Statistic and Visual Patterns within Oneota Pottery

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ABSTRACT

This paper compares statistical and visual patterns represented in decorated Oneota pottery from the La Crosse Locality. The study addresses the question of type definitions based on quantitative measurements of visual attributes versus statistical analysis of these and newly recorded attribute data. The sample used for this analysis is from the Krause site (47Lc41), La Crosse County, Wisconsin. Particular attention was focused on handles, as previous research is lacking in this component of Oneota vessels. Past research has focused on handle attachment location and not on specific attributes of the handles themselves such as length, width, thickness and arc ratio. To provide a broad sample, additional handles were examined from the Olson (47Lc76), Pammel Creek (47Lc61) and Valley View (47Lc34) sites. These villages are the type-sites for a sequence of three Oneota phases at La Crosse. In addition to handles, this study considered rim decoration, decorative design elements and motifs, vessel size, and other vessel attributes from the Krause site assemblage. The compiled data was subject to multi and univariate statistical analysis using SPSS, revealing patterns that suggest typological groupings. These were then compared with the traditional type/phase sequence for this locality.

INTRODUCTION

There has been a wealth of research conducted concerning a group of people known to archaeologist as Oneota, within the Midwestern United States. The Oneota tradition is expressed throughout Michigan, Indiana, Illinois, Missouri, Iowa, Minnesota, Nebraska, and Wisconsin (Overstreet 1997). There are numerous site reports written from these localities and many articles and papers have dealt with various aspects of the Oneota culture. This paper will deal with the Oneota tradition within Wisconsin, specifically the group of Oneota that lived along the middle portion of the Upper Mississippi River Valley during the height of occupation on the La Crosse terrace, about AD 1300-1625. By using this group of Oneota and specifically one village site, the Krause site (47Lc41), within the La Crosse locality, this paper will develop a model for the statistical and visual examination of Oneota pottery in this and other regions.

This paper compares statistical and visual patterns represented in decorated Oneota pottery and addresses the question of type definitions based on quantitative measurements of visual attributes versus statistical analysis of this data. The sample used, as mentioned above, is from the Krause site (47Lc41), La Crosse County, Wisconsin. Part of this paper focused attention on handles, as previous research is lacking in this component of Oneota vessels. Past research has focused on handle attachment location and not on specific attributes of the handles themselves such as length, width, thickness and arc ratio. To provide a broad sample for this expanded research, 10 handles from each of the following sites were examined:

Olson (47Lc76), Pammel Creek (47Lc61) and Valley View (47Lc34). These handles were added to the sample of 44 already obtained from the Krause assemblage. These villages were chosen because they are the type-sites for a sequence of three Oneota phases already in place at La Crosse. In total, 305 decorated rims and/or body sherds were examined and 74 handles. In addition to handles and their attributes, this study considered rim decoration, decorative design elements and motifs, vessel size, and other vessel attributes from the Krause site assemblage. The compiled data was subject to both multivariate and univariate statistical analysis using SPSS, revealing patterns that suggest typological groupings. These were then compared with the traditional type/phase sequence for this locality.

METHODS

Defining Attributes:

The first step in creating a database was to determine pertinent attributes. By examining previous work done at the Mississippi Valley Archaeology Center (Boszhardt 1989 and 1994), a list of attributes was compiled. Additions were made to include potentially useful attributes that had not been previously considered. This list was then compared to the attributes used in pottery analysis of the Diamond Bluff site (Rodell 1997) to look for similarities and overlooked attributes. Two types of attributes were selected: those that are qualitative or visual and those that are quantitative or measurable. The qualitative attributes chosen included: rim decoration and location, body decoration, and handle type and decoration. The quantitative attributes included: rim notching width, rim height, rim angle, approximate vessel radius, approximate percentage of vessel, handle thickness, handle width, outer handle length, outer handle attachment length, and distance of handle attachment below the lip.

Oneota pottery differs from earlier Woodland pottery in that it is characteristically marked by the use of shell temper. Most Oneota vessels are globular or ovate shaped jars. The terms used to describe the various parts of a vessel are represented in figure 1. Most of these vessels are topped with notched rim designs either represented on the interior, exterior, or more commonly on the top of the rim. The rim notching is measured from crest to crest, as can be seen in figure 2. The rim height is measured from the top of the lip to the break of the rim. This measurement is taken from inside the vessel as shown in figure 3. Rim angle is the angle between the lip and the shoulder, as shown in figure 4. It was measured using a protractor. The center point of the protractor was placed where the rim meets the body of the vessel. It is then lined up vertically with the rim. The reading is then taken at the farthest point before the shoulder break. Figure 5 illustrates the measuring of the rim angle. Approximate vessel radius and approximate percentage of vessel give an idea of how large of a vessel the sherd came from. It is hard to measure these attributes precisely because of the globular shape of Oneota vessels. The orifices of most Oneota pottery are of an ovoid shape in comparison to the circular measurements taken for the radius. The method used to obtain vessel radius and percentage of vessel included the use of what Rodell (1997) refers to as a Polar Coordinate Grid. This is not the most accurate method and others such as the Geometric method may be considered as an alternative. Figure 6 shows a rim sherd being measured using the Polar Coordinate Grid.

Handle thickness and width were taken at the center point of the handle to reduce variability caused by fluctuation and taper within handles. Holding a handle in orientation to a vessel, the thickness is measured front to back and the width measured side to side. These measurements are represented in figure 7 and 8 respectively. The outer handle length is a

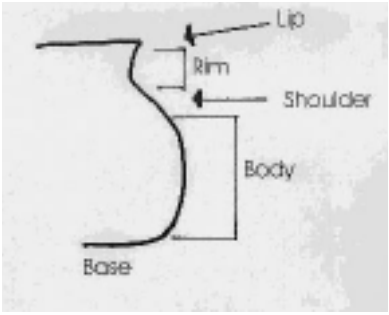


Figure !: Pottery Terms

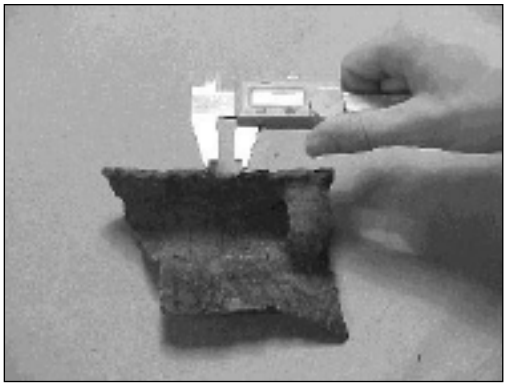


Figure 2: Rim Notch Width

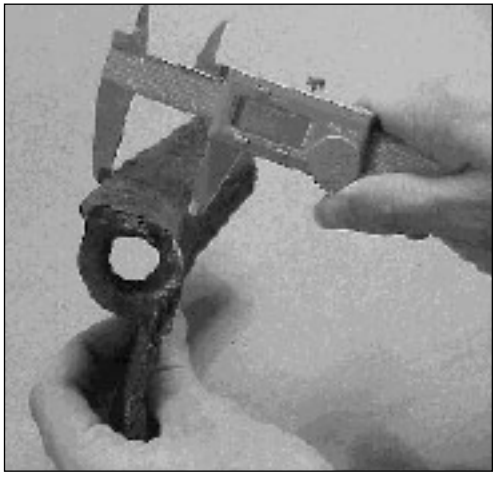


Figure 3: Rim height

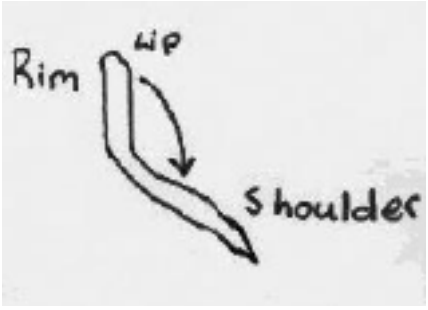


Figure 4: Rim Angle

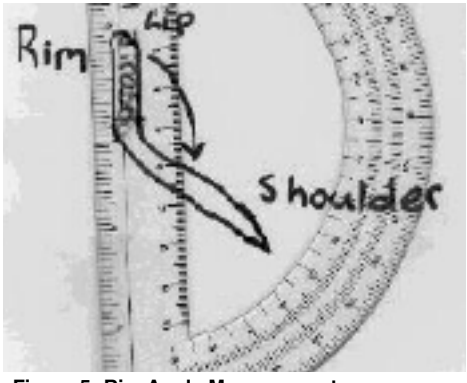


Figure 5: Rim Angle Measurement

flush measurement on how long the handle is while the outer handle attachment length measures the length from point of attachment to point of attachment, figure 9 versus figure 10. The distance of handle attachment below the lip is measured from the lip to the attachment point. This was done with the depth measurement function of a caliper as shown in figure 11. All other, qualitative, attributes were noted visually.

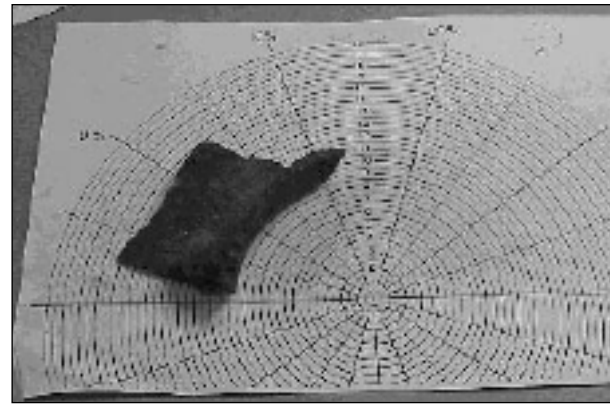


Figure 6: measurements with Polar Coordinate Grid

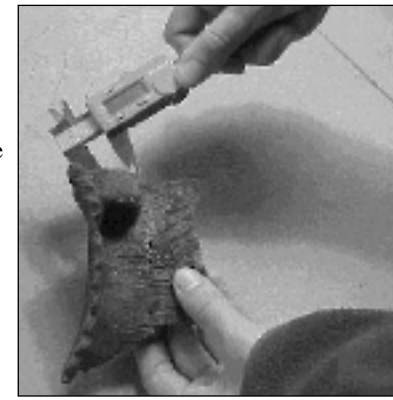


Figure 7: Handle thickness

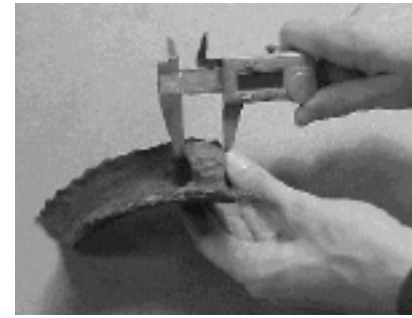


Figure 8: handle width

Database Formation:

Using Microsoft Access, a database program, two tables for the input and analysis of data were created. One included all vessel attributes, while the other included the attributes of handles. The two tables connect not only to each other, but also to other data tables on file at MVAC. This will allow researchers to easily view correlations between different sources of data. Computer databases are easier to make references from than paper files. They give researchers many sources of information at their fingertips. In a matter of minutes correlations can be made not only between different attributes within a set of artifacts, but correlations between different types of artifacts and between sites. Databases allow for easier access into new ideas and new queries of research.

The connecting attribute, used both in this paper and MVAC's collection, is the acquisition number, including the final end number. This allows for the tracing of specific artifacts once in the database. It also allows tracing back from the artifact to the feature/unit, level, and ultimately the site. This keeps the artifacts in context even after they are entered into a computer. It should be noted that databases are not a replacement for paper copies but a tool to look at the information gathered on those paper sources.

Data Collection:

A data collection form was made directly from the database tables. This sheet was used in the actually data collection process and will be stored on file at MVAC and in the author's personal collection. Computer databases are no substitute for actual paper copies. While multiple copies of this database will be on file in multiple locations, it is important that a paper copy is keep as a source of reference. Also sometimes there are notes on the paper forms that are not entered into the database and need to be kept for later study. Appendix A is a copy of the data collection forum, and Appendix B is the description form that goes into detail of how data is to be collected using the form.

All quantitative measurements were taken with a digital caliper with 1/100th accuracy. The only exceptions were rim angle taken with a protractor, vessel radius and percentage of vessel taken with the Polar Coordinate Grid, and outer handle length taken using a string that was marked and laid against the metric-side of a ruler. The outer handle length was only measured to 1/10th accuracy. All measurements were taken in centimeters.

Figure 9: Outer handle length

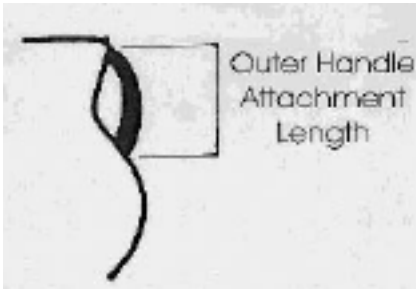


Figure 10: Outer handle attachment length

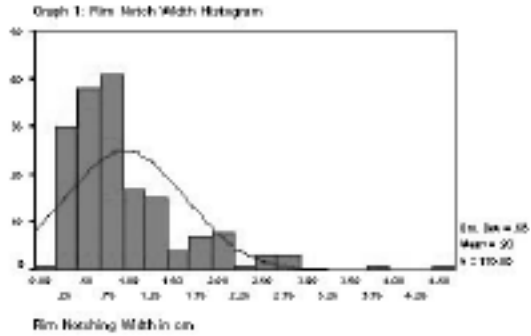
Figure 11: Handle attachment below lip

Analysis of Data:

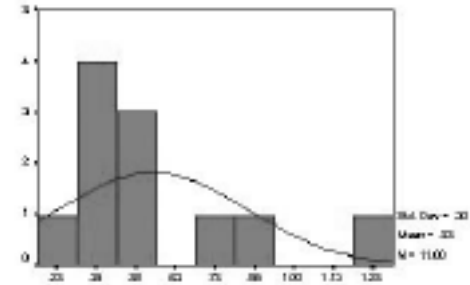
After all of the data was entered into Access, the data was sorted and transferred to Microsoft Excel from which it was converted into SPSS. This is another beneficial feature of the computerized database; it can be easily transferred into different programs and examined in different ways. Using a program like SPSS, statistics are easily obtained on any set of data. Statistics gives archaeology a level of definition that is hard to obtain with just the examination of visual patterns. While it can be stated that human thought process such as the designing that go into pottery decorations can not be fully examined by mathematics or statistics, other patterns such as the functional purposes of vessels can be. This can be seen in the use of length thickness ratios used in the analysis of lithic cores. In that example, mathematical ratios clearly follow the functional stages of core design. Some elements of pottery design also clearly follow this functional correlation; however it is arguable that though human thought is hard to quantify, it does cycle through time. These cycles of thought can be seen expressed in design elements of vessels. It is these cycles of thought that can be examined and expressed statistically, not the individual vessels and designs themselves. Statistics can be a very useful tool in archaeology and should be used more often in papers such as this one.

RESULTS

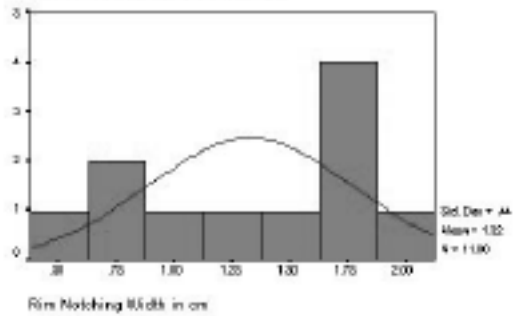
A variety of graphs were composed to view patterns within the sample, the most often used graph was a histogram. A histogram looks like a bar graph, but each bar represents the relative frequency of the axis label. The histogram shows the frequency distribution and is viewed against a bell, or normal, curve. The bell curve shows what the histogram would look like if the frequencies peaked in the middle and evenly decreased on both sides. The number of peaks within a histogram defines the number of modes. A histogram with one peak is said to be unimodal, two peaks bimodal, and more than two multimodal. It is these peaks and the shape of the histogram that offers data on the distribution of the data. This distribution then has to be interpreted as to what it means and why it looks as it does. The other graphs that have been used are the simple bar graph, bar-line graph, scatter plot, and clustered bar graph. These graphs show the distribution of one axis attribute against another.



Graph 2: Rim Notch Width Histogram
Olson Site (47Lc0076)



Graph 3: Rim Notch Width Histogram
Pammel Creek Site (47Lc0061)



The first attribute examined was rim notch width (figure 2). Graph 1 shows that the mean, or average, rim notch is 0.90 cm wide with the range from .25 cm to 2.75cm.

When this is broken down by site, the means are at 0.55 cm, 1.32 cm, and 0.37 cm. Olson, Pammel Creek and Valley View respectively graphs 2-4.

The pattern created by this data is one of medium sized rim notches that get twice as large before shrinking down smaller than they began, and all this is developing relative to time. The Krause site histogram, graph 5, falls right into this pattern as a multi-period site with a mean of 0.93 cm and a range running between 0.25 cm and 2.75 cm.

Attribute two was rim heights (figure 3). The mean, shown in graph 6, is 4.02 cm high, while the range runs from 2.25 cm to 5.75 cm. Looking at rim height over time means of 4.03 cm, 4.30 cm, and 4.45 cm were gathered (graphs 7-9). These graphs show a clear pattern of rim heights getting higher over time. The Krause site again shows the entire range of heights centering around 3.95 cm, graph 10.

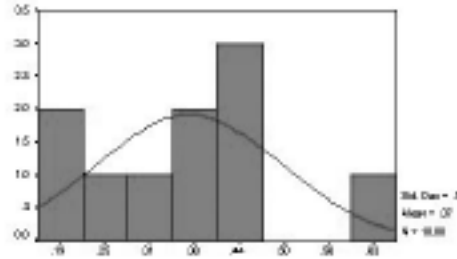
There are three possible types of rim angles: right, obtuse, and acute. Most of the angles are strongly divided between right and obtuse angles, as can be seen in graph 11. This is clearly a distinct design idea that is passed on from generation to generation. It is very different from the straight walled rims of earlier Woodland pottery. Looking at the rim angle histogram for the Krause site, graph 12, the range of angles is quite evident as well as the strong peak between right and obtuse angles.

Motif decoration is present on most Oneota vessels. Very few are undecorated. When motifs are examined as a whole, they constitute a type or style and are defined as such (Boszhardt 1989). In this project, motifs were used singularly. Graph 13 denotes how trail designs are divided over the three type-sites against the Krause assemblage.

Vertical trails are the most common motif, with oblique trails and nested chevrons also being well represented in the Pammel Creek and Valley View phase. It is interesting to note that though vertical and oblique trails are also represented similarly in the Krause assemblage, that the nested chevrons are greatly under represented. This could be a cultural distinction of the Krause people in that they did not use the nested chevrons as often in their pottery making them distinct from their neighbors.

Graph 4: Rim Notch Width Histogram

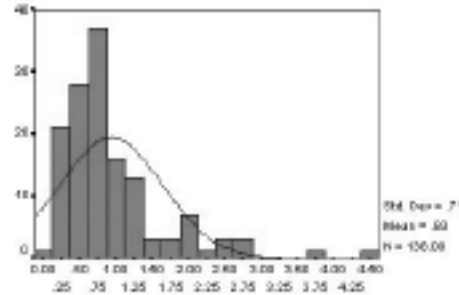
Valley View Site (47Lc0034)



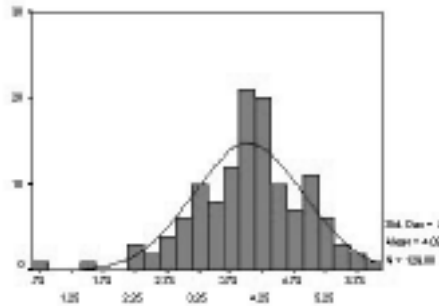
Rim Notching Width in cm

Graph 5: Rim Notch Width Histogram

Krause Site (47LC0041)



Graph 6: Rim Height Histogram

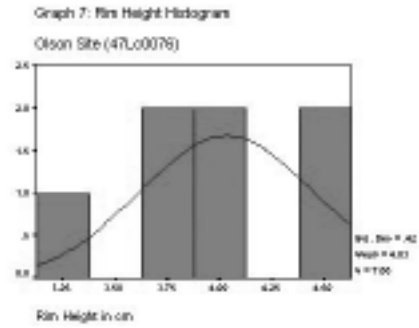


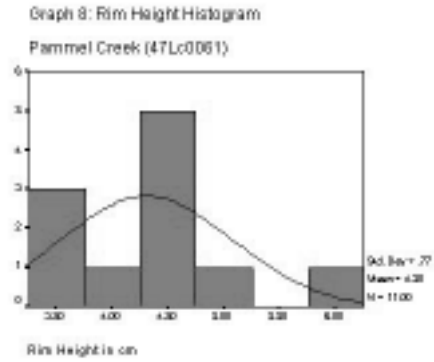
Rim Height in cm

Examining the trails further, it is important to look at their width. Though measurements were not made, trails were visually identified as made with a finger or tool. Future research could be done on actual trail widths and how they change through time. As can be seen in graph 14, trails are more often made with tools; however, there can be quite the variety in

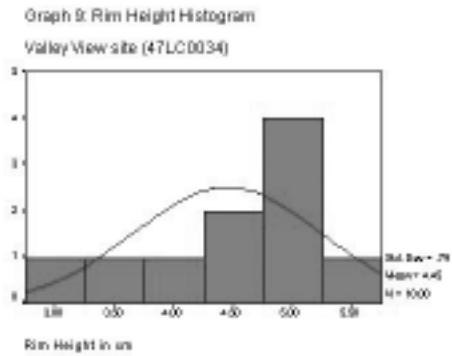
tool width. In this graph, it is important to note that the Olson site has no finger trails. This is concordant with what is known about Brice Prairie pottery designs.

Another design element is the punctate. This element appears as either bordering trail designs or as filled zones between designs. It can either consist of small precise dots or elongated slashes. Graphs 15 and 16 show how punctate design and punctate type are divided between the sites. Punctate design (graph 15) varies over time. In the older sample (Olson and Pammel Creek) punctates are used mostly as a border motif. There is a shift during the Pammel Creek phase to the filled punctate zones. In graph 16, the trend is from the small dot punctate type to the slash type and back to the dot type. Both punctate types are represented almost equally in the Krause assemblage.



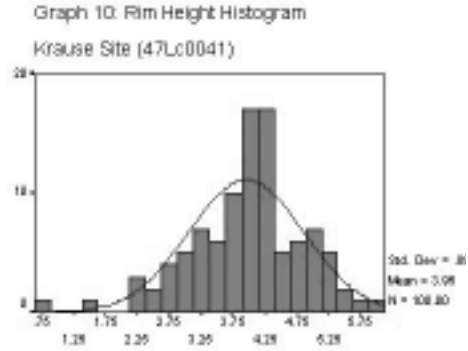


Handles on Oneota vessels seem too small on a whole to be useful, unless rods were placed through them. Also, on a whole, breakage occurs right in the mid-section of the handle showing how weak the structure is. Both of these areas should be looked into for possible reasons why handles were even placed on Oneota vessels. This project looked at the design and decorative use of handles and not at them as utilitarian objects. The first attribute that was examined was the distance the handle was attached below the lip. This attribute has been looked at before by Boszhardt (1994). Handle attachment gets lower and lower below the lip over time, from the Brice Prairie phase with at lip attachments to the Valley View phase with attachments up to 1 cm below the lip. The Krause site histogram, graph 17, shows this entire range. Looking at the Pammel Creek and Valley View histograms, graphs 18 and 19 respectively, the lower attachment can be seen lengthening through time. Though the peaks of these two graphs are very close, with the Pammel Creek actually 0.12 cm larger, the range dips much lower on the Pammel Creek graph showing the shorter distance of the attachments.

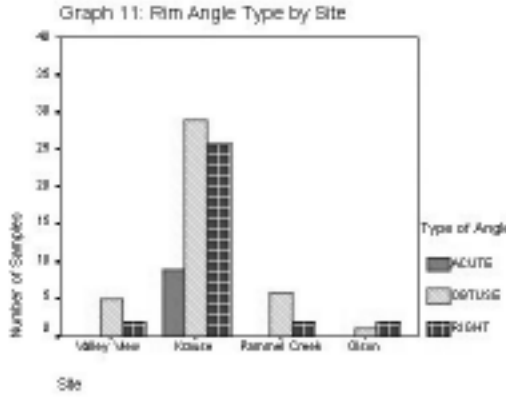


This project was designed to examine some handle attributes that had never been measured and recorded before and list valuable measures to be used in later data collection. The

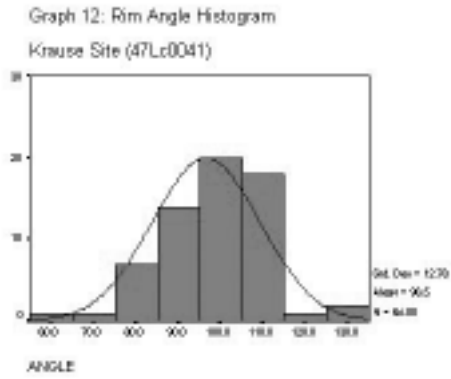
first attribute that will be looked at here is handle thickness. Looking at histograms for each site (Olson graph 20, Pammel Creek graph 21, and Valley View graph 22), handle thickness seems to be similar or even thinner over time. This can be directly seen in the sample as the handles become visually more open through the time phases. The handle thickness data is important because it shows that the handles are not becoming greatly thinner and that some other attribute is causing this 'opening' of the handle orifice.



The next two attributes to be looked at include the handle width and length. Although the size of the handle width varies this has not been looked at in detail to determine any patterns that might result from width variation. The histogram of the entire sample (graph 23) shows how this attribute ranges within about 2 cm, from the smallest to the largest. When the individual sites are looked at (graphs 24, 25, and 26) there are some differences in the peaks of each phase. The overall pattern shows Pammel Creek as a range that includes both extremes and not a stage in the range.



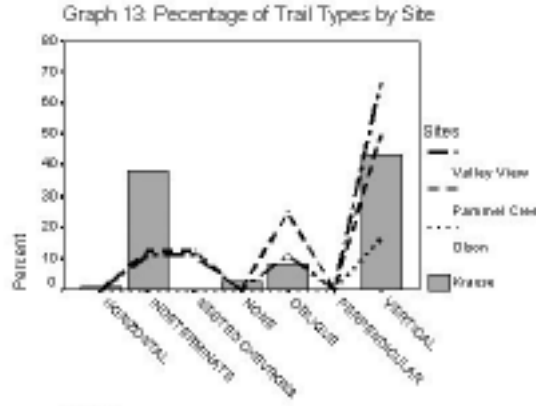
Handle length is similar to the handle thickness, as its measurement would play a factor in determining the size of the handle opening. Handle length does seem to fill this role as handle orifice determiner. Overall handle length, graph 27, shows a strong range, which when looked at over time (graphs 28, 29, and 30) divides into three segments with different peaks. Just like handle width, it is important to note that the Pammel Creek phase extends beyond the later Valley View parameters.

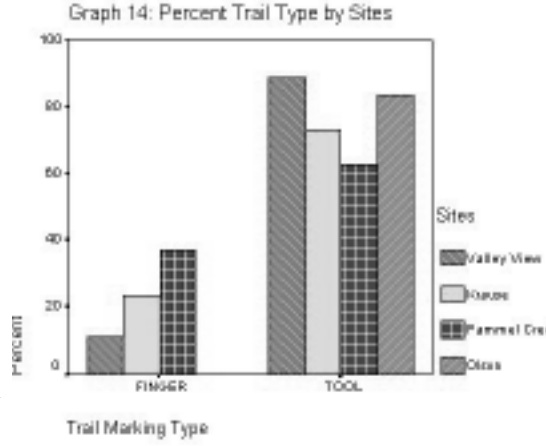


One last attribute ratio was examined to see if it illustrated more precisely what handle thickness and length could not, namely a quantified way to look at the orifice opening and compare it to time. This ratio took the already examined handle length and compared it against an outer attachment length. In theory, this should provide a percent or decimal integer that represents the curve and openness of the handle opening. As can be seen in the scatter plot (graph 31) of these two variables, there is a strong linear slope with an absence of any strong clusters of sites as there would be if the

sites had distinct differences in the handle opening. It is important to note that the Krause site (47Lc41), represented by the asterisk, appears all across the range, as should a multi-phase site.

The histogram of this ratio (graph 32) is exactly as would be expected. It has a small range with one large peak where most of the handles fall. It would be suggested that development of this ratio is not a worthwhile endeavor. The handle length should be used on its own as an adequate source of handle change over time.

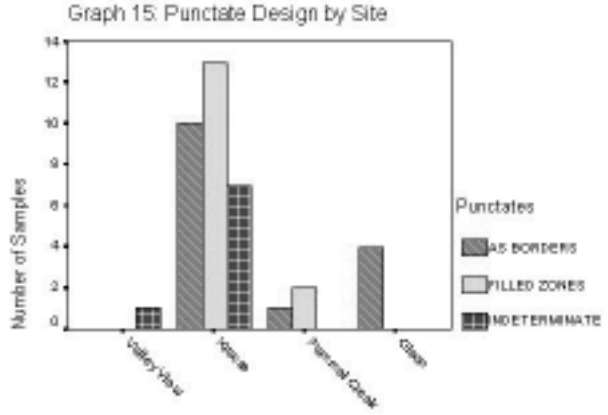




Comparison

Pottery Phases:

Three phases have been defined for the La Crosse area based on specific chronologically sensitive pottery attributes in combination with radiocarbon dates. The attributes used in this past research included: rim decoration, punctate use, and handle attachment. From this the following three phases have been defined: Brice Prairie AD 1300–1400, Pammel Creek AD 1400-1500, and Valley View AD 1500-1625 (Boszhardt 1994). This section summaries these phase definitions before comparing them to recent results.

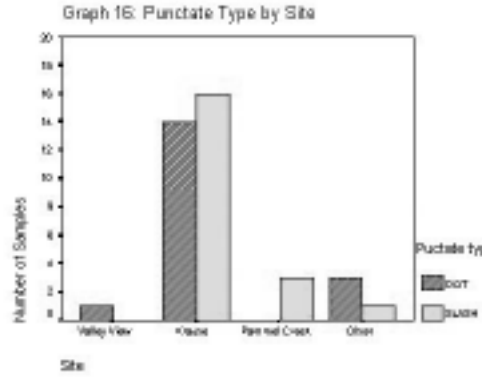


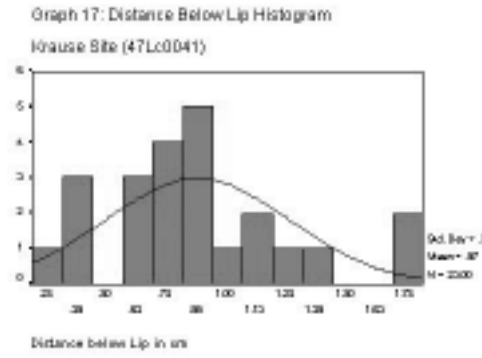
The Brice Prairie phase began around AD 1300 when the Oneota first moved into the La Crosse locality. Brice Prairie pottery has been defined by “inner lip/rim decoration, shoulder motifs that often contain punctate-border elements, and handles (primarily plain loops or narrow straps) that attach at the lip” (Boszhardt 1994:194). Rim heights from this phase nor-

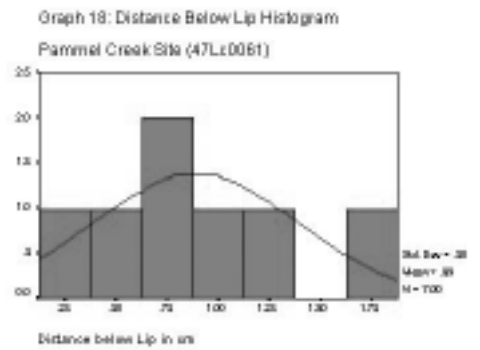
mally range from less than 30 mm to 42 mm at the highest. Boszhardt (1994) noted that rim heights changed over these three phases. Through time the rims heights increased. It has been thought that this could account for a change in handle attachment. Early handles, as seen in the Brice Prairie phase, were attached at the lip but as the rim heights increased they became attached below the lip (Boszhardt 1994).

The distribution of pottery with similar characteristics as Brice Prairie is reflected in many regions. Some of the phases with these similarities are: "Blue Earth Trailed/Blue Earth phase, Correctionville Trailed/Correctionville phase, late Moingoina phase, Burlington phase, Bold Counselor phase, Moccasin Bluff phase, Fisher Trailed and Fifield Trailed/Fisher phase, Langford phase, early Lake Winnebago, and Vulcan" (Boszhardt 1994:197).

Around AD 1400, the La Crosse locality entered a transitional period referred to as the Pammel Creek phase. This phase lasted till about AD 1500 (Boszhardt 1994). Pottery during the Pammel Creek phase showed this transitional nature. Designs specific to the earlier and later phases co-occurred, some on the same vessel. The distinctive characteristic of Pammel Creek pottery was "bold", finger or tool notches wider than 1.25 cm, impressed lip tops. Wide, decorated strap handles were present during this phase and began to be attached below the lip. In keeping with the trend, rim heights ranged from less than 50 mm to 60 mm, an increase from the Brice Prairie phase. It is important to note that plain loop handles were normally attached at the lip, while the newer decorated strap handles were more often attached below the lip. As was stated earlier, this might have to do with the change in rim heights. Punctate-borders continued during this phase but were joined by a new punctate-filled zone design (Boszhardt 1994).

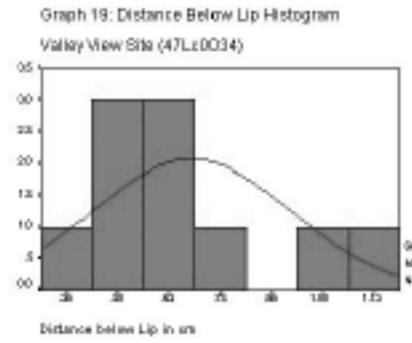




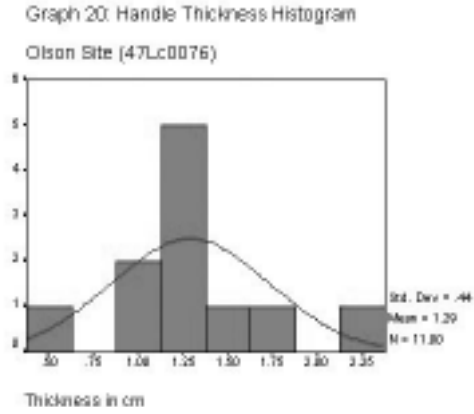


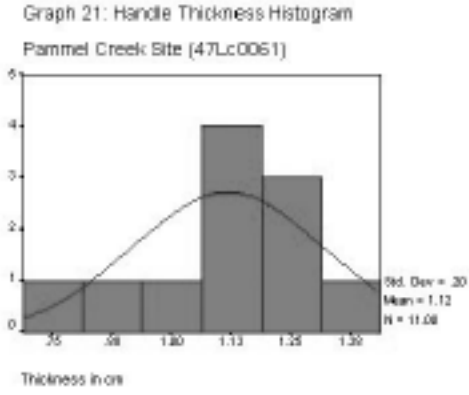
The bold lip impressions were wide spread during this time. Examples have been found at the Grant site on the Upper Iowa River, Kelley site/phase in southeastern Iowa,

McKinney site, Utz site, and at Leary. In eastern Wisconsin, some pottery styles were extremely similar to those of the La Crosse area. Two examples were Koshkonong Bold and Lake Winnebago Trailed. Some imported Lake Winnebago Trailed vessels found in the La Crosse area suggest interaction between eastern Wisconsin Oneota populations and La Crosse during the Pammel Creek phase (Boszhardt 1994).



The Valley View phase was the last phase of Oneota occupation in the La Crosse locality. It started about AD 1500 and continued till about AD 1625 when the Oneota migrated out of the area. Pottery of this period is defined by finer lip top notching less then 1.25 cm. The attachment of wide decorated handles below the lip continued on from the Pammel Creek phase. The rim heights of this phase averaged above 40 mm and extend past 55 mm. During the Valley View period punctate-filled zones replaced the punctate border designs (Boszhardt 1994). Pottery similar to that found in the La Crosse locality was widespread across the Upper Midwest including the areas of southeast Iowa and the Anker site in Chicago (Boszhardt 1994).





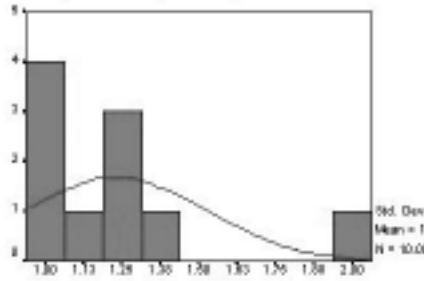
Recent Findings:

Looking at what this study found about the two quantitative attributes Boszhardt (1994) examined and comparing the two, the conclusions match quite well. It is hoped that through this study some more attributes can be added to the list already implemented. The two quantitative attributes previously considered were rim notch width and rim height. Rim heights from the Brice Prairie phase (Olson site) have been recorded as ranging from less than 3.0 cm (30 mm) to 4.2 cm (42 mm) in height (Boszhardt 1994). The histogram for the Olson (graph 7) peaks between 3.25 and 4.5 cm. Rim heights for the Pammel Creek phase have been recorded between 5.0 cm (50 mm) and 6.0 cm (60 mm) (Boszhardt 1994). The histogram for Pammel Creek (graph 8) shows the

rim height ranging between 3.5 cm and 6.0 cm. Finally, the recorded values for the Valley View phase averaged above 4.0 cm (40 mm) and extend past 5.5 cm (55 mm) (Boszhardt 1994). The histogram for the Valley View phase (graph 9) ranges from 3.0 cm to 5.5 cm, with peaks at the 4.50-5.0 cm range. As can be seen the statistically data done is very close to the original ranges and shows similar patterns.

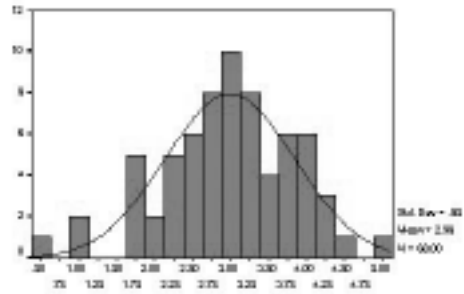
As for rim notch width, no data was ever recorded for the Brice Prairie phase. The histogram for this phase (graph 2) shows the range running between 0.25 cm and 0.88 cm. Measurements were taken for the Pammel Creek and Valley View phases. Pammel Creek consisted of notches wider than 1.25 cm (Boszhardt 1994). The histogram for this phase (graph 3) shows the notching ranging between 0.5 cm and 2.0 cm, with the largest peak at the 1.75 cm width. For the final Valley View phase the recorded data marked it as notching less then 1.25 cm (Boszhardt 1994). The histogram for the Valley View phase (graph 4) shows the range to run from 0.19 cm to 0.63 cm well below the 1.25 cut off. Perhaps the cut off needs to be lowered, further studies would have to be done to determine this.

Graph 22: Handle Thickness Histogram
Valley View Site (47Lc0034)



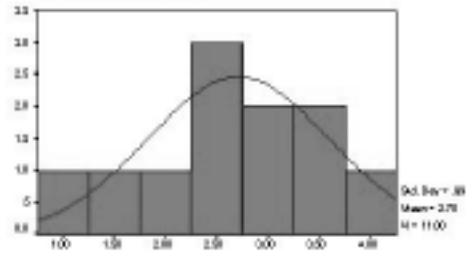
Thickness in cm

Graph 23: Handle Width Histogram



Width in cm

Graph 24: Handle Width Histogram
Olson Site (47Lc0076)



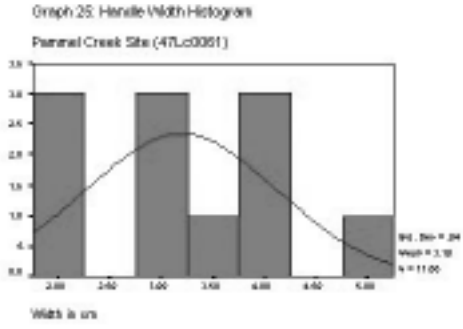
Width is cm

Conclusion

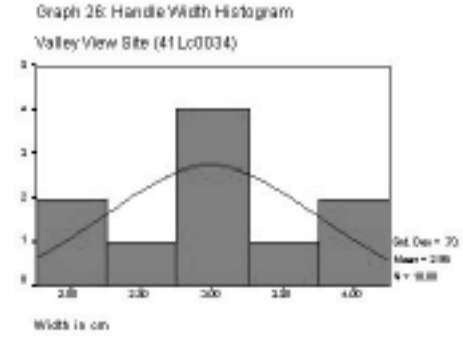
A number of things may be gained from the research presented in this paper. Some of these conclusion apply to the La Crosse locality specifically and others include a much broader scope. Past analysis has presented the Pammel Creek phase as a transitional phase from Brice Prairie to Valley View. Though this is most likely the case, through evidence offered in this paper it seems that Pammel Creek is also something more. The ranges represented in the histograms for Pammel Creek on a whole do not just fill in the gap between earlier and later periods. Instead, their range normally is quite broad including both traits defined as earlier and later and traits that are larger and extend farther than the later traits. This seems to suggest that not only is this period one of transition it is also one of change and looking for a new identity. These people were not only using the old ways, but were trying new things as well, some of which they continued to use and oth-

ers, which were abandoned-perhaps because they were too far away from what was considered the norm.

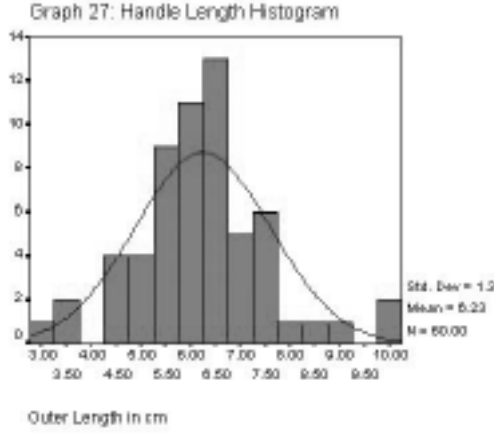
The research presented in this paper confirms the Krause site as a multi-phase site. This research also concludes that the majority of pottery recovered was within the Pammel Creek and Valley View time periods. This would seem to represent an increase in the number of people using the site during those periods, as opposed to the earlier Brice Prairie phase.



More general is the example this research presents for attributes used in Oneonta data collection. It is useful to collect the same attributes across large regions when studying the same or similar people groups. This allows for comparison and hopefully a better understanding of the group being studied. Even non-Oneota groups may find the list of attributes presented here useful in designing a data collection sheet for their specific needs.



Presented earlier in the paper was the importance of the database. Computerized data sorting, analysis, and comparison is easy, fast, and efficient. It is an essential tool to any archaeology or museum laboratory. There are many different ways of designing specifically for the intended purpose and outcome. This paper presents how this can be done, and a small fraction of the many conclusions that can be examined. The database used in this study is on file at the Mississippi Valley Archaeological Center to be examined and used by future researchers.

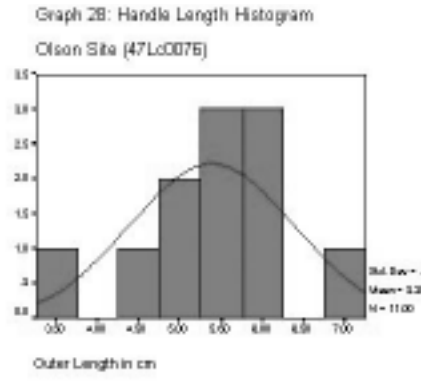


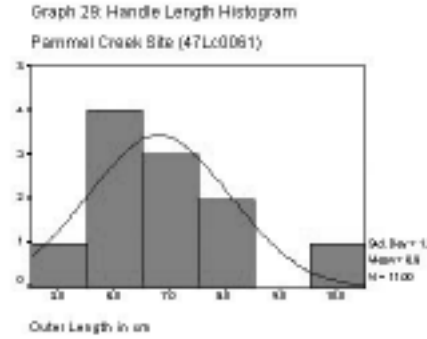
The final point shown in this paper is the importance of statistical analysis and how it can back up visual patterns seen in pottery designs and functions. Statistics is a useful tool that should be used by all archaeologists to strengthen their claims and to be used as supporting evidence.

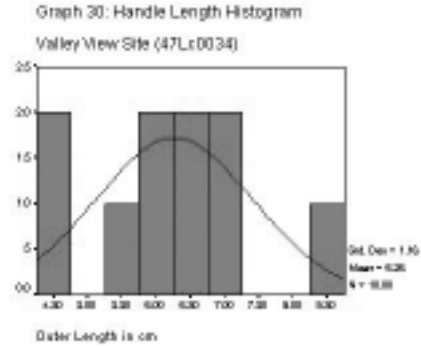
In the examination of the research done for this paper, it was found that a mixed random sample for all the sites used would have been potentially more useful. The data that was learned about the Krause site was important, but the samples from the others three sites really

lacked in numbers because they were only gathered for a more intensive study of handles. That make their sample number much too low to when examining anything other than the handle attributes.

All data collected in this project and the databases used are on file at the Mississippi Valley Archaeology Center, University of Wisconsin La Crosse.







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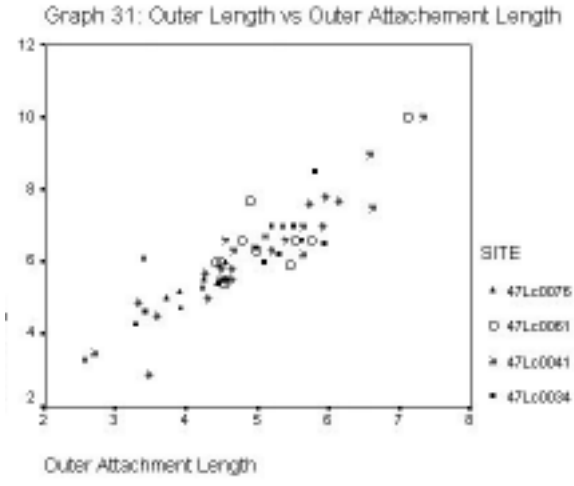

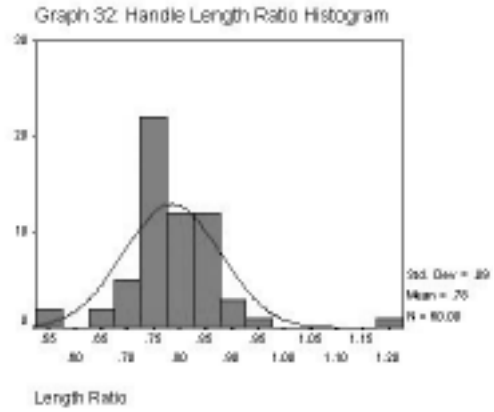

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Appendix A: Vessel Description Form

Site Number: _____ Acquisition Number: _____
Site Name: _____ Photo Date: _____
Looked at by (full name): _____ Date: _____

Rim Decoration Treatment:
__ Finger
__ Tool
__ Smoothed/Pointed
__ Plain
__ Indeterminate
__ NA

Rim Decoration Location:
__ Top
__ Inner
__ Exterior
__ Plain
__ Indeterminate
__ NA

Notching Angle:
__ Perpendicular
__ Oblique/Right
__ Oblique/Left
__ Indeterminate

Rim Notching Width: _____ cm Rim Height: _____ cm
Approximate Vessel Radius: _____ cm
Vessel Size: % of Vessel: _____
__ Mini
__ Small
__ Medium
__ Large

Rim Angle: ____o
Rim Angle Type:
__ Acute (0o-84o)
__ Right (85o-95o)
__ Obtuse (96o-180o)

Body Decoration:
__ Plain
__ Decorated
__ Indeterminate
__ NA

Trails: (check all that apply)
__ None __Indeterminate
__ Vertical
__ Horizontal
__ Perpendicular
__ Oblique
__ Chevrons
__ Nested

Trail Marking Type:
__ None
__ Finger
__ Tool
__ Indeterminate

Punctates:
__ None
__ As Borders
__ Filled Zones
__ Indeterminate
__ Burned after Break

Punctate Type:
__ None
__ Slash
__ Dot
__ Indeterminate

Handle Type:
__ Loop
__ Narrow Strap
__ Strap
__ Indeterminate

Handle Measurements (in CM)
Thickness: ___
Width: ___

Other Comments:
_____
_____
_____
_____
_____
_____

Handle Attachment:
__ At Lip
__ Below Lip
__ Indeterminate

Outer Length: ___
Outer Attachment Length: __
Distance below lip: ___

Handle Decoration:
__ Plain
__ Decorated
__ Indeterminate

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Appendix B: Explanation of Vessel Description Form

Site Number- State code, County number, and Site number ex. 47Lc0041
Acquisition Number- Year, Given bag number, and artifact number(s)
Site Name- Write name of the site
Photo date- Date photograph was taken, or none
Looked at by- Researchers full name
Date- Date artifact was examined, and form completed

(*Indeterminate* means that though the element is there its type/placement cannot be determined, and NA means that the element is missing and can not be examined)
Rim decoration treatment- Plain, Finger, Tool, Smoothed/Pointed, Indeterminate, NA
Rim decoration location- Top, Inner, Exterior, Plain, Indeterminate, NA
Notching angle- is determined by looking at the sherd from the inside of the vessel. Perpendicular, Oblique/Right, Oblique/Left, Indeterminate
Rim notching width- is measured from crest to crest, in cm.
Rim height- is measured from the sharpest angle on the inside of the vessel/the break in the neck to the top of the lip, in cm.
Rim angle- is the angle between the rim and the shoulder. It is measured with a protractor, the apex is held at the point where the rim meets the shoulder, 0o held vertically up the rim and the angle is read at the farthest point out on the shoulder.
Rim angle type- Acute 0o-84o, Right 85o-95o, Obtuse 96o-180o
Approximate vessel radius- is measured using a Polar Coordinate Grid
% of vessel- also read off of the Polar Coordinate Grid
Vessel size- estimated based on size of sherd and % of vessel represented. Used mostly for mini and small vessels. Mini, Small, Medium, Large

(None means that that element is not present, Indeterminate means that it is there but its type cannot be distinguished, NA means that it cannot be determined because of size or broken away sections etc.)
Body decoration- Plain, Decorated, Indeterminate, NA
(If NA, no other categories are checked. If Plain, 'none' is still checked for all other categories.)
Trails- (check all that apply) None, Vertical, Horizontal, Perpendicular, Oblique, Chevrons (chevrons has a sub-category for Nested Chevrons), Indeterminate
Trail marking type- None, Finger, Tool, Indeterminate
Punctates- None, As Borders, Filled Zones, Indeterminate
Punctate type- None, Slash, Dot

Handle type- Loop (rounded handle), Narrow Strap (flat handle but narrow), Strap (flat wide handle), Indeterminate
Handle attachment- At Lip, Below Lip, Indeterminate
Handle decoration- Plain, Decorated, Indeterminate
Thickness- Z axis measurement, in cm.
Width- X axis or horizontal measurement, in cm.
Outer Length- Vertical or Y axis measurement, in cm.
Outer Attachment Length- Measured from outer handle attachment points, in cm.
Distance Below Lip- Measured from the lip to the attachment of the handle, in cm.

Burned after break- is there any evidence of burning after the vessel broke. Not used in this project.

Other comments- note anything else about the vessel not mentioned above, such as handle decoration description, and other acquisition numbers that connect.