconsin such as Minnesota, Illinois, and Iowa. This is closely followed by Prairie du Chien chert that has been heat-treated. Heat-treating this material gives a glossy texture with a reddish, pinkish, or grayish pink tint (Morrow 1988:15; Gonsior 1992). This material is often found in bedrock outcrops that are found along the rivers.



MAP 1. Map of the Midwest illustrating the approximate distributions of represented lithic materials.

1. Prairie du Chien Group (Ordovician)
2. Galena Group (Ordovician)
3. Hixton quarry, silicified sandstone (Cambrian)
4. Burlington/Keokuk Formations (Mississippian)
5. Moline chert (Pennsylvanian)
6. Cobden flint (Mississippian)
7. Knife River flint (Eocene)

Figure 13: Map from Toby Marrow overhead.

Another type of lithic material is often found in Wisconsin is Hixton Silicified Sandstone. This quarry Silver Mound located in Jackson County is a major well known site for the material. The heat-treatment of this material causes weakening of the chalcedony and opal cement encasing of the sand grains (Morrow 1988: 15; Gonsior 1992). This means that the heat-treating Silicified Sandstone makes it too brittle to flake produce a tool. According to Morrow this material unheated is often white, pale, orangish, brown, and light brown are the most common colors.

Burlington chert is found in southern Wisconsin and Illinois. This material is white to brownish-gray, and the heat-treated has a reddish tint to the material (Rick 1978: 20, 26). This is an example of an exotic material found at the Cade 3 and Cade 9 sites. There are four factors affecting heat fracture rate are color, texture, thickness, and rate of temperature increased (Rick 1978: 27; Gonsior 1992). This could account for the number of tertiary and secondary flakes compared to the number of primary flakes.

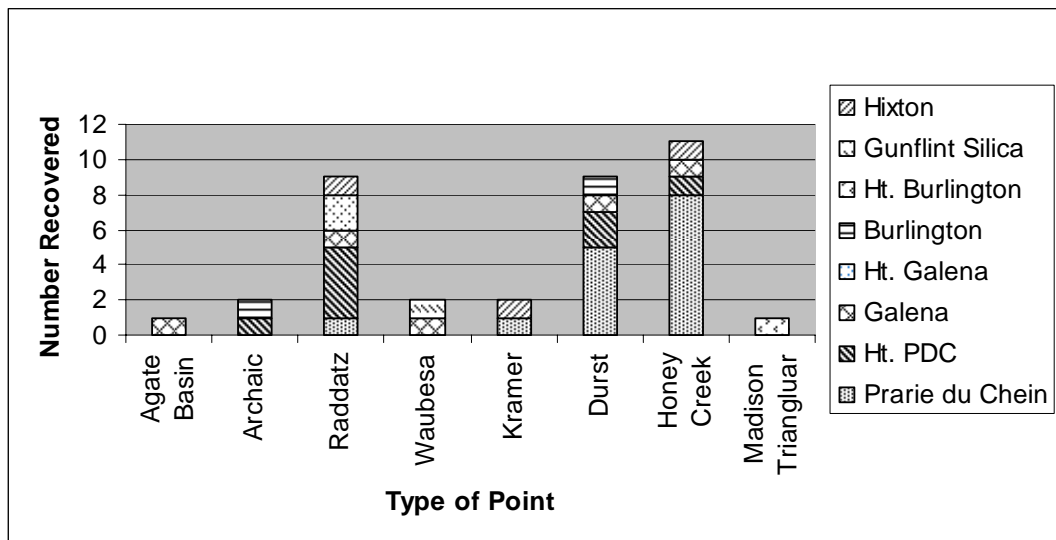
The other lithic material that was recovered from this the Cade district sites is Galena chert. This lithic material is found throughout the southern portion of Wisconsin and boarding states. Galena chert can be extremely plentiful in loess covered lag deposits in Fillmore County, Minnesota especially where veins are evident (Gonsior 1992: 2). This material is typically light gray to pale grayish brown in color, and when heat treated, it turns a pale red, reddish, reddish brown in color (Morrow 1988: 17). This material was the least common exotic lithic material recovered at this site compared in the Burlington and Hixton Silicified Sand Stone. Once the natives would have found a deposit or vein of this material they probably gathered as much as they could.

Results

Projectile Points

The Raddatz points indicate the study sites were occupied during Middle to Late Archaic period, 5000 to 3500 B.P. Since many of the projectile points are broken or have impact fractures this suggests that these points are discards from re-tooling activities at the site. Also there were no features identified during the excavation of Cade 3 during the summers of 2004 and 2007.

There seems to be evidence of two other periods of occupation at this site. This is shown by the number of Durst-Stemmed points recovered at the site which are dated to around 3000 B.P. A few pieces of Grit Temper pottery was recovered during the 2007 summer excavation of Cade 3. This suggests that natives were occupying this site in Early Woodland times. There is a high number of Honey Creek points found at several sites meaning Late Woodland occupation is present. This would mean that the previous occupants were manufacturing, using, and depositing projectile points at this site that may represent the first arrow point in the region.



Graph 1: Projectile Point recovered from Cade 3 and Surface Collections

The graphs describe the archaeological materials that were recovered during the excavations. The Graphs describe each level separately. The abbreviations in the graphs are as follows:

PDC = Prairie du Chien chert

SS = Silicified Sandstone

Gal = Galena chert

Bur = Burlington chert

N.I. = Not Identified lithic material

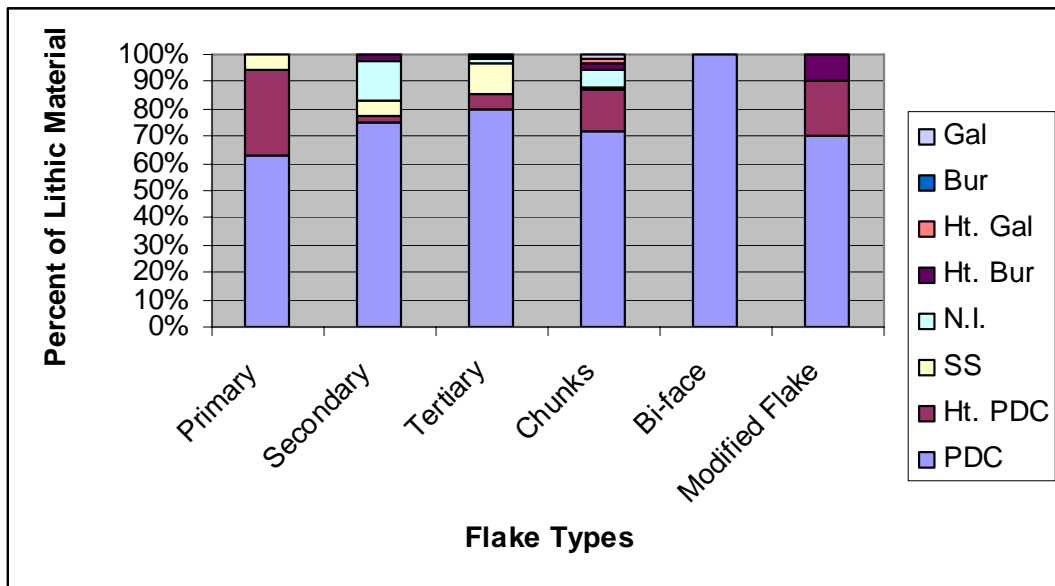
Ht. = Heat-Treated lithic material

According to the Mississippi Valley Archaeology Center cataloguing guide bifaces are pieces of raw material that has flakes removed from both sides. These bifaces are worked down into tools and projectile points. “Flakes are distinct from naturally broken raw material as they have a bulb of percussion, a striking platform, and a smooth, flat ventral surface.”(MVAC: 2002). These flakes are then classified as primary, secondary, and tertiary. These flakes are removed from larger piece of raw material known as cores. Primary have mostly all cortex present, secondary are smaller with less cortex, tertiary have no cortex, and chunks have no bulbs of percussion. (MVAC: 2002). According to the cataloguing guide modified flakes are flakes that have been pressured flaked into tools and known as retouched or utilized.

Lithic Material:

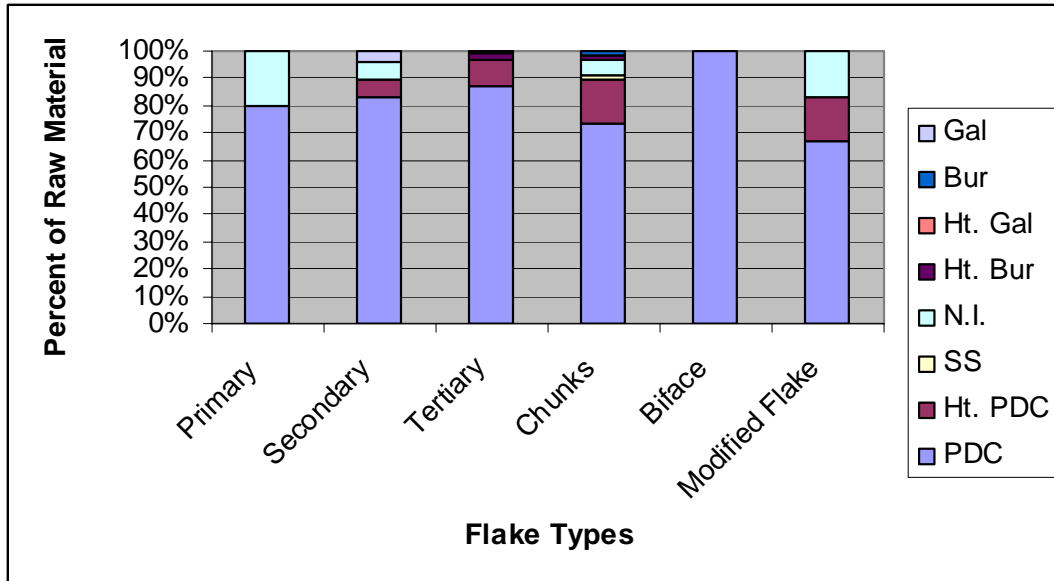
About seventy percent of the lithic material recovered from Cade 3 was of Prairie du Chien chert followed closely by heat-treated Prairie du Chien chert. Heat-treating involves baking the stones to temperatures between 400 and 800 degrees Fahrenheit, when the chemical compound and crystalline character are altered (Theler and Boszhardt 2003:24). According to

Graph 2 the previous occupants preferred Prairie du Chien chert for their bifaces and modified flakes. Over a thousand pieces of lithic material was recovered from this level and about ten percent was heat-treated (see Graph 2). The large amount of lithics could be due to this level being within the plow zone.



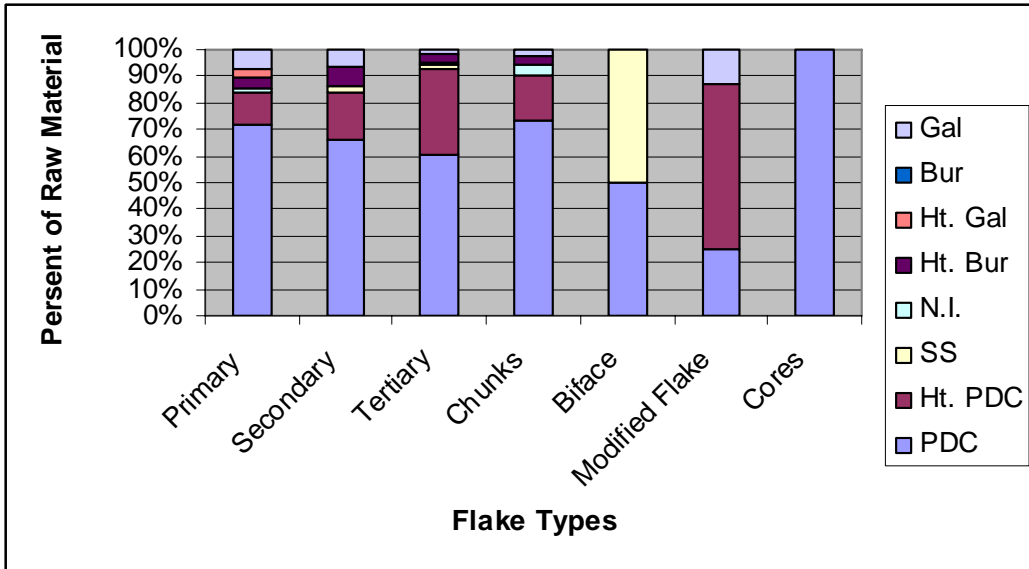
Graph 2: Lithic Material recovered from Cade 3 (0-15 cmbd).

The next level of soil is 15 to 20 centimeters below datum. This lithic material is from both 2004 and 2007 excavations. This level shows use of Prairie du Chien chert more than the previous level with about 80 percent (see Graph 3). According to Graph 3 the previous occupants are still producing bifaces out of Prairie du Chien chert rather than any of the other raw materials. Heat-treating the material still seems to be common with evidences of modified flakes. The lithic concentration drops by half with about four hundred lithic specimens recovered and of that four hundred only thirteen percent is heat-treated material.



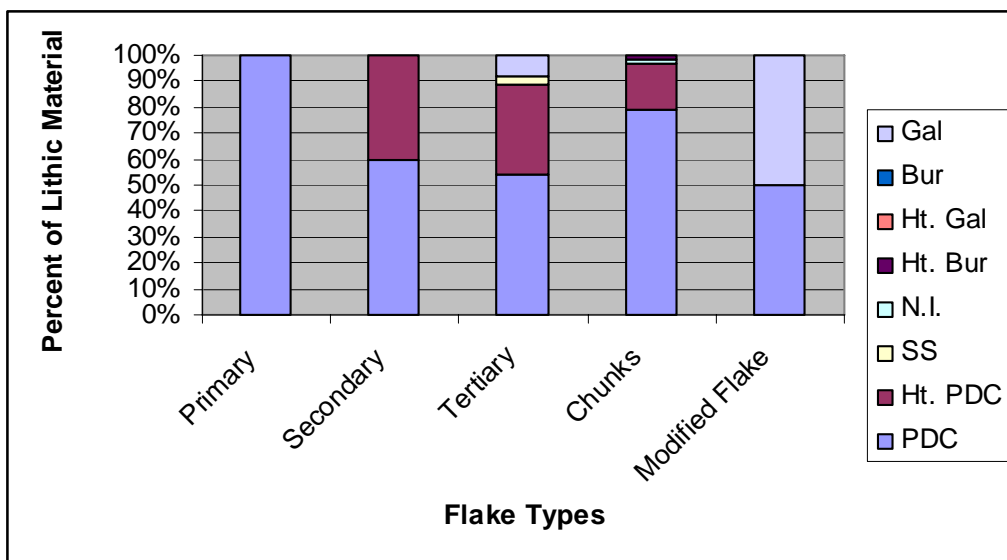
Graph 3: Lithic Material recovered from Cade 3 (15-25 cmbd)

The next level of soil is 25 to 35 centimeters below datum. This level of soil is from the 2007 excavation of Cade 3 and the last level of the 2003 excavation of Cade 3. Prairie du Chien chert is still the most common raw material used, but there seems to be an increase in the use of other raw lithic material (see Graph 4). Graph 4 reveals that bifaces are made of Prairie du Chien and Hixton Silicified Sandstone. During this period the previous occupants seem to have become interested in Galena chert. They apparently found a vein of this material, and extracted the chert exposed veins in area regionally. (Gonsior 1992: 2). There is an increase in the amount of heat-treated Prairie du Chien chert being used based on modified flakes and recovered in lithic debris. There was five hundred lithic items recovered from this level and twenty-five percent were heat-treated.



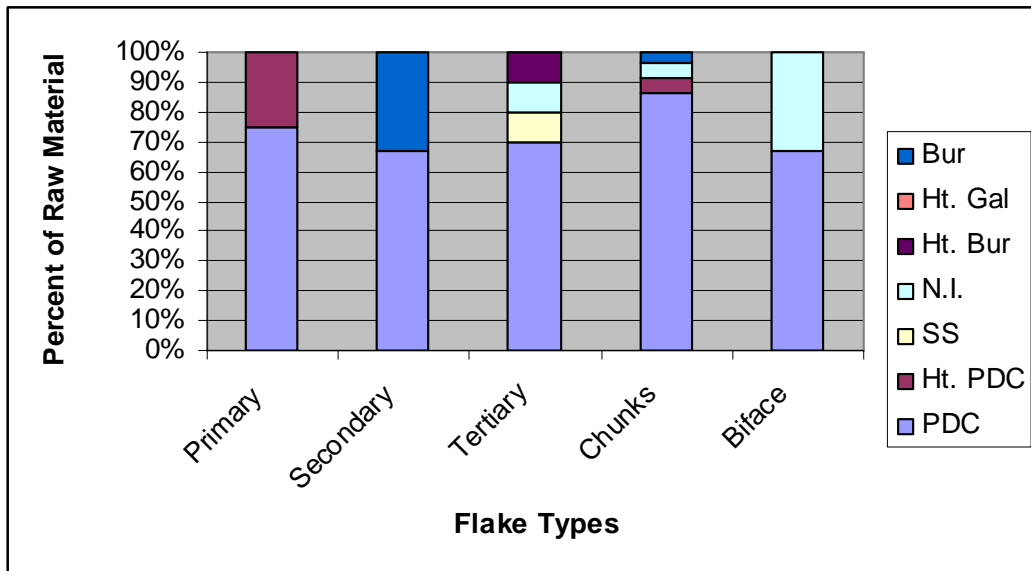
Graph 4: Lithic material recovered from Cade 3 (25-35 cmbd)

The next level is thirty-five to forty-five centimeters below datum. The lithic material recovered from this level was from the 2007 excavation. Graph 5 in this level the previous occupants preferred more heat-treated Prairie du Chien than non heat-treated Prairie du Chien. They also seem interested in using Galena as another type of raw material. There was only one hundred forty-six lithic items recovered from this level and twenty-one present was heat-treated (see Graph 5).



Graph 5: Lithic material recovered from Cade 3 (35-45 cmbd).

The last level is forty-five to seventy centimeters below datum, the last levels of soil that was excavated during the summer of 2007. Graph 6 this level the previous occupants preferred to use Prairie du Chien chert rather than any other type. About seventy percent of the lithic material recovered was Prairie du Chien. There does not seem to be a strong interest in heat-treating the raw material as in the previous levels. Only eighty lithic materials were recovered from this level and six percent was heat-treated (see Graph 6).



Graph 6: Lithic material recovered from Cade 3 (45-70 cmbd).

Conclusions

The analysis the projectile points and lithic material from the Cade 3 site will be made from local Prairie du Chien chert (PDC) with a few examples of non-local materials. Since there is a lot of lithic material and multiple projectile points recovered at this site, the former inhabitants might have used this area for manufacturing projectile points, retooling weapons or knives, and other lithic tools. Based on the projectile point types there seems to be three periods of occupation. Once during the Middle-Late Archaic which is 6000 B.C. through 1000 B.C. and when the occupants were hunting deer and began building Burial mounds (Goldstein 1998: 10). Early Woodland is, 1000 to 300 B.C., is identified by the first type of Wisconsin pottery, Kramer and Waubesa Contracting stem points (Goldstein 1998: 11). Late Woodland, is A.D. 600 – 1100, and is also known as the Effigy Mound Culture in this region (Goldstein 2003: 11). The Early Woodland period is based on the pottery sherds recovered that are grit tempered and not shell tempered.

For my results on the lithic raw material there seems to be two periods of more heavy use periods. The first is fifteen centimeters below datum, and the second twenty-five to thirty-five centimeters below datum. Each level showed that Prairie du Chien chert was the most common used lithic material ranging from seventy to eighty percent of the sample. During the second period of occupation there seems to be an increase in the use of heat-treating lithic raw material. In the earlier levels the natives seem to be interested in using non-local lithic material such as Galena and Burlington chert. This could be due to people moving into this area and bringing what ever material that they were using. More analysis and work on the Cade Archaeological District is called for to get a better understanding of the occupations.

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I would like to thank Jim Theler for opportunity to work on the Cade3 site and his advising with the paper. I would also like to thank Dr. Joe Tiffany for proofing-reading and advising on this thesis. I would like to thank Loren and Margaret Cade for their hospitality during the excavations on and adjacent to their property during the summers of 2004 and 2007. Ernie Boszhardt, Vicki Twinde-Javner, Jean Dowiasch, Mike Bednarchuk, and Chris Driver are thanked for their help and support.

Appendix A

The tables and data describe the archaeological materials that were recovered during the excavation. The tables describe each unit by level separately. The abbreviations in the tables are as follows:

PDC = Prairie du Chien chert

SS = Silicified Sandstone

Gal = Galena chert

Bur = Burlington chert

N.I. = Not Identified lithic material

Ht. = Heat-Treated lithic material

Unit 1

Level 1 (0-5 cmbd)

Artifact	Amount	Raw Material
Primary	1	PDC
Secondary	1	PDC
Tertiary	33	31 PDC, 2 N.I.

Level 2 (15-25 cmbd)

Artifact	Amount	Raw Material
Miscellaneous bi-face	1	PDC
Secondary	3	PDC
Tertiary	9	PDC

Level 3 (25-33 cmbd)

Artifact	Amount	Notes
Grit Temper Pottery	1	Undecorated body sherd

Unit 2

Level 1 (0-5 cmbd)

Artifact	Amount	Raw Material
Modified Flake Retouched	1	PDC
Primary	1	PDC
Secondary	12	1 PDC, 11 N.I.
Tertiary	24	23 PDC, 1 N.I.
Chuck/Shatter	3	N.I.

Level 2 (15-25 cmbd)

Artifact	Amount	Raw Material
Miscellaneous bi-face	1	PDC
Modified Flake Retouched	1	N.I.
Tertiary	5	PDC
Chunks/Shatter	4	1 PDC, 3 N.I.

Unit 3

Level 2 (10-20 cmbd)

Artifact	Amount	Raw Material
Secondary	1	PDC
Tertiary	7	PDC
Chucks/Shatter	2	PDC

Unit 4

Level 1 (0-40 cmbd)

Artifact	Amount	Raw Material
Tertiary	2	PDC

Unit 5

Level 1 (0-5cmbd)

Artifact	Amount	Raw Material
Secondary	6	PDC
Tertiary	18	PDC

Level 2 (15-25 cmbd)

Artifact	Amount	Raw Material
Stage III Bi-face	1	PDC
Secondary	2	PDC
Tertiary	4	PDC

Unit 6**Level 1 (0-5 cmbd)**

Artifact	Amount	Raw Material
Secondary	1	PDC
Chuck/Shatter	2	PDC

Level 2 (15-53 cmbd)

Artifact	Amount	Raw Material
Tertiary	2	PDC

Unit 9 and 10**Unit 9, Level 1 (0-10 cmbd)**

Artifact	Amount	Raw Material
Primary	1	PDC
Secondary	15	1 SS, 13 PDC, 1 N.I.
Tertiary	81	59 PDC, 22 SS
Chunk/Shatter	46	39 PDC, 2 SS, 5 N.I.

Unit 9 and 10, Level 1 (0-10 cmbd)

Artifact	Amount	Raw Material
Primary	2	PDC
Secondary	22	PDC
Tertiary	160	138 PDC, 20 SS, 2 N.I.
Chuck/Shatter	4	3 PDC, 1 N.I.

Unit 9 and 10, Level 2 (10-20 cmbd)

Artifact	Amount	Raw Material
Secondary	1	PDC
Tertiary	43	
Chunk/Shatter	3	

Unit 11

Level 1 (0-10 cmbd)

Artifact	Amount	Raw Material
Secondary	1	PDC
Tertiary	43	41 PDC, 2 SS
Chuck/Shatter	3	PDC

Level 2 (10-20 cmbd)

Artifact	Amount	Raw Material
Stage III Bi-face	1	PDC
Primary	1	PDC
Secondary	16	13 PDC, 3 N.I.
Tertiary	34	PDC
Chunks/Shatter	1	PDC

Level 3 (20-30 cmbd)

Artifact	Amount	Raw Material
Secondary	1	PDC
Tertiary	5	PDC
Chunk/Shatter	4	3 PDC, 1 SS

Level 4 (30-40 cmbd)

Artifact	Amount	Raw Material
Tertiary	2	PDC

Unit 15

Level 1 (0-10 cmbd)

Artifact	Amount	Raw Material
Tertiary	11	PDC

Level 2 (10-20 cmbd)

Artifact	Amount	Raw Material
Miscellaneous bi-face	1	PDC
Secondary	3	PDC
Tertiary	29	PDC

Level 3 (20-30 cmbd)

Artifact	Amount	Raw Material
Primary	4	PDC
Secondary	5	PDC
Tertiary	36	26 PDC, 10 Ht. PDC

Level 4 (30-40 cmbd)

Artifact	Amount	Raw Material
End Scraper	1	Ht. Gal
Primary	5	PDC
Secondary	7	PDC
Tertiary	64	63 PDC, 1 N.I.
Chunks/Shatter	8	PDC

Level 5 (40-50 cmbd)

Artifact	Amount	Raw Material
Tertiary	8	7 PDC, 1 SS
Grit Tempered Pottery	3	Undecorated body sherds

Unit 16**Level 1 (0-19 cmbd)**

Artifact	Amount	Raw Material
Miscellaneous bi-face	1	PDC
Secondary	5	PDC
Tertiary	54	53 PDC, 1N.I.
Chuck/Shatter	6	PDC
Grit Temper Pottery	2	Undecorated body sherds

Level 2 (19-29 cmbd)

Artifact	Amount	Raw Material
Modified flakes retouched	2	PDC
Platform core	1	PDC
Secondary	15	PDC
Tertiary	122	103 PDC, 1 Gal, 18 SS
Chunks/Shatter	4	3 PDC, 1 N.I.

Unit 17

Level 1 (0-10 cmbd)

Artifact	Amount	Raw Material
Miscellaneous bi-face	1	PDC
Platform cores	2	PDC
Secondary	12	11 PDC, 1 SS
Tertiary	235	154 PDC, 33 Ht. PDC, 38 SS, 3 Gal, 1 Bur, 4 Grand Medow, 2 N.I.

Appendix B

The tables and data describe the archaeological materials that were recovered during the excavation. The tables describe each unit by level separately. The abbreviations in the tables are as follows:

PDC = Prairie du Chien chert

SS = Silicified Sandstone

Gal = Galena chert

Bur = Burlington chert

N.I. = Not Identified lithic material

Ht. = Heat-Treated lithic material

Unit 20

Level 1 (0-15 cmbd)

Artifact	Amount	Raw Material
Projectile Point	1	Modified point Base PDC
Miscellaneous bi-face	1	PDC
Modified Flakes Retouched	2	PDC
Secondary	5	3 PDC, 1 SS, 1 Ht. Bur
Tertiary	11	6 PDC, 3 Ht. PDC, 2 Gal
Chuck/Shatter	80	53 PDC, 14 Ht. PDC, 4 Ht. Bur, 3 Ht. Gal, 4 Gal, 2 N.I.

Level 2 (15-20 cmbd)

Artifact	Amount	Raw Material
Tertiary	3	1 PDC, 2 Ht. PDC
Chuck/Shatter	19	13 PDC, 4 Ht. PDC, 1 Ht. Bur, 1 N.I.

Level 3 20-25 cmbd)

Artifact	Amount	Raw Material
Secondary	3	1 Ht. PDC, 2 Gal
Tertiary	5	3 PDC, 1 Gal, 1 Ht. Bur
Chunk/Shatter	30	19 PDC, 7 Ht. PDC, 1 SS, 2 Ht. Bur, 1 N.I.

Level 4 (25-30 cmbd)

Artifact	Amount	Raw Material
Miscellaneous bi-face	2	1 SS, 1 PDC
Secondary	4	3 PDC, 1 Ht. Bur
Tertiary	13	9 PDC, 3 Ht. PDC, 1 Gal
Chuck/Shatter	59	48 PDC, 5 Ht. PDC, 5 Ht. Bur, 1 Gal
Rocks	7	Fire Cracked Rock

Level 5 (30-35 cmbd)

Artifact	Amount	Raw Material
Honey Creek	1	PDC
Primary	2	1 Ht. Gal, 1 Gal
Secondary	12	7 PDC, 4 Ht. PDC, 2 Gal
Tertiary	13	9 PDC, 3 Ht. PDC, 1 Gal
Chuck/Shatter	66	45 PDC, 12 Ht. PDC, 4 Gal, 5 N.I.
Pottery	3	3 Decorated Grit Temper Body,

Level 6 (35-40 cmbd)

Artifact	Amount	Raw Material
Modified Flake Retouched	2	1 PDC, 1 Gal
Primary	3	PDC
Tertiary	11	6 PDC, 3 Ht. PDC, 2 Gal
Chuck/Shatter	42	37 PDC, 5 Ht. PDC
Rocks	5	Fire Cracked Rock

Level 7 (40-45 cmbd)

Artifact	Amount	Raw Material
Modified Flake Retouched	2	1 PDC, 1 Gal
Tertiary	3	2 PDC, 1 Ht. PDC
Chunk/Shatter	13	PDC

Level 8 (45-50 cmbd)

Artifact	Amount	Raw Material
Secondary	2	1 PDC, 1 Bur
Tertiary	3	2 PDC, 1 N.I.
Chunk/Shatter	12	11 PDC, 1 Ht. PDC
Pottery	1	Undecorated Grit Temper Body

Level 9 50-60 cmbd)

Artifact	Amount	Raw Material
Tertiary	3	2 PDC, 1 SS
Chunk/Shatter	8	7 PDC, 1 Bur

Unit 21**Level 1 (0-15 cmbd)**

Artifact	Amount	Raw Material
Modified Flake Retouched	5	4 PDC, 1 Ht. Bur
Primary	9	5 PDC, 3 Ht. PDC, 1 SS
Secondary	8	PDC
Tertiary	15	12 PDC, 2 Ht. Bur, 1 Ht. Gal
Chunk/Shatter	48	40 PDC, 5 Ht. PDC, 1 Ht. Bur, 1 Ht. Gal, 1 N.I.

Level 2 (15-20 cmbd)

Artifact	Amount	Raw Material
Modified Flake Retouched	4	PDC
Primary	2	PDC
Secondary	4	3 PDC, 1 Ht. PDC
Tertiary	7	6 PDC, 1 Ht. Bur
Chunk/Shatter	26	21 PDC, 5 Ht. PDC

Level 3 (20-25 cmbd)

Artifact	Amount	Raw Material
Modified Flake Retouched	1	Ht. PDC
Primary	2	N.I.
Tertiary	10	8 PDC, 1 Ht. PDC, 1 Ht. Bur
Chunk/Shatter	36	27 PDC, 4 Ht. PDC, 2 Bur, 1 SS, 2 N.I.

Level 4 (25-30 cmbd)

Artifact	Amount	Raw Material
Projectile Point	1	Kramer – PDC
Modified Flake Retouched	1	Ht. PDC
Secondary	3	PDC
Tertiary	6	3 PDC, 3 Ht. PDC,
Chunk/Shatter	48	37 PDC, 7 Ht. PDC, 2 Gal, 2 Ht. Bur
Pottery	2	Grit Temper Body sherds

Level 5 (30-35 cmbd)

Artifact	Amount	Raw Material
Modified Flake Retouched	4	2 PDC, 2 Ht. PDC
Primary	2	1 Ht. Gal, 1 N.I.
Secondary	5	1 Gal, 1 Ht. Bur, 3 PDC
Tertiary	14	9 PDC, 2 Ht. PDC, 1 SS, 2 Ht. Bur
Chunk/ Shatter	28	23 PDC, 4 Ht. PDC, 1 N.I.

Level 6 (35-40 cmbd)

Artifact	Amount	Raw Material
Tertiary	7	2 PDC, 4 Ht. PDC, 1 SS
Chunk/ Shatter	16	11 PDC, 3 Ht. PDC 2 Ht. Bur

Level 7 (40-45 cmbd)

Artifact	Amount	Raw Material
Chunk/ Shatter	2	Ht. PDC

Level 8 (45-50 cmbd)

Artifact	Amount	Raw Material
Chunk/ Shatter	11	PDC

Level 9 (50-60 cmbd)

Artifact	Amount	Raw Material
Miscellaneous bi-face	2	PDC, N.I.
Chunk/ Shatter		

Level 10 (60-70 cmbd)

Artifact	Amount	Raw Material
Primary	2	PDC
Chunk/ Shatter	7	PDC

Unit 22**Level 3 (20-25 cmbd)**

Artifact	Amount	Raw Material
Primary	3	PDC
Secondary	10	PDC
Tertiary	78	62 PDC, 15 Ht. PDC, 1 Ht. Gal
Chunk/Shatter	7	PDC

Level 5 (30-35 cmbd)

Artifact	Amount	Raw Material
Primary	41	32 PDC, 4 Ht. PDC, 3 Gal, 2 Ht. Bur
Chunk/Shatter	9	7 PDC, 2 Ht. PDC
Pottery	1	Grit Temper Body Sherd

Unit 28**Level 1 (0-20 cmbd)**

Artifact	Amount	Raw Material
Modified Flakes Retouched	2	Ht. PDC
Primary	5	2 PDC, 3 Ht. PDC
Secondary	7	1 Ht. PDC, 3 PDC, 1 SS, 2 Ht. Bur
Tertiary	33	24 PDC, 3 Ht. PDC, 1 SS, 2 Ht. Bur, 1 Gal, 2 N.I.
Chunk/Shatter	84	52 PDC, 23 Ht. PDC, 1 SS, 3 Ht. Bur, 5 N.I.

Level 2(20-25 cmbd)

Artifact	Amount	Raw Material
Miscellaneous bi-face	1	PDC
Primary	2	PDC
Secondary	2	1 PDC, 1 Ht PDC
Tertiary	9	7 PDC, 2 Ht. Bur
Chunk/Shatter	35	28 PDC, 5 Ht. PDC, 1 SS 1 N.I.

Level 3 (25-30 cmbd)

Artifact	Amount	Raw Material
Modified Flakes Retouched	2	Ht. PDC
Primary	5	2 PDC, 3 Ht. PDC
Secondary	7	1 Ht. PDC, 3 PDC, 1 SS, 2 Ht. Bur
Tertiary	33	24 PDC, 3 Ht. PDC, 1 SS, 2 Ht. Bur, 1 Gal, 2 N.I.
Chunk/Shatter	84	52 PDC, 23 Ht. PDC, 1 SS, 3 Ht. Bur, 5 N.I.

Level 4(30-35 cmbd)

Artifact	Amount	Raw Material
Modified Flakes Retouched	1	Gal
Platform Core	2	PDC
Primary	2	PDC
Secondary	7	4 PDC, 3 Ht. PDC
Tertiary	12	6 PDC, 5 Ht. PDC, 1 Gal
Chunk/Shatter	14	13 PDC, 1 N.I.
Pottery	4	Grit Temper Body Sherd

Level 5 (35-40 cmbd)

Artifact	Amount	Raw Material
Projectile Point	1	Raddatz SS
Primary	1	PDC
Secondary	5	3 PDC, 2 Ht. PDC
Tertiary	5	4 PDC, 1 Ht. PDC
Chunk/Shatter	36	26 PDC, 9 Ht. PDC, 1 N.I.

Level 6 (40-45 cmbd)

Artifact	Amount	Raw Material
Chunk/Shatter	19	14 PDC, 4 Ht. PDC, 1 N.I.
Pottery	1	Decorated Grit Temper Body Sherd
Pottery	7	Grit Temper Body Sherd

Level 7 (45-50 cmbd)

Artifact	Amount	Raw Material
Projectile Point	1	Durst Burlington
Primary	1	Ht. PDC
Tertiary	4	3 PDC, 1 Ht. Bur
Chunk/Shatter	15	9 PDC, 2 Ht. PDC, 1 Bur, 3 N.I.
Pottery	1	Grit Tempered

Level 8 (50-60 cmbd)

Artifact	Amount	Raw Material
Chunk/Shatter	1	PDC

Level 9 (60-70 cmbd)

Artifact	Amount	Raw Material
Primary	1	PDC
Secondary	1	PDC
Chunk/Shatter	6	PDC

References

Boszhardt, Robert F.

2003 *A Projectile Points Guide for the Upper Mississippi River Valley*. University of Iowa Press. Iowa City, Iowa.

Goldstein, Lynne G., and Sannie K. Osborn

1998 *A Guide to Common Prehistoric Projectile Points in Wisconsin*. Milwaukee Public Museum. Milwaukee, Wisconsin.

Gonsior, LeRoy

1992 Lithic Material of Southwestern Minnesota. *The Platform: A Publication of Minnesota Knappers Guild (4):(1-4)*.

Mississippi Valley Archaeology Center

2002 *MVAC Manual on Cataloguing Procedures*

Morrow, Toby

1988 *Descriptions of Common Wisconsin Lithics*. Department of Anthropology. University of Wisconsin- Madison.

Rick, John Winfield. *Heat-Altered Cherts of the Lower Illinois Valley*. Northwestern Archaeological Programs: 1978.

Ritzenthaler, Robert

1967 *A Guide to Wisconsin Indian Projectile Point Types*. Milwaukee Public Museum. Milwaukee, Wisconsin: 1967.

Theler James L., and Boszhardt, Robert F.

2003 *Twelve Millennia: Archaeology of the Upper Mississippi River Valley*. University of Iowa Press. Iowa City, Iowa.