Getting To The Point: A Reply to Bradbury et al.

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Abstract

This paper is a response to Bradbury et al.'s critique of the currently used Fort Ancient fine triangular projectile point typology. Drawing on the variation in projectile point morphology they observed at the Early Fort Ancient Elk Fork site in Morgan County, Kentucky, Bradbury et al. concluded that the typology should be abandoned in favor of an attribute approach. We agree with Bradbury et al. that researchers need to determine the extent to which variation in triangular point morphology is related to temporal trends, tool function, or style. However, we disagree that the existing typology cannot be used to address these issues. We have found it to be a good research tool and argue that it should be retained, as we illustrate by a consideration of the regional Fort Ancient database.

Introduction

In a recent paper in this journal, Bradbury et al. (2011) expanded upon Bradbury and Richmond's (2004) critique of the Fort Ancient fine triangular projectile point typology developed by Jimmy A. Railey in 1992. The typology was developed to account for the variation in triangular projectile points observed in the chipped stone tool assemblages recovered from five northeastern Kentucky Fort Ancient sites. These sites were investigated in the mid-1980s as part of the Kentucky Fort Ancient Research Project - Phase Two (Henderson 1992), one of the goals of which was to identify diachronic changes in Fort Ancient material culture. In his conclusions, Railey (1992:168) noted that future Fort Ancient studies should concentrate on refining the triangular projectile point sequence he presented for northeastern Kentucky.

Over the past 20 years, additional research at Fort Ancient sites in northern and central Kentucky has augmented Railey's sample, and researchers have, indeed, made modifications to his original typology (cf., Henderson 1998e; Updike 1996). They have documented a longer time depth for some types (e.g., Type 2 Fine Triangular: Flared Base and Type 5 Fine Triangular: Straight Sided) (Carmean 2010; Henderson 1998e, 2008; Pollack and Henderson 2000) and identified variants of other types (e.g., Type 2.1 Fine Triangular: Basal Ears and Type 3.1 Fine Triangular: Finely Serrated) (Henderson 1998e, 2008; Miller and Sanford 2010).

Bradbury et al. used the triangular projectile point assemblage from the Elk Fork site in Morgan County, a small early Fort Ancient settlement, as a comparative context for their evaluation of Railey's point typology (Herndon 2005). In this paper, we identify some problems with Bradbury et al.'s critique of the usefulness of the typology. Then, using a more representative and inclusive set of data than that used by Bradbury et al., we illustrate how Railey's typology, as currently defined, can be used to identify morphological, stylistic, and functional trends in Fort Ancient projectile point assemblages.

Bradbury et al.'s Concerns and Our Response

Bradbury et al.'s two primary concerns with the 1992 typology are: 1) none of the fine triangular point types are good temporal indicators in and of themselves, and 2) the existing types do not adequately account for the morphological and stylistic variation in triangular projectile points observed in the archaeological record. The former concern is not surprising, as all of the site assemblages/components Railey analyzed contained more than one type. It simply was never the intent of the typology for individual projectile points to be used to date a site's occupation.

With respect to the latter, Fort Ancient projectile point stylistic and morphological variation is a result of choices flint knappers made concerning hafting element and edge treatment. Other contributing factors identified by Bradbury et al. include idiosyncratic differences among knappers or cultural groups, a knapper's skill, the species of prey hunted, hafting methods, and resharpening. To these factors we would add raw material type and its availability and limitations, different rates of adoption of new styles, the reuse of earlier projectile points by later groups, and analytical bias. All of these factors have the potential to contribute to variation observed in the archaeological record. And all have the potential to produce variation in projectile points regardless of temporal affiliation. Thus, attending to these factors is an issue in any projectile point classification.

Bradbury et al.'s proposed alternative to the 1992 typology is to employ a trait-based approach to Fort Ancient triangular projectile point classification. They suggest that researchers classify specimens according to clusters of observable attributes:

Attribute	Dimension		
Base	Incurvate	Excurvate	Straight
Blade	Incurvate	Excurvate	Straight
Serrations	None	Coarse	Fine
Basal Flaring	Absent	Present	

For example, using their attribute cluster approach, a triangular point could be classified as straight based, straight sided, and coarsely serrated. Using Railey's typology, the same point would be assigned to Type 3 Fine Triangular: Coarsely Serrated. Thus, whether employing an attribute cluster or a type designation approach, the analyst is using the same set of observable shared characteristics to group points. And irrespective of which approach they employ, an analyst's particular research needs and questions help determine which attributes they record and whether they privilege one attribute over another.

Once a cluster or type is defined, its utility can only be assessed and evaluated by employing it to classify artifacts and answer research questions. Then, if it is found wanting, it can be modified as needed.

In deciding whether to employ a previously developed typology, researchers must determine if they have sufficient information, and confidence in their ability, to replicate the types. They also must decide how much variation they are willing to tolerate before they create new types in an established typology, or decide to develop a new typology. That is: are they a "lumper" or a "splitter?" Lumpers will tolerate more variation in a type, while splitters will tend to account for variation by creating additional types or varieties. If they decide an existing type/typology encompasses too much variation, they may forgo using it.

The amount of variation encompassed within a type, then, in large part reflects the analysts' personal preference. This is true whether they are using a typological or attribute cluster approach, since both require analysts to make classificatory decisions.

A good illustration of this problem, relative to the Fort Ancient fine triangular projectile point typology under consideration here, is the degree of "coarseness" of serration required for analysts to classify a specimen as a Type 3 Fine Triangular: Coarsely Serrated point (Figure 1). Specimens assigned to this type are distinguished by their coarsely serrated lateral margins (Railey 1992:158). Assignment of a point to this type, then, depends on the analyst recognizing and privileging the presence of coarse serrations over other prominent attributes, such as basal shape. The range of variation subsumed within Type 3 Fine Triangular: Coarsely Serrated points is highlighted in Figure 1. The specimens in the top and middle rows were recovered from Fox Farm. They are very similar to those Railey (1992:159) illustrated as examples of this type (recovered mainly from Fox Farm, but also from Thompson and Augusta). The two on the bottom row are from Elk Fork. In our opinion, the example on the right does not conform to the type, as it is not coarsely serrated.

Bradbury et al. (2011) asked: "Are any of the fine triangular projectile point types, in and of themselves, temporally diagnostic?" Based on the results of their research, they determined the individual types were not temporally diagnostic, and so they concluded that the typology *itself* was not valid and they recommended researchers no longer use it. Bradbury et al. (2011) did *not* assess the utility of the typology to: characterize site/site component projectile point <u>*assemblages*</u>; make intersite and interregional comparisons; identify temporal trends in triangular projectile point morphology; and assess the extent to which changes in triangular projectile points are related to hunting practices.

The typology did help Bradbury et al. (2011) determine that the Elk Fork site inhabitants used a variety of triangular projectile points. But having established this fact, they never asked any follow-up questions, such as:

- Why is such a diverse set of projectile points associated with such a small site?

- Is this assemblage more diverse than contemporary Early Fort Ancient assemblages?

- To what extent does the diversity of projectile points within the Elk Fork assemblage reflect this site's transitional Late Woodland/Fort Ancient occupation, its Eastern Kentucky location, or the types of activities undertaken there?

Railey's typology is well-suited to address all of these questions. To illustrate this point, in the following section, we illustrate how the typology can be used to address these issues. We will compare the Elk Fork fine triangular projectile point assemblage to those recovered from 22 Fort Ancient sites in northern, central, and northeastern Kentucky (Figure 2 and Table 1).

Figure 1. Type 3 Fine Triangular: Coarsely Serrated: Top and middle rows, Fox Farm; Bottom row, Elk Fork (from Bradbury et al. 2011).

Comparison

In making intersite comparisons, it is important to use data from relatively large Fort Ancient triangular projectile point assemblages. These assemblages should be derived from single component Fort Ancient villages or from sites with multiple components where the analyst can confidently associate a group of projectile points with a particular component.

To highlight the merits of this advice, in this example, we restricted our sample to those sites/components (n=24) from which 15 or more identifiable specimens of Types 2 through 6 fine triangular projectile points have been recovered primarily from excavated contexts where there is little evidence for mixing of components (Table 1). We would have preferred to only use site assemblages containing 30 or more specimens, as such samples are statistically more valid and robust. Unfortunately, if we had done so, our comparative sample would have consisted of only 14 sites.

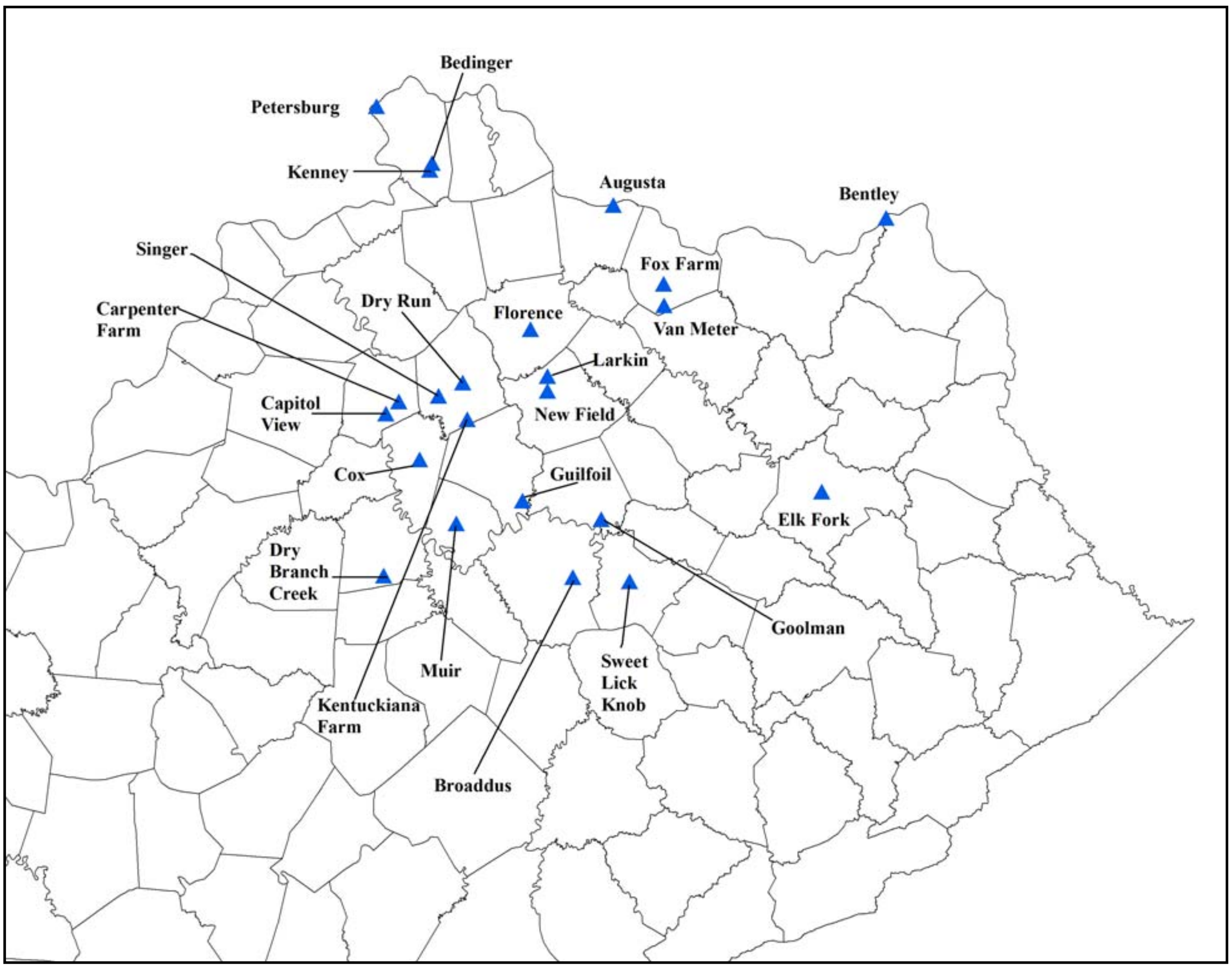

Figure 2. Sites from which triangular projectile point assemblage data were used in this comparison.

Table 1. Fort Ancient Triangular Projectile Point Assemblages.

Component/Site Name/ Frequency /Region	Type 2	Type 2.1	Type 3	Type 3.1	Type 4	Type 5	Type 6
Early Fort Ancient (A.D. 1000-1200)							
Elk Fork (n=32) (Eastern Mountains)[1]	65.6%		6.3%		6.3%	6.3%	15.6%
Dry Run (n=42) (Central Ky)[2]	50.0%	2.4%	2.4%			45.2%	
Muir (n=46) (Central Ky)[3]	45.7%	23.9%		17.4%		13.0%	
Late Early/early Middle (A.D. 1150-1250)							
Bedinger (n=69) (Northern Ky)[4]	68.1%				2.9%	26.1%	2.9%
Cox (n=17) (Central Ky)[5]	70.6%					29.4%	
Dry Branch Creek (n=29) (Central Ky)[6]	58.6%					34.5%	6.9%
Kentuckiana Farm (n=36 (Central Ky)[7]	30.6%	25.0%	8.3%	2.8%	5.6%	27.8%	
Van Meter (n=20) (Northeastern KY)[8]	65.0%					30.0%	5.0%
Middle Fort Ancient (A.D. 1200-1400)							
Guilfoil (n=18) (Central Ky)[9]	50.0%		16.7%			33.3%	
Broaddus (n=94) (Central Ky)[10]	42.6%		10.6%		3.2%	43.6%	
Kenney (n=65) (Northern Ky)[4]	66.2%		4.6%		1.5%	26.2%	1.5%
Singer (n=26) (Central Ky)[9]	34.6%	11.5%	19.2%	7.7%		26.9%	
Carpenter Farm (n=17) (Central Ky)[11]	17.6%		17.6%			64.7%	
Fox Farm (n=55) (Northeastern Ky)[12]	23.6%		41.8%		7.3%	27.3%	
Florence Hr22 (n=17) (Central Ky)[9]	23.5%	5.9%	29.4%	5.9%	5.9%	29.4%	
Early Late Fort Ancient (A.D. 1400-1550)							
Capitol View (n=65) (Central Ky)[13]	7.7%		1.5%		7.7%	70.8%	12.3%
Sweet Lick Knob (n=59) (Eastern Ky)[14]	5.8%	1.8%	5.8%	1.8%	6.8%	78.0%	1.7%
Fox Farm (n=40) (Northeastern Ky)[12]	7.5%		12.5%		17.5%	32.5%	30.0%
New Field (n=85) (Central Ky)[15]			1.2%		9.4%	68.2%	21.2%
Petersburg (n=26) (Northern Ky)[16]	15.4%		3.8%		15.4%	61.5%	3.8%
Late Late Fort Ancient (A.D. 1550-1750)							
Augusta (n=20) (Northeastern Ky)[12]					15.0%	40.0%	45.0%
Goolman (n=107) (Northeastern Ky)[17]						24.3%	75.7%
Larkin (n=55) (Central KY)[18]	3.9%		3.9%		11.8%	23.5%	56.9%
Bentley (n=52) (Northeastern Ky)[19]					32.7%	17.3%	50.0%

[1]Cooper 2005; [2]Henderson 1998b; [3]Henderson 2006; [4]Raymer 2008; [5]Raymer 2011; [6]Pope 2005; [7]Picklesimer and Miller 2010; [8]Raymer et al. 2012; [9]Henderson 1998e; [10]Carmean 2010; [11]Pollack and Hockensmith 1992; [12]Railey 1992, Pollack and Henderson 2012; [13]Henderson 1998a; [14]Steve Ahler, personal communication 2011; [15]Updike 1996; [16]Flood 1993; [17]Henderson 1998d; [18]Stokes 1996; [19]Henderson and Gray 2000

Like Bradbury et al. (2011), we restricted ourselves to a consideration of just fine triangular projectile point Types 2 through 6. Not included in this intersite comparison were: Type 1 Fine Triangular: Small Tri-Incurvate points, Type 7 Fine Triangular: Thick, Wide Base points, Crude Triangular points, and unassigned points. These four types/groups can account for as much as 30 percent of the triangular projectile points recovered from a site.

Using this 15-specimen minimum, the only site/components included here from Railey's initial study are Augusta and the two components at Fox Farm. Those not included are lower Thompson (n=12), Upper Thompson (n=14), Snag Creek units (n=12), Snag Creek surface (n=13), and Laughlin (n=9). Several other sites in Bradbury et al.'s (2011) study also did not meet the 15-specimen minimum. They are Florence Hr21 (n=4), Goff Village (n=13), Buckner Village 1 (n=12), and Clay Village (n=10) (Sharp and Pollack 1992; Henderson 1998e).

Several sites included in Bradbury et al.'s (2011) study also met our criterion, but were published on, before, or as Railey was finalizing his typology. These include Muir (Sharp 1988), Dry Run (Sharp 1984), Guilfoil (Fassler 1987), Florence Hr22 (Sharp and Pollack 1992), Larkin (Pollack et al. 1987), and Carpenter Farm (Pollack and Hockensmith 1992). In this comparison, we rely on subsequent analysis of these collections, which often led to a reassessment of some of the original classifications. For instance, Henderson's (1998e) reanalysis of the Florence Hr22 triangular projectile point assemblage led to the identification of Type 2 Fine Triangular: Flared Base points at this site. For sites reported on after 1992, we relied on the original published determinations.

Table 1 reflects much of the variation in triangular projectile point assemblages observed by Bradbury et al. (2011): often all point types are present. They are, therefore, present throughout the Fort Ancient temporal sequence. However, if one looks more carefully at the data, diachronic trends in Fort Ancient triangular projectile point types are identifiable, as are hints of interregional patterns.

Early (A.D. 1000-1200) and late Early/early Middle (A.D. 1150-1250) Fort Ancient site assemblages are dominated by Type 2 Fine Triangular: Flared Base/Type 2.1 Fine Triangular: Basal Ears points (Table 1). In fact, two-thirds of the specimens from the Elk Fork site were classified as Type 2 Fine Triangular: Flared Base points. This is consistent with contemporary northern, northeastern, and central Kentucky Early Fort Ancient site. These data reflect a preference for points with incurvate sides and a flared hafting element early in the Fort Ancient sequence.

At most Early and late Early/early Middle Fort Ancient sites, Type 5 Fine Triangular: Straight Sided points are the second most common type. The exceptions are Elk Fork, where Type 6 Fine Triangular: Concave Base points are the second most common type, and Muir, where Type 3.1 Fine Triangular: Finely Serrated points, the predecessor to Type 3 Fine Triangular: Coarsely Serrated points, is the second most common type. Like at Elk Fork, Type 6 Fine Triangular: Concave Base points are present at Dry Branch Creek, Van Meter, and Bedinger. Type 3 Fine Triangular: Coarsely Serrated points were recovered from just Elk Fork and Dry Run. Type 4 Fine Triangular: Short, Excurvate points are present at 37.5 percent of Early and late Early/early Middle Fort Ancient sites, but never account for more than 6.3 percent of the triangular projectile point assemblage. Overall, at Early and late Early/early Middle Fort Ancient sites, Type 2 Fine Triangular: Flared Base, Type 2.1 Fine Triangular: Basal Ears, and Type 5 Fine Triangular: Straight Sided points account for 71.9 to 100.0 percent of site projectile point assemblages. These types account for more than 90 percent of the points at six of the eight sites (Table 1).

The Middle Fort Ancient (A.D. 1200-1400) is marked by an increase in the popularity of Type 3 Fine Triangular: Coarsely Serrated points, and a decrease in Type 2 Fine Triangular: Flared Base and 2.1 Fine Triangular: Basal Ears points. In general, the percentage of Type 5 Fine Triangular: Straight Sided points in site collections remains relatively consistent vis-a-vis the Early Fort Ancient. Fox Farm has the highest percentage of Type 3 Fine Triangular: Coarsely Serrated points: these distinctive points account for 41.8 percent of the triangular points at this site.

There appears to be a distance-decay factor at work with respect to Type 3 Fine Triangular: Coarsely Serrated points during the Middle Fort Ancient. Sites located closest to Fox Farm, such as Florence and Singer, have the next highest percentages, and Broaddus, the most southerly site, and Kenney, the most westerly, have the lowest percentages.

Throughout central Kentucky, Type 2 Fine Triangular: Flared Base and Type 2.1 Fine Triangular: Basal Ears points account for 50 percent or less of triangular projectile point assemblages at this time. Kenney is the only Middle Fort Ancient site where the percentage of Type 2 Fine Triangular: Flared Base points is similar to that of earlier sites. Since it is located in northern Kentucky near Bedinger, this suggests that in this region, there was a continued preference for Type 2 Fine Triangular: Flared Base points.

During the Middle Fort Ancient, Type 4 Fine Triangular: Short, Excurvate points continue to be present, but in low numbers. This type appears to increase in popularity toward the end of the subperiod accounting for more than five percent of the projectile points at Florence Hr22 and Fox Farm, both of which were occupied towards the end of the Middle Fort Ancient subperiod. Type 6 Fine Triangular: Concave Base points were found only at one Middle Fort Ancient site (Table 1).

The increased preference for Type 3 Fine Triangular: Coarsely Serrated points during the Middle Fort Ancient, if not simply a stylistic preference, may be related to population aggregation and larger villages documented for this subperiod (Pollack and Henderson 2000). This may have resulted in the need to ensure greater success in the recovery of big game (deer, bear, elk) for these larger communities.

The coarsely serrated lateral margins of Type 3 points provide two functional qualities that would have aided Fort Ancient hunters of big game: grip and cut. Grip is critical when hunting big game, such as bear. These animals have a high fat content that can, and often does, seal the wound channel inflicted by the projectile and help “plug” the wound. This results in less blood loss, which means less effective tracking, and thus fewer animals taken. For other big game animals, such as elk, an effective cut is needed to penetrate the thicker hide (Miller and Sanford 2010). The jagged cut caused by serrations would have increased the blood trail and damage caused by an animal running with an embedded serrated point. Tracking would be more effective in these situations and hunting success would be greater. Serrations also provide bulk/mass that helps retain edge support. It is also likely, although not quantifiable at this time, that serrations increase the available cutting edge. Interestingly, the efficiency and effectiveness of serrated triangular arrow points is supported by their continued use by modern archers, albeit made from modern raw materials (Miller and Sanford 2010).

During the early Late Fort Ancient (A.D. 1400-1550), Type 5 Fine Triangular: Straight Sided points reach their peak of popularity. This type can account for as much as 78.0 percent of site assemblages (Table 1). Type 4 Fine Triangular: Short, Excurvate and Type 6 Fine Triangular: Concave Base points also increase in popularity at this time, and there is a sharp decline in the presence of Type 3 Fine Triangular: Coarsely Serrated points. That the latter accounts for 12.5 percent of the points at Fox Farm likely represents occupational continuity from the earlier Middle Fort Ancient component at this site.

Early Late Fort Ancient triangular points tend to be smaller than earlier Fort Ancient examples. This reduction in point size over time is supported, in part, by Bradbury and Richmond’s (2004) discriminant functional analysis, which concluded that the Type 6 Fine Triangular: Concave Base point was a valid type.

Reduction in projectile point length may be tied to changes in hunting practices and access to/choice of raw materials. Continued population aggregation and growth of Fort Ancient villages may have put stress on populations of bigger game. A reduction in the size of the regional deer herd, for example, may have led to a greater reliance on small fur-bearing animals as a meat source. Hunting techniques also may have changed. Animal drives, similar to those documented during early contact and historic times in which large hunting parties "beat the bush" to drive animals to waiting hunters may have become more common. There also may have been a shift in emphasis from hunting deer for hides to hunting small fur-bearing mammals for fur. It is also possible that as more groups moved their villages to major waterways, there was a shift in chert resource procurement strategies (i.e., from upland chert outcrops to smaller riverine gravels). The *chaîne opératoire* to reduce an Ohio River gravel cobble of Laurel chert is totally different from that involved in working a large nodule of Boyle chert obtained from an outcrop of the Lexington Limestone. It would be very difficult to manufacture Type 2.1 Fine Triangular: Basal Ears points similar in size to those found at Muir from Ohio River gravel chert; thus the reduction in point size.

At late Late Fort Ancient sites (i.e., those with post-A.D. 1550 components), Type 5 Fine Triangular: Straight Sided points continue to be present in substantial numbers, but the type is no longer the most popular, having been supplanted by Type 6 Fine Triangular: Concave Base points (Table 1). These two point types (5 and 6) account for at least 17 or 45 percent, respectively, of site assemblages. Together, they account for more than 67 percent of the points recovered from late Late Fort Ancient sites. Type 4 Fine Triangular: Short, Excurvate points continue to be present, and a few examples of Type 2 Fine Triangular: Flared Base and Type 3 Fine Triangular: Coarsely Serrated points have been found at the latest Fort Ancient sites.

Discussion

From this analysis, it is clear that a single triangular projectile point type alone cannot be used to date a Fort Ancient site occupation or component. It also is evident that for most of the Early and Middle Fort Ancient subperiods, Type 2 Fine Triangular: Flared Base points are the most common type, and that by the end of the Early Fort Ancient (ca. A.D. 1200), Type 5 Fine Triangular: Straight Sided points become firmly established and remain so throughout the balance of the Fort Ancient sequence. Type 3 Fine Triangular: Coarsely Serrated points reach their peak of popularity during the Middle Fort Ancient, Type 5 Fine Triangular: Straight Sided points during the early Late Fort Ancient, and Type 4 Fine Triangular: Short, Excurvate and Type 6 Fine Triangular: Concave Base points during the late Late Fort Ancient.

Given these trends, it is clear that, rather than looking at a particular point type, researchers should consider the spectrum of points recovered from a site component when attempting to interpret its age. Bradbury et al. (2011:18) reached a similar conclusion.

Conclusion

For more than 20 years, we have found Railey's 1992 typology, with some subsequent modifications, to be quite useful for dating site components, identifying diachronic changes in projectile point shape, and examining intersite and interregional variation in the manufacture and use of triangular projectile points. Patterns in ceramic data and suites of radiocarbon dates support the diachronic patterns identified in the projectile point data.

Bradbury et al. (2011:21) note that Fort Ancient triangular projectile points vary in shape, and that this variation has a temporal component. They also note that other factors, such as resharpening, intersite/interregional differences in rates of adoption, and the recycling of earlier points by later groups, have contributed to the observed variation. Bradbury et al. (2011) suggest that archaeologists should seek to identify the factors that led to the variation observed in the archaeological record and the extent to which these factors are similar across the Fort Ancient area.

We could not agree more. Having identified differences in projectile point shape, hafting elements and degree of serration, it is important for archaeologists to determine the extent to which these attributes are related to a tool's function or if they are linked more closely to stylistic preferences.

Where we disagree with Bradbury et al. is the extent to which the observed variation negates the usefulness of the existing typology. We feel that the regional data support the use of the 1992 typology as modified and that it continues to be a useful research tool.

What we need to do now in Fort Ancient chipped stone tool studies is to move beyond chronology, and begin to explore, for example, the relationship between projectile point shape, style, and function. Another question ripe for exploration is the extent to which changes in triangular projectile point shape are correlated with the introduction and adoption of other stone tools, such as chipped limestone discs and teardrop-shaped endscrapers. Fine triangular projectile points are but one component of a composite system of archery tackle. Changes to one component of the system (stylistic or functional) may have necessitated alteration of other components of the system. Researchers also need to examine the extent to which regional variation in projectile point assemblages during the Early and Middle Fort Ancient subperiods corresponds to social boundaries within the Fort Ancient culture area.

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