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Alternative Adaptive Strategies: Reply to Lyneis

ROBERT L. BETTINGER

The lines of contention between my assessment of prehistoric human ecology in the Great Basin (Bettinger 1978) and Lyneis's criticism of this assessment (see this volume) are clearly drawn. I have argued that there are at least two adaptive strategies represented in the prehistoric Great Basin, a *Desert Culture strategy* characterized by shifting settlements and unspecialized subsistence patterns, and a *Desert Village strategy* characterized by permanent settlements and relatively specialized subsistence patterns. I have argued further that, as presently understood, prehistoric subsistence-settlement patterns in Reese River Valley, central Nevada (Thomas 1973), and Warner Valley, south-central Oregon (Weide [Lyneis] 1968, 1974), are examples of the Desert Culture strategy, and those in the lower Humboldt Sink, western Nevada (e.g., Heizer and Napton 1970), Surprise Valley, northeastern California (O'Connell 1975), and Owens Valley, central eastern California (Bettinger 1977) are examples of the Desert Village strategy. This led me to conclude that the differences in these adaptive strategies could not be readily explained as responses to local environment because Warner Valley and Surprise Valley are quite similar in environment but sustained different adaptive strategies, the same being true for Reese River and Owens Valley. Lyneis objects to this interpretation, contending that subsistence and settlement patterns in Warner Valley are more characteristic of the Desert Village strategy, are quite similar to those in Surprise Valley, and there is no need to invoke the concept of adaptive strategies to explain differences in Great Basin human ecology at all. In responding to this criticism, I shall confine my discussion to a comparison of the adaptive patterns in Warner Valley and Surprise Valley, for virtually the whole of Lyneis's argument lies in what she perceives to be overall similarities between these areas.

In this context, there are two related issues. One is the nature of man-land relationships in Warner Valley and Surprise Valley, particularly in terms of their similarities and differences; the other is the presence of environmental characteristics in either area that might explain any differences observed in their respective aboriginal adaptations. With regard to the latter, following O'Connell (1971), I have suggested that there are broad environmental similarities between Warner Valley and Surprise Valley (Bettinger 1978). Lyneis (see the preceeding paper in this issue) seems disin-

Table 1

CHARACTERISTICS OF SETTLEMENT CATEGORIES IN SURPRISE VALLEY, NORTHEASTERN CALIFORNIA (O'Connell 1971, 1975), AND WARNER VALLEY, SOUTH-CENTRAL OREGON (Weide 1968, 1974)

Regional Settlement Categories	Setting	Occupant Group	Duration	Season	Procurement Activities
SURPRISE VALLEY					
LOWLAND OCCUPATION SITES	marshes	4-6 families	permanent	year round	plant collecting/hunting
LOWLAND TEMPORARY CAMPS	marshes	3-5 males	1-5 days	year round	hunting
UPLAND TEMPORARY CAMPS	upland meadows	3-5 males	1-5 days	spring-fall	hunting
WARNER VALLEY					
WINTER VILLAGES	marshes	5-10 families	3-4 months	winter	plant collecting/hunting
DUNE AND SLOUGH CAMPS	dune and slough	1-2 families	5-15 days*	spring-fall	plant collecting/hunting
UPLAND CAMPS	uplands	1-2 families/ 4-5 males	1-15 days*	spring-fall	hunting/plant collecting

* Actual duration of dune and slough and upland camps is indicated only as "brief spells" (Weide 1974).

clined to take exception to this, and in any case the data presently at hand are almost certainly insufficient to demonstrate fundamental environmental contrasts that might account for significant differences in adaptation between these regions (James O'Connell, personal communication). This being the case, we must look to explanations other than environmental for whatever major adaptive dissimilarities exist.

Turning to the problem of human ecology, subsistence-settlement models proposed by Weide (1974) for Warner Valley and O'Connell (1975) for Surprise Valley differ fundamentally in several important respects, and these require some detailed comment. To facilitate discussion, Table 1 summarizes the characteristics of the major settlement categories that are the framework for subsistence-settlement systems in Warner Valley and Surprise Valley. Careful inspection of these data reveals two things.

First, Surprise Valley is characterized by permanent, i.e., year round, occupation at multifamily villages, the catchments of which furnished nearly all of the plant resources annually consumed. As a further aid to the procurement of plant resources in these catchment areas, lowland seed gathering and processing sites were established in close proximity to lowland occupation sites to be used daily or occasionally overnight by inhabitants stationed at these permanent villages.[1] Both lowland and upland temporary camps provided the opportunity to procure additional plant resources but these were ignored. This is what I mean by *specialized*, namely the preferential procurement of some resources when others are readily at hand but remain unexploited. Given these characteristics, Surprise Valley subsistence and settlement patterns illustrate what I have termed the Desert Village strategy.

Second, the pattern in Warner Valley is very different from that in Surprise Valley, particularly in that the majority of the year is characterized by family camps moved at short intervals to take advantage of widely distributed resources. Now it is clear that this pattern cannot be identified as one of permanent occupation because only a small part of the time is spent at any single settlement; neither can it be identified as one of specialized subsistence patterns because both plants and animals are procured in a variety of settings, lowland and upland. The pattern is, in short, fully consistent with the Desert Culture strat-

egy as I have described it and as it is outlined, albeit with slightly different connotations, by Steward (1938) and Jennings (1957). In sum, despite their occurrence in similar environments, subsistence-settlement patterns in Warner Valley and Surprise Valley exhibit significant dissimilarities that are more than sufficient to justify their recognition as different adaptive strategies.

Of course, these reconstructions, and consequently the contrast I have drawn between them, are vulnerable to the criticism that they involve a good deal of speculation. The case would be stronger in all respects if some archaeological data could be cited in its support. Limitations of space preclude a comprehensive discussion of this sort, but I would like to offer the distribution of millingstones and manos in Warner Valley and Surprise Valley as evidence consistent with the reconstructions of Weide and O'Connell and with the distinctions I have drawn between them. These groundstone implements are particularly telling in this instance because they can be taken as crude indicators of plant procurement, the presence of women, and usually, by extension, the presence of families since among hunter-gatherers it is uncommon, although not unknown, for parties composed of women to operate away from base camps for any great length of time. (I am fully aware of the frailties inherent in such simplistic assumptions [e.g., Heizer and Napton 1970:107]; however, the attempt here is not to be conclusive, but merely to apply some solid data to an argument that has so far been debated in terms of heuristic models.)

Keeping these parameters in mind, the following archaeological pattern emerges. In Surprise Valley (O'Connell 1975), groundstone implements occur almost exclusively at large sites with extensive midden deposits. They are exceptionally rare at small lowland sites and entirely absent at upland sites, which are uniformly small. The only notable exception to this are the numerous millingstones occurring at lowland seed gathering and processing stations, and these sites are not only rare, but their assemblages are so dominated by groundstone implements and so deficient in debitage and finished chipped stone tools as to suggest that they were not used as campsites but rather as specialized activity areas by task groups maintaining residence elsewhere, e.g., at lowland occupation sites. This pattern has held in subsequent Surprise Valley surveys more intensive than that carried out by O'Connell (James O'Connell, personal communication). Clearly, if groundstone is taken as an index of plant procurement and family groups, these data are consistent with O'Connell's model for Surprise Valley in which occupation is permanently based at large villages and plant procurement is confined to the vicinity of these settlements. In Warner Valley (Weide 1968, 1974) groundstone implements occur at both large and small sites, but are relatively more abundant at small lowland sites than large lowland sites. They are less common at nonlocalized upland sites, but substantially more common there than at the upland sites in Surprise Valley. (In terms of actual data, roughly 21 Warner Valley upland sites produced 20 pieces of groundstone [Weide 1968: Table 2, 19]; 14 Surprise Valley upland sites produced no examples at all.) Again, these data are fully consistent with the subsistence-settlement patterns reconstructed by Weide and point to small, widely separated groups drawing upon resources from highly varied settings, both upland and lowland. These data are not definitive; nevertheless, they underscore the differences I have noted in adaptive patterns for Surprise Valley and Warner Valley.

Lyneis, however, seems to sidestep these substantive differences and places the weight of her argument on two characteristics of Warner Valley adaptation that she feels cannot be reconciled with the Desert Culture strategy. One is the annual reoccupation of winter

villages by the same social groups, the other is a "lacustrine subsistence specialization." As I have indicated (Bettinger 1978), the reoccupation of Warner Valley winter villages by the same social groups remains to be demonstrated; Weide has cited no data to support this idea. And certainly studies of modern hunter-gatherers make such an assertion exceedingly tenuous by furnishing frequent examples where village locations are permanently fixed in the vicinity of dependable resources, but despite this, village composition is quite fluid (e.g., Lee 1972). Moreover, Warner Valley winter villages lack the high frequencies of the distinctive aphanitic basalt which Weide (1974: Table 1) takes to be a social indicator for the inhabitants of northern Warner Valley. This raises important questions regarding the relationship between these winter villages and the northern Warner Valley dune and slough and upland camps; certainly, it makes even more doubtful her argument regarding the composition of the winter villages.[2] But perhaps the most important point here is that the annual reoccupation of winter villages, even if it did occur, would not necessarily be inconsistent with the Desert Culture strategy (cf. Jennings 1968:112; Steward 1938:passim), and has only minimal implications for social organization since the family would still be the maximal unit remaining in face-to-face contact year round.

With regard to the notion of a "lacustrine subsistence adaptation" in Warner Valley, it is clear that by this Weide (1974) means that most of the food consumed in Warner Valley was drawn from lacustrine settings. However, to paraphrase Jennings (1968:135) who once criticised a similarly proposed lacustrine specialization for the lower Humboldt region, the subsistence patterns in Warner Valley do not appear to reflect *specialization* at all but rather a broad spectrum adaptation in an area where lacustrine resources constitute the bulk of the edible biomass. To demonstrate specialization, it would have to be shown that non-lacustrine resources were systematically ignored, and on this point the Warner Valley data are quite to the contrary. Subsequent research seems to have proved Jennings wrong in the context of the lower Humboldt region, but his logic remains valid for the Warner Valley.

To summarize briefly, there are indeed important differences between subsistence and settlement patterns in Warner Valley and Surprise Valley and these appear to be of a sort that would warrant their recognition as examples of different adaptive strategies. Furthermore, as presently known, environments in Warner Valley and Surprise Valley are not sufficiently dissimilar to account for these adaptive differences. The concept of adaptive strategies (Bettinger 1978) provides a viable alternative explanation.

Before closing, I would like to respond to Lyneis's suggestion that in my article (Bettinger 1978), I misled readers by the use of circle graphs to convey information about subsistence patterns in different regions without indicating the disparate nature of the data they represented. This criticism is groundless. The graphs were intended only as visual aids to the discussion. That they are my estimates of published data is clearly indicated in the figure caption (Bettinger 1978:Fig. 2), as are the data upon which they are based, these in turn being succinctly described in the text of the article. While Lyneis finds particular fault with my failure to depict accurately the biases of survey technique underlying the Warner Valley data, I would find it difficult to do so now (though I did not originally), since what she described as "systematic survey" in 1974 (Weide 1974) she now refers to as "judgemental survey." The meanings of these terms are quite clear, but mutually incompatible. Other than the confusion on this point, the responsibility for which lies with Lyneis rather than me, I am confident that my graphics will not mislead careful readers.

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NOTES

1. Although Warner Valley dune and slough camps superficially resemble the Surprise Valley lowland seed gathering and processing stations, they differ from them in several respects, the most important being that (1) the Warner Valley dune and slough camps are not satellites of larger, more permanent villages; (2) their assemblages are sufficiently well balanced to suggest their use as short term campsites rather than specialized activity areas; and (3) they give evidence of occupation much more dispersed than is suggested for the Surprise Valley lowland seed gathering and processing stations.

2. It should be pointed out that O'Connell has also been unable to document the social composition of lowland occupation sites in Surprise Valley. However, his reconstruction of settlement stability is based on site distributions and a functional settlement taxonomy rather than assumptions about social cohesiveness.

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Corrections to Sea Level Article

POLLY McW. BICKEL

I have been informed of two errors of fact and one of interpretation in my article regarding changing sea levels along the California coast (Bickel 1978). Proximity of the dated hearth feature to the Sunnyvale female was 200 m. or less, not 500 m. as stated in the Appendix. West Berkeley radiocarbon dates in Table 1 do not reflect corrections made by the