Inter-Observer Variances in Coding Lithic Artifacts

Jeffrey Johnston (Colorado State University), Paul Burnett (Colorado State University), Allison Bohn (Colorado State University), Chad Bates (Colorado State University), Lindsay Melsen (Colorado State University), Bruno Romans (Colorado State University), Naush Ollie (Colorado State University), Alisa Hjermstadt (Colorado State University).

Abstract

When archaeological sites are recorded there is inter-observer variability in flaked stone documentation. This variability can potentially alter our interpretation of the archaeological record. Through proper training and experience this may be minimized, but different people will still perceive things differently. To test this, eight archaeologists of varying levels of experience coded 25 artifacts of varying types, materials, and colors. To describe artifact attributes, a system of coding was used differentiating lithic characteristics such as artifact type, material, colors, sizes, and any other attributes observed. The artifacts recorded were a surface scatter spread across a meadow north of Piney Creek in the Absaroka mountain range in Wyoming. The artifacts were photographed but not collected. Four of the archaeologists were archaeological field school students on day 36 and 37 of a 40-day field school. The rest were graduate students who had already completed a field school and most had years of archaeological experience. The amount of inter-observer variance was significant in most categories including artifact type, lithic material, colors, and sizes. With this amount of variance it is possible to observe how our interpretation of the archaeological record can be affected.

Areas of Concern

For Accurate Site Documentation

Difficult Materials

Artifact #9 (left); a flake of Morrison Quartzite. Morrison Quartzite tends to be a material that is difficult to identify. In this study 78% of the subjects misidentified it as a chert or a silicified sediment. Artifact #18 (right) is a chert worked flake. In this study there is a degree of variance seen with most materials whether they are identified problematic materials or not.

Difficult Classifications

These two artifacts (left # 11 petrified wood and right # 16 chert) were difficult to classify and the answers varied at 8.5% angular debris in core and at 9% answers varied from a worked flake, to a scraper, to an unabraded core.

Difficult Colors

Although color variance is seen in most artifacts tested certain artifacts such as #12 on the left and #13 on the right. Few gave identical colors for the first color and only two of the eight tested subjects gave the same second color for an artifact. Answers for colors varied from green semi-translucent to maroon opaque for artifact #12 first color.

Inter-Observer Variance

As with much of the rest of the data variations in artifact measurement most often have less than a 5% deviation from the mean. Some outliers occurred but may be explained by typing errors on the PDAs rather than gross inaccuracy.

Conclusion

Each Archaeologist sees things differently, whether it is pertaining to human global perception or just what type of material this stone is made of, our different perceptions can alter our conclusions. To minimize this, ongoing education whether in the field or supervised instruction only is likely the solution. This study, conducted at the end of a forty day summer session. The participating Archaeologists of varying prior experience spent the summer recording these materials and artifact types with experienced help/supervision. They were familiar with the Archaeology of the area and still there was variance. A slight bias would be difficult to put aside in this type of study is how people may change how they code things if they feel they are being examined. Some Archaeologists made it known that they might have coded some artifacts differently in the field if the pressure of a study administrator hovering around collecting their results, most just did not want to be wrong. With more practice and uniform experience this variance should be easily minimized. Cooperation among Archaeologists on how to classify artifacts may also help in minimizing inter-observer variance.

Sites and are surface scatter sites that lay along a meadow about 50m north of Piney Creek. The two sites are in the same meadow but are separated by a small seasonal arroyo and a few trees. Due to apparent slow soil deposition, an abundance of lithic artifacts were found on the surface. Materials and lithics noted at these two sites appear to be fairly accurate representations of the Archaeology found in the Greybull River Area and were chosen for this study because of this. Both sites including double-flaked artifacts needed to be fully recorded for site documentation. 25 artifacts were selected and double-flaked and combined to specially identify them to the participating Archaeologists. Artifacts from these two sites were chosen on the basis of getting a full range of materials, colors, and artifact types representing what GRSLE 2004 had been finding and recording all summer.

Most of Site PC002 and PC004 are surface scatter sites that lay along a meadow about 50m north of Piney Creek. The two sites are in the same meadow but are separated by a small seasonal arroyo and a few trees. Due to apparent slow soil deposition, an abundance of lithic artifacts were found on the surface. Materials and lithics noted at these two sites appear to be fairly accurate representations of the Archaeology found in the Greybull River Area and were chosen for this study because of this. Both sites including double-flaked artifacts needed to be fully recorded for site documentation. 25 artifacts were selected and double-flaked and combined to specially identify them to the participating Archaeologists. Artifacts from these two sites were chosen on the basis of getting a full range of materials, colors, and artifact types representing what GRSLE 2004 had been finding and recording all summer.