usefulness for various purposes [Woodbury 1977:551].

In conclusion, I would like to endorse Woodbury's sentiments, and urge anyone who is involved in the reviewing process to approach the task honestly and *responsibly*; I also hope that, in future, the staff of the *Journal* will apply the same high editorial standards to the selection of book reviews (and reviewers) as are presently employed in the evaluation of articles.

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On the Correspondence Between Villages and Wetlands in the Great Basin

MARGARET M. LYNEIS

Robert Bettinger (1978) argues that adaptive strategies in the Great Basin cannot be explained as the product of differences in local environment. In two of the five cases he examines, he finds no correspondence between environment and adaptive strategy. He is mistaken, however, in his analysis of one of the two cases, that of the Warner Valley subsistence network in south-central Oregon (Weide 1974). As a result, he muddles the relationship of settlement-subsistence systems and environmental variability in the Great Basin. He creates a false problem where none exists, a mystery of discordance between environmental potential and evolutionary adaptation.

Bettinger describes five cases: prehistoric settlement-subsistence systems from the Owens and Surprise Valleys in eastern California, the lower Humboldt and Reese River Valleys in Nevada, and Warner Valley, just north of Surprise Valley in Oregon. He proposes a two-category classification of prehistoric adaptive strategies in the Great Basin, a Desert Culture strategy and a Desert Village strategy. Bettinger classifies the Reese River and Warner Valley cases as examples of the Desert Culture strategy, placing the remaining three systems, including Surprise Valley, in the Desert Village category. Recognizing the general environmental similarity of Surprise and Warner valleys, Bettinger puzzles over the supposed dissimilarities in their adaptive strategies, and strays into speculation concerning separate cultural-historical origins for the two adaptive strategies.

I identified the Warner Valley as a settlement-subsistence network which included annually reoccupied, permanently situated lowland winter villages. This semi-sedentary settlement system was adapted to the permanent lakes, streams and extensive sloughs and marshes of the valley floor. The Warner Valley case is an excellent example of correspondence between environmental possibilities and more sedentary lifeways, contrasting with models of Great Basin settlement patterns derived from Julian Steward's work (Weide 1968).

Bettinger metamorphoses the Warner Valley case in the course of his discussion. He begins by properly characterizing the Warner Valley settlement-subsistence network as consisting of three settlement types, one of which is

> *Lowland villages* located at the edges of permanent lakes or streams [which] were repeatedly occupied during the winter months by from 5 to 10 nuclear families comprising perhaps 25 to 50 individuals, these groups subsisting on stored seeds and fish [Bettinger 1978:31].

He then inexplicably classifies it as an example of Desert Culture strategy, which he defines as "shifting settlements and unspecialized subsistence patterns" (Bettinger 1978:27).

The distortion is heightened when Bettinger places the Surprise Valley, California, system on the Desert Village side of his dichotomy, for the Surprise Valley is similar to Warner Valley in settlement system. Bettinger (1978:33) identifies three criteria for the Desert Village strategy: "a subsistence-settlement system far more sedentary, economically specialized, and comprising larger population aggregates than the Desert Culture system." Bettinger's summaries, however, present the Surprise and Warner Valley cases as indistinguishable in (1) extent of economic specialization, and (2) size of population aggregation. The degree of difference in sedentism between the two cases is minor. O'Connell (1975) argued that in Surprise Valley, most resources are available within a three to six mile catchment of his lowland sites, and that the sites might have been occupied year-round. In the Warner Valley families dispersed in the summer to short-term camps in lacustrine/riparian portions of the valley floor five to fifteen miles from village locations. While this degree of sedentism is less than that proposed for Surprise Valley, the similarities of the Warner Valley and Surprise Valley systems far outweigh their contrast in degree of sedentism. Bettinger has no basis, either in his own argument or in my analysis of the Warner Valley case, for the great contrasts he claims between the adaptive strategies of the two adjacent valleys. There are simply no grounds for placing Warner Valley in the Desert Culture strategy as he defines it.

David H. Thomas' (1973) interpretation of the Reese River Valley is Bettinger's other example of a Desert Culture strategy. By Bettinger's description, Reese River Valley is characterized by upland winter pinyon settlements which varied annually in both location and group composition, and are markedly different from the Warner Valley villages. Bettinger (1978:32) falsely attributes to me recognition of a purported "overall similarity between subsistence-settlement systems in Reese River and Warner Valley," when in fact I stated:

> While both valley floor and upland resources were used in Reese River and Warner Valleys, winter locations, group size and permanency of wintering locations contrast for the two areas. Piñon nuts were the winter staple in the Reese River Valley and Thomas finds his winter villages in the Piñon-Juniper Zone. He suggests that winter group composition may have been relatively stable from year to year, but wintering location was determined by local availability of the piñon crop in any year. He suggests a winter group of 5 families with several such groups sometimes situated within a 1 mile radius (Thomas 1973:173). Warner Valley winter sites appear to have had permanent locations on the valley floor with the smaller summer groups aggregating to winter together. The contrasts between the wintering patterns in Reese River and the Warner valleys are related to the absence of piñon as a winter staple in the Warner Valley, which lies many miles north and west of the limits of piñon (Steward 1938: Fig. 4). Stored seeds and fish must have been winter staples supplemented with results of winter hunting and catching on the valley floor [Weide 1974:77-78].

As I constructed it, the Warner Valley subsistence-settlement network is remarkably similar to that of the ethnographic Klamath

(Weide 1968:303). I am appalled to see it so clearly misclassified. The harm lies not in the taxonomic error, however, but in the erroneous conclusion that Bettinger then reaches, specifically:

> The differences between these [two adaptive] strategies do not reflect environmental constraints, both strategies being found in essentially equivalent natural settings [Bettinger 1978:27].

Once the Warner Valley subsistence-settlement network is correctly classified as a Desert Village strategy, then four of Bettinger's five cases are settlement systems based on sedentary to semi-sedentary lowland villages, and are situated in well-watered valleys with substantial lacustrine and/or riparian resources. The correspondence between environmental and adaptive strategy defined as settlement system is marked. It is not my intention to argue that ecology fully explains the variability in socio-political organization that may have characterized the prehistoric Great Basin. There is, however, a marked correlation between village life and riparian/lacustrine resources in the set of cases that Bettinger brought together.

Bettinger would have served his readers better if he had given them a sense of the quality of data that are the bases of his cases. Each of his examples derives from a different balance of archaeological survey and excavation, and the survey data from each of the five valleys is biased in different ways. The Warner Valley subsistence network was inferred from data collected in a non-randomized, judgmental archaeological survey, and from the composition of surface assemblages of artifacts and debitage on sites. No excavation was done, and no site catchment analyses were made. There is no information from the Warner Valley studies quantifying the proportion of riparian, lacustrine, and marsh-derived plant foods in the plant diet. Yet Bettinger (1978:Fig. 2) has devised a circle graph purporting to show the composition of the plant diet in Warner Valley, and compares it to similar diagrams also of his own creation for the other case.

In summary, Bettinger has brought the existence of prehistoric villages within the Great Basin to a wide audience, but his misleading use of his own categories has led him to misrepresent the relationships between environmental potential and the appearance of more sedentary settlement subsystems. More than twenty years ago, Jennings and Norbeck predicted that village sites would be found in lacustrine valleys in the Great Basin. They stated:

> Mention must also be made here of specialized cultures within the Basin during this period for which inclusion under the name Desert Culture is inappropriate. Around the margins of the fresh-water lakes of the Great Basin there probably existed various more or less sedentary communities of people relying primarily upon the richer resources of the lakes and their shores and doing little foraging in the desert [Jennings and Norbeck 1955:3].

Subsequent investigations have largely confirmed their predictions, although we now recognize a greater contribution of marsh and riparian resources to subsistence than was explicit in their statement. The well-watered valleys which drain the eastern slopes of the Sierra Nevadas and other hydrologically favored portions of the Great Basin generally fostered more sedentary populations than did the drier valleys of central Nevada. The ecological correspondence is clear, despite Bettinger's argument to the contrary.

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Alternative Adaptive Strategies: Reply to Lyneis

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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-