

# Inter-Observer Variances in Coding Lithic Artifacts



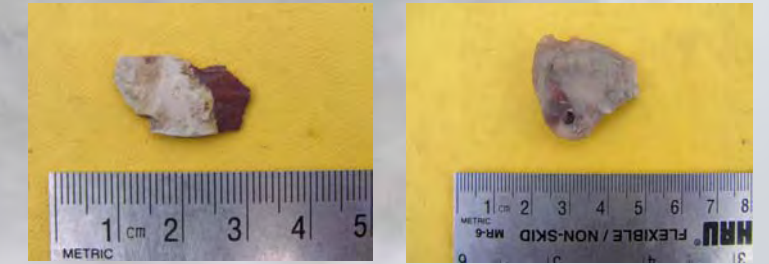
Sites **PC002** and **PC004** are surface scatter sites that lay along a meadow about 50m north of Piney Creek. The two sites are in the same meadow but are separated by a small seasonal arroyo and a few trees. Due to apparent slow soil deposition, an abundance of lithic artifacts were found on the surface. Materials and lithics found 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-flagged artifacts needed to be fully recorded for site documentation. 25 artifacts were selected and double-flagged and numbered 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.

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### 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 in different ways. With a controlled experiment where multiple archaeologists code the same set of flaked stone, the amount of variability may be quantified and analyzed to determine the possible affect on our interpretation of the archaeological record. 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 near 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 # 14 (left): A flake of Morrison Quartzite Morrison Quartzite tends to be a material that is difficult to identify; In this study 75% of the subjects misidentified it as a chert or a silicified sediment. Artifact # 3 (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.

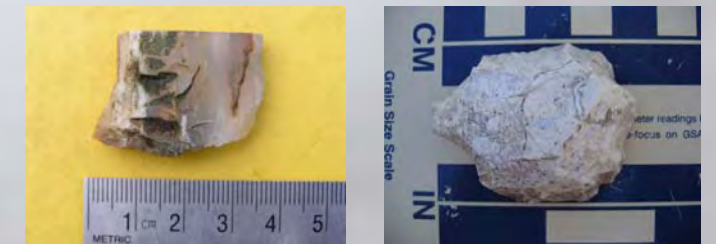


### How Lithics were Classified

A simple system of two to three letter acronyms representing the different lithic debitage we may encounter and need to record was used for quick data entry into Excel files on iPAQ PDA's. What was recorded, included the context of the immediate where the lithic was found, common answers were sediment patch (SDP) and vegetation (VEG). In the category we call class we separated chipped stone (CS) from heat altered rock (HAR) and rock (RK). Under element we classified the type of artifact further such as type of tool, or whether or not the flake had been worked (FKW) or utilized (FKU). Next the portion was recorded to record the presence of a platform (PT or PTN), or how complete the lithic artifact is. Material type along with color 1, 2, and color inclusions are recorded next as well as any heat modifications to the artifact. Then the artifact is measured using Mitutoya digital metric calipers, and the amount of rock cortex is recorded as well as any other comments the subject may feel necessary to include for accurate site documentation.

### Conclusions

Each Archaeologist sees things differently, whether this is pertaining to human global migrations or just what type of material this stone knife is made of, our different perceptions can alter our conclusions. To minimize this, ongoing education whether in the field or supervised instruction may be the only solution. This study occurred 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 variable that would be difficult to get around in this type of study is how people may change how they code things if they feel they are being scrutinized. Some Archaeologists made it known that they might have coded some artifacts differently in the field without 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.



### Difficult Classifications

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



### Difficult Colors

Although color variance is scene 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.

### Size Differential

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



More of Sites **PC002** and **PC004** scattered Lithics; Lithics used in the study include bi-faces, blades, cores, debitage, fire cracked rock, and a couple rocks to keep them on their toes. Materials include Chert (of various colors), Obsidian, Quartzite, Morrison Quartzite, Petrified Wood, and Silicified Sediment.

