In 1993, Julie Stein and Angela Linse published, in a Geological Society of America Special Paper (283), a geological and archaeological examination of concepts of scale in those disciplines (Stein and Linse 1993). In both complementary disciplines the issue of scale is crucial for research. However, in many instances the two disciplines conceive of scale in very different ways. At times in geology the size and resolution of scale is tightly constrained, in other situations much less so. The same in archaeology. The obvious difference is in conceiving geological formations either in structure or composition. Mapping archaeological sites down to the millimeter is quite common for archaeologists, indeed expected. Geologists rarely are concerned about this level of scale in geological mapping. Geoarchaeological mapping of stone sources is often at a finer resolution as well (Shackley 1998; Shackley et al. 2016). Our research on the obsidian sources in the Mount Taylor volcanic field is where the contrasting views of scale intersected. Goff rightly, and with intensive research, characterizes the obsidian at Mount Taylor as derived from the Grants Ridge rhyolite center, which is most certainly correct. However, Shackley has identified two compositionally and structurally different obsidian "sources" that have important archaeological meaning - the scale is different. Called geoarchaeologically "Grants Ridge" or "Horace/La Jara Mesa" obsidian, the former exhibits a more vitrophyric fabric and a less desirable media for stone tool production, while the latter is generally aphyric and a somewhat better media for stone tool production. This difference is reflected in the archaeological record and archaeological contexts in the region. Is the geological definition incorrect? Of course not, but the scale of definition is quite contrasting, and just as meaningful to either discipline. After spending two days field sampling in Goff et al's (2019) geochronologically defined map units in "Grants Ridge rhyolite" a better understanding of scale for both geoarchaeology and geology has become visible. Indeed, some of the map units on Horace Mesa, based on the geoarchaeological examination of the obsidian in those units could be expanded. It's a matter of scale. We present those inferences, both for the Mount Taylor specific example, and as a potential guide for future geological and geoarchaeological research.

References:


Keywords:

Mount Taylor, geology and geoarchaeology, obsidian source provenance, effects of scale