Late Woodland Interaction Patterns in the Upper Yadkin River Valley

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Introduction

This research seeks to understand the economic and social interaction patterns among Piedmont Village Tradition (PVT) communities in the upper Yadkin River valley, 1200-1600 CE. We characterize economic behaviors from 1) constructing fall-off curves of local vs. non-local lithic material proportions at 4 PVT settlement sites and adding them to previous findings from Rogers (1993); and 2) examining the reduction stages represented at these sites. Our goal is to understand how local and non-local lithic materials were being used and what their patterning tells us about how communities were acquiring and distributing materials. To examine social interaction patterns, we conducted a Brainerd-Robinson analysis of ceramic characteristics from five sites and compared our data to Rogers' (1993) findings.

Background

General PVT History: Late Woodland PVT communities (Figure 1) were semi-sedentary forager-farmers living in 1-5 household communities. Coalescence into villages of 8-15 households occurred in the Dan valley after 1300 CE. Villages also appear in the Eno and Haw valleys but were likely constructed by migrants (Davis and Ward 1991; Dickens et al. 1987). The upper Yadkin River valley (UYRV) has no evidence to date of village formation. Settlements of 1-3 households were occupied for approximately 100-150 years, likely along with a location that was occupied for 300-500 years with a slightly larger population (Jones 2017; Woodall 1990). The differences between these community types has yet to be determined and is part of the inspiration for this work.

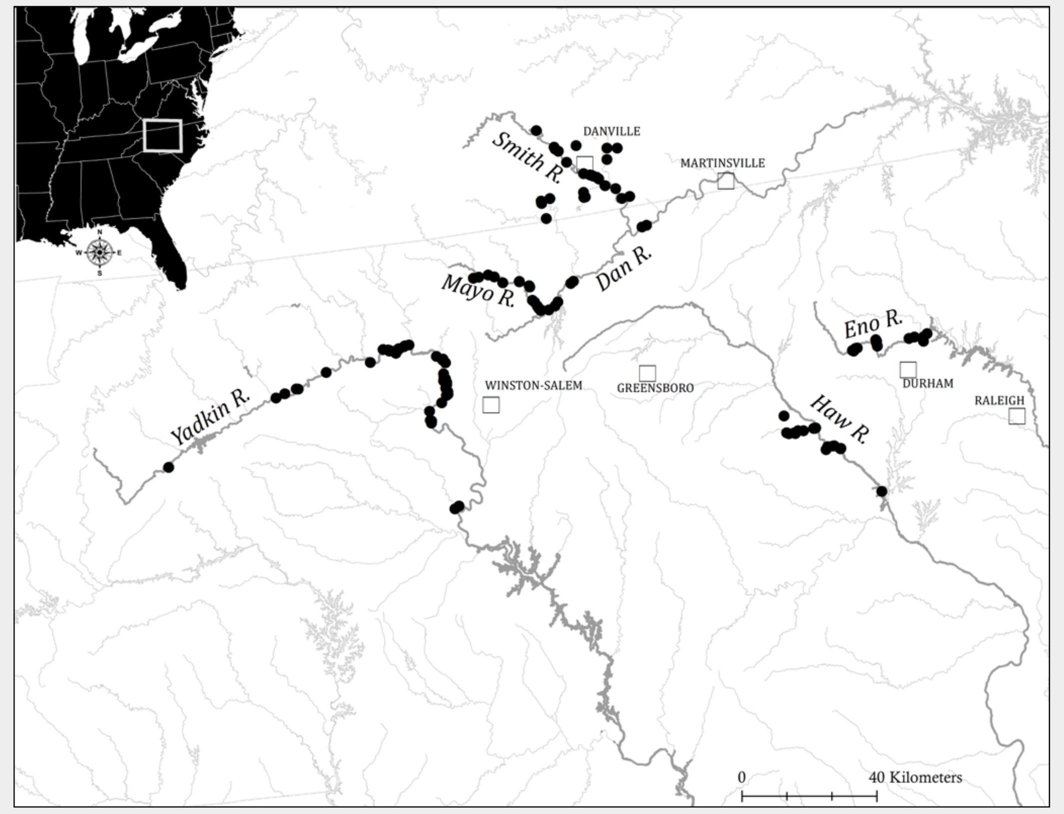


Figure 1: map of Late Woodland Piedmont Village Tradition settlements.

Lithics in the UYRV: The most common flaked stone tools at Late Woodland PVT sites are small triangular projectile points (Figure 2). Drills, end scrapers, side scrapers, and expedient flake tools occur in small quantities (Woodall 1984, 1990, 1999, 2009). Local lithic materials include quartz, quartzite, and jasper (Rogers 1993). Non-local materials (i.e. at least 60 km from the valley) include rhyolite, chert, and farther afield jasper sources. Rhyolite is the most common found at sites and originates from three different sources: Morrow Mountain, Asheboro, and Mt. Rogers (Daniel and Butler 1996). UYRV artifacts derive mostly from the Asheboro sources.

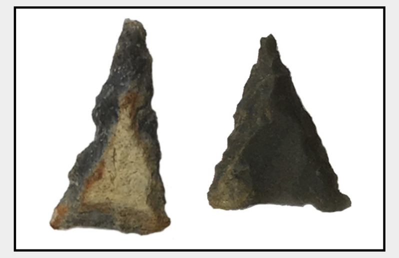


Figure 2: points from the Redtail site

Ceramics in the UYRV: The chronology of PVT pottery types is problematic, as they are found in a number of different stratigraphic orders at different sites. Furthermore, some attributes of earlier types are also found on later types, meaning that an earlier design choice, such as cord-marking, is not strictly tied to chronology. As a result of unclear archaeological typology, it is more effective to focus on the co-occurrence of specific attributes at sites of known ages (Rogers 1993:144).

Previous Research: Woodall (1990) proposed two separate processes. In the Upper Great Bend (UGB) area (shown on the large map) of the UYRV, he hypothesized a down-the-line exchange system based on relative proportions of rhyolite and quartz. In the Lower Great Bend (LGB) area, he identified a positive correlation between site size and proportion of rhyolite. In this model, gateway communities preferentially acquired rhyolite and then distributed it to smaller neighboring communities. Rogers (1993) found no clear distance-decay pattern, no noticeable difference in primary or secondary flake frequencies among UGB sites, and sites with high proportions of rhyolite did not have more flakes with cortex. She concluded that each site had equal access to raw rhyolite and may have obtained it during hunting or trading expeditions. Rogers (1993) also conducted a Brainerd-Robinson analysis of combined exterior surface treatments and temper and found similarities between sites 31Yd32, 31Sr58, 31Sr59, and 31Yd173; 31Yd175 was dissimilar.

Methods

We examined lithic artifacts from four sites (Redtail, 31Sr58, 31Yd175, and 31Wk26) and ceramics from these same sites and two additional sites (31Sr59 and 31Yd32). Rogers' (1993) research was the basis for our work here.

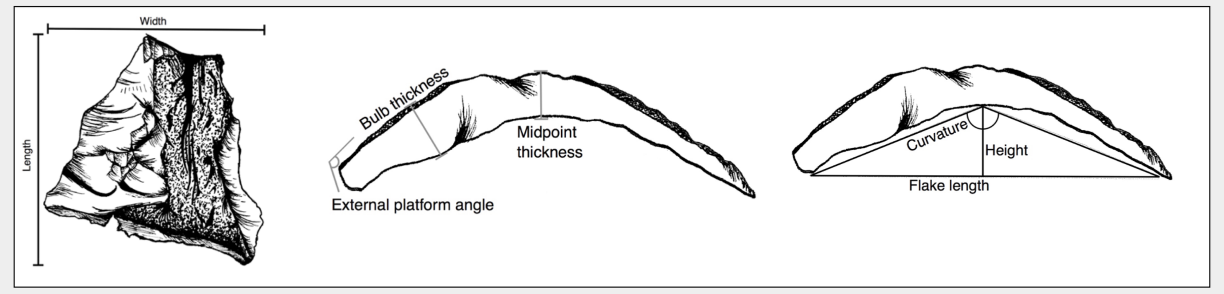


Figure 3: diagram of flake attributes measured and how curvature was calculated (drawings by Krause).

Lithic Analysis: We counted and weighed the entire lithic assemblage from Redtail, 31Yd175, 31Wk26, and 31Sr58 by material type. 31Yd175, 31Wk26, and 31Sr58 are only represented by surface artifacts. Redtail has been excavated from 2013-18. We compared these sites to one another by both weight and count, and we compared the proportions to Rogers' (1993) results. Woodall (1990) compared surface assemblages to excavated assemblages at the Hardy site and found virtually no differences in both the types of artifacts found as well as the proportional counts of types of lithic materials found. We found similar patterns at Redtail with proportional weights; however, we found proportional counts were not consistent between these contexts. We are inclined to trust Woodall's results because most of the surveys at Redtail were conducted by fieldschools.

We then measured several attributes of the flakes (Figure 3). We examined a 100% sample of the surface lithics found at 31Wk26 and 31Yd175 and an 11% sample (810/7164) from Redtail. We sampled from all contexts at the latter site: surface, plowzone, undisturbed strata, and features to ensure a representative sample. Using height and length, we calculated flake curvature using Andrefsky's (1986:50) equation. We included lightly modified flakes in our analysis.

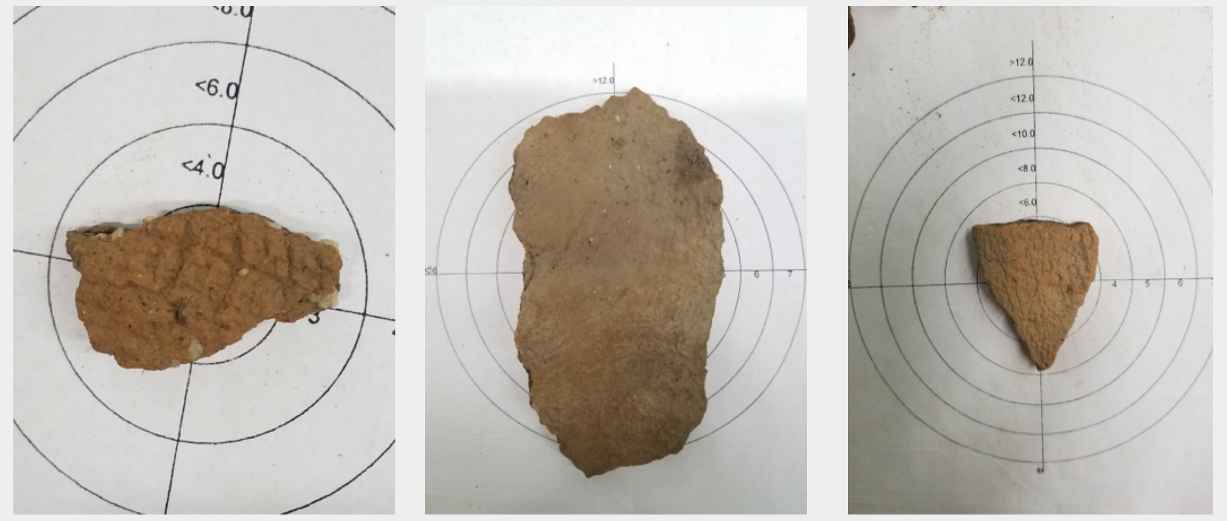


Figure 4: examples of three surface treatments, from left to right: net-impressed; net-impressed, scraped, and smoothed; and fabric-marked.

Ceramic Analysis: We examined 300 ceramic sherds from Redtail, 50 from 31Sr58, 50 from 31Wk26, 35 from 31Sr59, 32 from 31Yd32, and 20 from 31Yd175. For Redtail, only sherds 3cm or longer were considered. Sherds 2cm or longer were included for sites with only surface assemblages.

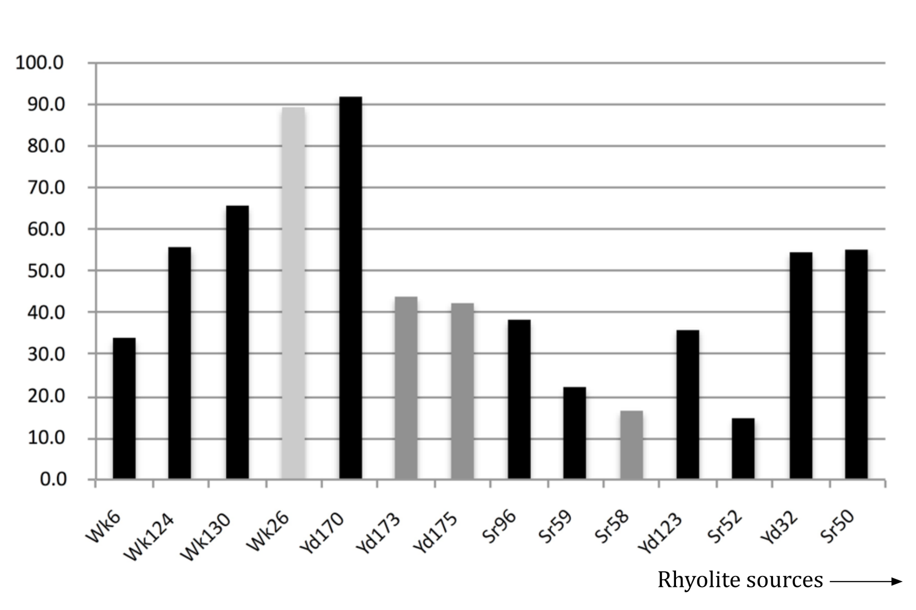
We described sherds based on a variety of physical and stylistic characteristics: position (neck, lip, base), weight, length, width, height, diameter, thickness, temper, Munsell coloration on the surfaces and interior, and decorative motif on the exterior surface. Decorative motifs (Figure 4) included plain (no apparent treatment), smoothed (both hand and tool smoothed, although tool smoothing could easily be misidentified as scraping), scraped (tool scraped, with a noticeable [.5mm] amplitude, as opposed to the less marked smoothing pattern), net-impressed (reminiscent of the Haw River style), simple-stamped, fabric-marked, and cord-marked.

We used the Brainerd-Robinson coefficient of agreement for our data (Brainerd 1951; Robinson 1951; Cowgill 1990). This method relies on a typology; we used an empirical, taxonomic classification (Hill and Evans 1972:235) because a focus on the obvious characteristics leads to statistically non-random results. This also falls in line with the *chaînes opératoire* mentality, as each obvious attribute can reflect one of the potter's design choices. One problem is the types can become cannon (Hill and Evans 1972:235), even though typologies are problematic (Whittaker et al. 1998). To avoid this, we separated potsherds into types based on a variety of attributes with the variables included differing between different statistical models (Figure 5).

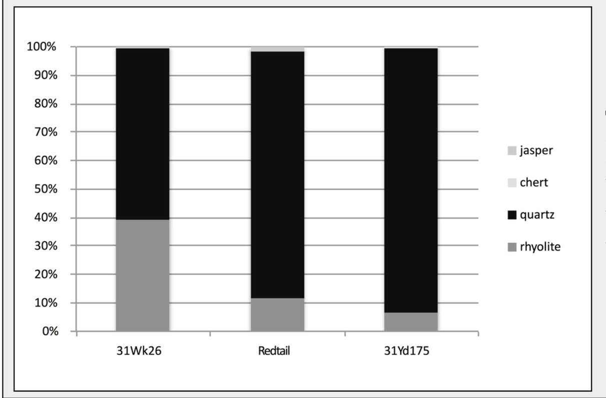
Model	1	2	3	4	5	6
Temper (small and large quartz combined)	Yes	Yes	Yes	No	No	No
Temper (small and large quartz not combined)	No	No	No	Yes	No	No
Exterior Treatment	Yes	Yes	Yes	Yes	Yes	Yes
Interior Treatment	Yes	Yes	No	Yes	Yes	No
Smoothing and scraping treated as the same treatment	No	Yes	No	No	No	No

Figure 5: table of attributes we used to create types in the 6 models we examined using the Brainerd-Robinson coefficient.

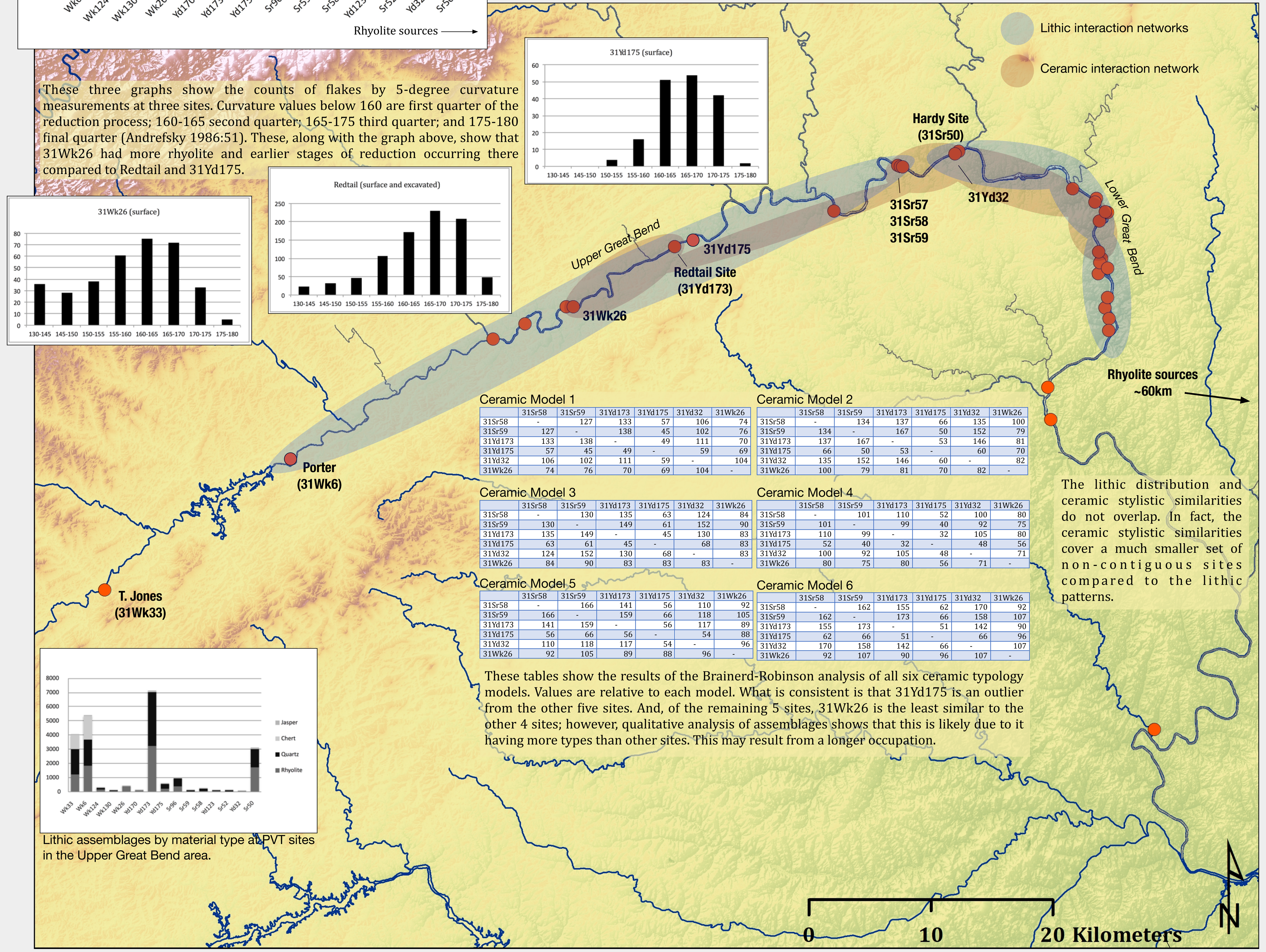
Results



The graph to the left shows the proportions of different lithic material types by count at sites throughout the Upper Great Bend area. The sites with black bars are Rogers' (1993) data; the darker gray bars are combinations of her data and ours; and the light gray bar is our data. Adding data to four sites did nothing to change the pattern that Rogers interpreted as not being distance-decay (i.e. down-the-line) from the Hardy site, which is closest to the rhyolite sources to the east.



This graph shows the proportions of different lithic material types by weight. Even though this is only for three sites (31Wk26, Redtail, and 31Yd175), it mirrors the proportions by count data supporting the idea that differences in material proportions are about how much rhyolite was at a site not how the material was flaked or how long people were at the site.



These three graphs show the counts of flakes by 5-degree curvature measurements at three sites. Curvature values below 160 are first quarter of the reduction process; 160-165 second quarter; 165-175 third quarter; and 175-180 final quarter (Andrefsky 1986:51). These, along with the graph above, show that 31Wk26 had more rhyolite and earlier stages of reduction occurring there compared to Redtail and 31Yd175.

Ceramic Model 1

	31Sr58	31Sr59	31Yd173	31Yd175	31Yd32	31Wk26
31Sr58	-	127	133	57	106	74
31Sr59	127	-	138	45	102	76
31Yd173	133	138	-	49	111	70
31Yd175	57	45	49	-	59	69
31Yd32	106	102	111	59	-	104
31Wk26	74	76	70	69	104	-

Ceramic Model 2

	31Sr58	31Sr59	31Yd173	31Yd175	31Yd32	31Wk26
31Sr58	-	134	137	66	135	100
31Sr59	134	-	167	50	152	79
31Yd173	137	167	-	53	146	81
31Yd175	66	50	53	-	60	70
31Yd32	135	152	146	60	-	82
31Wk26	100	79	81	70	82	-

Ceramic Model 3

	31Sr58	31Sr59	31Yd173	31Yd175	31Yd32	31Wk26
31Sr58	-	130	135	63	124	84
31Sr59	130	-	149	61	152	90
31Yd173	135	149	-	45	130	83
31Yd175	63	61	45	-	68	83
31Yd32	124	152	130	68	-	83
31Wk26	84	90	83	83	83	-

Ceramic Model 4

	31Sr58	31Sr59	31Yd173	31Yd175	31Yd32	31Wk26
31Sr58	-	101	110	52	100	80
31Sr59	101	-	99	40	92	75
31Yd173	110	99	-	32	105	80
31Yd175	52	40	32	-	48	56
31Yd32	100	92	105	48	-	71
31Wk26	80	75	80	56	71	-

Ceramic Model 5

	31Sr58	31Sr59	31Yd173	31Yd175	31Yd32	31Wk26
31Sr58	-	166	141	56	110	92
31Sr59	166	-	159	66	118	105
31Yd173	141	159	-	56	117	89
31Yd175	56	66	56	-	54	88
31Yd32	110	118	117	54	-	96
31Wk26	92	105	89	88	96	-

Ceramic Model 6

	31Sr58	31Sr59	31Yd173	31Yd175	31Yd32	31Wk26
31Sr58	-	162	155	62	170	92
31Sr59	162	-	173	66	158	107
31Yd173	155	173	-	51	142	90
31Yd175	62	66	51	-	66	96
31Yd32	170	158	142	66	-	107
31Wk26	92	107	90	96	107	-

These tables show the results of the Brainerd-Robinson analysis of all six ceramic typology models. Values are relative to each model. What is consistent is that 31Yd175 is an outlier from the other five sites. And, of the remaining 5 sites, 31Wk26 is the least similar to the other 4 sites; however, qualitative analysis of assemblages shows that this is likely due to it having more types than other sites. This may result from a longer occupation.

The lithic distribution and ceramic stylistic similarities do not overlap. In fact, the ceramic stylistic similarities cover a much smaller set of non-contiguous sites compared to the lithic patterns.

Lithic assemblages by material type at PVT sites in the Upper Great Bend area.

Discussion

Non-local lithics in the UYRV
The positive correlations of high proportions of rhyolite with earlier reduction flakes, suggests that not all sites had equal access to rhyolite. We propose a model where 31Wk26/31Wk130 were the gateway communities for directly acquiring and distributing rhyolite. This network may have encompassed almost all of the Upper Great Bend area. Jones (2017) identified a shift upriver from the Lower Great Bend to Upper Great Bend area around 1200 CE, but this was not monolithic. Thus, the communities at 31Yd123, 31Sr50, 31Yd32, and Hardy may have been part of a rhyolite distribution network that included sites still occupied after 1200 CE in the Lower Great Bend area. Finally, this suggests Woodall's (1990) proposed gateway method of rhyolite distribution may have been a longstanding economic system.

Ceramic styles in the UYRV
Rogers (1993) suggested 4 groupings of sites with regard to ceramic styles. We conducted a similar analysis but with different stylistic variables and with a subset of sites and found similar results. Both sets of data suggest that sites with similar styles are not necessarily near one another in the valley and there are sites with few similarities between sites with similarities. She suggested, and we agree, that if these results are telling us something about interaction, that interaction is not simply about proximity. Women were most likely the potters given historic accounts, so interaction among women in different communities may account for this. Given that these societies were also likely matrilineal, movement of women for marriage may not be the best explanation. Plus, women are too often treated as products of interaction instead of the agents of it. In the UYRV, women may have been driving social interactions as evidenced by pottery production and distribution.

Interpretations
As seen on the large map, combining our results shows that ceramic stylistic spatial patterns do not correlate with the lithic patterns. There are certainly overlaps, but the spatial patterning is not as proximity-based as the lithics appear to have been. And, the ceramic styles cross-cut rhyolite network boundaries. Rhyolite distribution may have been a more simple process of moving material from the gateway communities to those nearby via down-the-line methods. Ceramic styles may have had more social information imbedded within and were thus more closely tied to social behaviors than economic behaviors. Given that lithic tools were less prone to stylistic variability, we may be comparing apples and oranges by comparing types and styles. However, this still may be showing us something real about how different material objects were perceived, connected to other behaviors, and how they moved between communities. Perhaps ceramics were at least partially about social interaction between women in different communities, while rhyolite was simply about moving material needed for the production of utilitarian goods.

Conclusions

The patterns suggest that interaction between communities in the UYRV was not monolithic. Movement of people, material, and ideas may have varied with each intention/purpose and with community needs. This contradicts somewhat with the previous cultural ecological models for the valley in which social interactions were assumed to be closely tied to economic interactions (Woodall 1990). In fact, there may have been many economies and many types of social interactions at work. In addition, we think the geographic discordance in our two datasets further supports Rogers' (1995) idea that sociopolitical autonomy and fluidity were the norm in the Late Woodland UYRV. Lithic economies may have been a bit more formally organized, perhaps out of necessity for a highly desired raw material.

Acknowledgments

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