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Dr. Rex E. Gerald  
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Dear Rex:

Your very welcome letter of May 22nd emphasized a most interesting point regarding cultural traits which I am afraid, at the moment, I cannot satisfactorily interpret or answer.

The interpretation of Cultural traits based on an artifact media analysis - whether it be pottery or a particular lithic industry - would have to include many components. These components are the result of the many stages involved in both the making of pottery and artifacts before the raw material culminates in the finished product. I cannot speak for the potters, but in the tool industry there are many subtle differences in flaking technology.

For the novice lithic technologist, these differences are difficult to discern and this is the very purpose of my present writings - to acquaint the student of lithic technology with the diverse manufacturing techniques of the tool, flake, and blade industry; and even to encourage him to experiment and then to verify the experiment. Some differences are individual variations and are simply the result of one person having more skill than another. Others are the result of differences in materials; differences in holding; lack or, or inadequate preparation; variations in the actual technique; miscalculation or error by the worker; modification of the tool after breakage; resharpening; and other factors too numerous to list. All of these factors can cause variations in the completed artifact.

It may ultimately be possible to determine the difference in Clans who consistently used an established and comfortable technique to make points which produced a flake surface different than, or a variant of, those of neighboring clans. However, large populations of artifact assemblages found in context would be most important to verify the difference and then relate this deviation to either holding, materials, instruction, dexterity, diverse techniques, or the development of muscular motor habits. At present, it has become a real problem to even differentiate between the sub-types of projectile types. For example, the diverse styles and forms of the fluted point, i.e. Clovis, which represents a wide range of techniques, form and size.

Children usually try to emulate the activities of their parents, but I feel that instruction in toolmaking was essential and that mere observation would only enable them to detach sharp flakes. Mere observation is not enough to grasp the mechanics and variables of flaking stone and the apprentice must be instructed. I think that Henry Irwin, Washington State University, proved this point. There he conducted a class in the limited manufacture of stone tools and, in the beginning, only permitted the students to observe his methods of fabrication. According to Henry, after months of observation, they were unable to make tools even comparable in refinement to those found at the lower levels of Oldivert Gorge. But, after he gave them instruction improvement was rapid.

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Norman Tindale, University of Adelaide, has observed the Australian aborigines and he says that boys there do not receive instruction in tool-making until they have reached a certain age, after certain rites have been performed, and after they are accepted as men to associate with the adult tribe members. In the interim of being rejected by their mothers and until acceptance by the men of the tribe they were forced to gather their food by whatever sharp flakes they could produce.

Of course, we always have the individual who is quicker to learn and more adept than others. It is very possible that there were also specialists who devoted more time to toolmaking than others, which would account for some artifacts found at the same site being more refined than others. I think it is not only probably, but very possible that tribes had their master toolmaker.

There is another factor which disturbs me but which may be just what you are looking for and that is an assemblage such as the Hohokam. Right now I am working on a paper on this culture and find that there is no such thing as a "Hohokam point".

I received an assemblage of these points from Dr. Emil Haury, University of Arizona, and the group comprised a number of different point styles. Some were recovered by surface collecting and others by excavation generally associated with cremations. I separated the points according to form, techniques and materials and found that this brought forth an automatic sorting of five general forms - barbed, serrated, side-notched, corner-notched, and some thin, lightweight, triangulate points. Technological differences - some major and some minor - were associated with various point forms; and I noted that material preferences were also related to point forms. I have <sup>not</sup> concluded my analysis of this industry, but right now, it suggests a type of assembly-line production with various toolmakers doing individual stages of the tool manufacture.

Monday I am leaving for the University of Arizona to confer with Haury on this lithic material in more detail and will try to keep notes on any differences that may be associated with Clans.

I am afraid I have not been of much help to you and only hope I have not nailed the lid ~~on~~ your box. If you would care to send some of these artifacts to me, I will be glad to look them over and give you my analysis conclusions.

Thanks for the invitation to the Pecos Conference and I would very much like to attend. However, our Great Basin Conference is being held in Pocatello the 7th, 8th, and 9th of August and this would crowd me for time. Perhaps you could attend this conference in Pocatello and we could get together then with Swanson and try to resolve something.

Yours very truly,

Don E. Crabtree