Paracas in Chincha and Pisco: a Reappraisal of the Ocucaje Sequence

Dwight T. Wallace
State University of New York
at Albany

Introduction

The 1964 publication by Menzel, Rowe, and Dawson of the Paracas style sequence of Ica had been long awaited, particularly as an article in 1958 by Rowe had outlined the 4 phase seriation arrived at earlier by Lawrence Dawson. The result was a sequence of 10 phases, extending the earlier seriation and making some corrections based on excavations done in Ica in 1958 (Wallace 1962). The sequence was named after one subarea of Ica, although covering the whole valley; it was also presented as defining the temporal period termed the Early Horizon (Menzel, Rowe, and Dawson 1964, p. 4; hereafter referred to as "MRD").

My own interest in using the Ica sequence was considerable, as I had made a number of collections of Paracas style materials during a site survey of Chincha and Pisco (Wallace 1971). The authors had recognized areal variations in the broader Paracas style distribution in these valleys as well as in Nasca to the south. Despite this range of temporal and areal differences, the Paracas style is quite distinct and readily identifiable; the distribution of the style is moderately wide, but the main area covers coastal zones quite accesible to each other. The authors also recognized areal variation within the valley of Ica itself; this is unusual since areal variation had often been considered too complicating a factor to permit good seriations.

Comparatively little fieldwork has been done on the south coast since 1960, and there has been no new field data to measure or test the success of the Ica sequence. The style sequence, based largely on whole

plots from looted graves, is very difficult to apply to sherd collections because the style traits unique to single phases are somewhat limited in number and can easily be missing from even large field collections. In any case, it is certainly timely to discuss Paracas style materials from outside Ica in light of the published Ica sequence.

When the comparison between the Paracas materials from Chincha, Pisco and Ica was made, it was apparent that similarities fell between Ica phases 7 and 9. However, some confusing differences were noted. Areal variation was to be expected, but cross-dating between specific forms of style traits should be possible, given the direct, historical contact expectable in this restricted area. One relatively large collection from Chincha, with internal consistencies like those used to establish contemporaneity in the Ica Paracas sequence, had ties with both the upper and lower Ica varieties of Paracas style, as well as specific similarities with traits of phase 7 and of phases 8 and 9. One other small collection is from the upper Pisco valley, and there are also the original Cavernas lots from the Paracas area. These two latter collections show some interesting differences, which can be assumed to be at least of areal significance, if not also temporal.

The inter-valley comparisons set the scene for a discussion of the Ocucaje sequence itself. This discussion will cover methodological factors, most specifically the relationship of style and temporal factors. The effect of operating with certain assumptions concerning the sources of change will also be examined, and an alternative arrangement based on different assumptions will be presented.

Paracas in Chincha and Pisco

Paracas style sherds were found at various sites in Pisco and Chincha during reconnaisance work in 1957 (Wallace 1971). Midden of the Topara style tradition commonly covers the Paracas remains, so the sherd collections are small. These sherds are clearly dated within the Paracas tradition and in the Ica Phases 6 to 9 range. There were 2 additional lots, mainly of whole pots: one grave lot of 9 pots plus some sherds from the upper Pisco valley, near Tambo Colorado (Engel 1956), and also the graves from the type site, Paracas Cavernas (Tello 1959). A third lot comes from the Chincha survey (PV57-63; Wallace 1971). These collections show a reasonable stylistic consistency, but are easily distinguishable from each other. Temporal differences are probably not very great within any of the lots.

A lot from the upper Chincha valley was found in what can be best described as a crater in a miniature pyramid; it consists of 302 well preserved sherds, of which 78% were fine ware sherds with incised-painted, red slip, or polished smudging, 7% were graters, and only 18% were utilitarian ware. This collection, termed Pinta, will be treated as equivalent to a grave lot or cache, assumed to represent a fairly limited time period. It is technologically an excellent ware--thin, well polished and evenly fired, with even black smudging and small evenly formed and spaced negative spots, equal to the upper range of Ocucaje pottery.

A comparison between these three lots (Pinta, Pisco, and Paracas Cavernas) and the Ica sequence is given in Table 1. As an overview of the comparison, perhaps the most obvious result is the large number of traits shared by the 3 northern lots and the Upper Valley Phases 7 and 8.

Figure 1. Comparison of Paracas Style Areal Variants

		Pinta	Pisco	Cavernas	Ica
Inc-pt. designs, no red slip			X	X	All
Inc-pt. bowls, interior red slip	1.8	X	X		U7, U8
Same, concave-sided outflared bowl		X			
Bowl, red slip interior only		X	X		U7, U8
Bowl, red slip interior and exterior			X		
Concave-sided outflared bowl		X	X		U7, U8
Same, as base of 2-spout bottle				X	U8, C8
Negative dots + inc-pt. designs	2.1.2	X	X	X	U7, U8
Neg. dots + isolated design panels		X		X	
Neg. dots between design panel ends			X	X	U7, U8
Small painted dots as main design			X		O8
Same, combined with other designs		X			O8,(C8)
Isolated design panels + red slip			X		
Open design grounds, usually yellow		X	(X)	X	O8, 9
Diag. 1-step motif fret w/dots	15.12.5	X			U7
Diag. 2-ply twined fret	15.13.4	X	X	X	U8,O8,9
Incomplete 2-ply twined fret	15.13.9	X	X	X	9
1-step element in bands	5.12.1	X	X		U7,U8,9
Ang. geom.--diamonds, tri-band rhomboids		X	X		O8, 9
Gliding bird	3.5.2.1.1		X		U7, U8
Oculate being	3.3	X		X	O8, 9-10
Eccentric eye as separate motif	4.1	X	X		O6, U6-8
Serpentine semi-representational motif (Assoc. with Oculate Being)			X		U9
Graters: red slip rim band		X	X	X	3-8, 10
Graters: incised parallel short lines		X	X	X	
Graters: starfish motif		X		X	9
Graters: fishbones motif			X		O8

Numbers indicate traits specified in the Ocucaje report (Menzel, Rowe and Dawson 1964, Table 1, pp. 267-289). Parentheses indicate presence in variant form. 'U' = Upper Valley; 'C' = Callango; 'O' = Ocucaje.

The main cluster of traits that set off this grouping includes ones that are not simply incidental or minor traits. They include the common use of red slipped interiors, both on bowls with exterior incised-painted decoration and ones with no other decoration; negative dots combined with incised-painted decoration; two types of the 2-ply twined fret design as well as some generic angular motifs; and graters with interior red slipped rim bands. Pigmented slipping is more than just an esthetic feature; it also represents an economic and technological choice.

The Upper Pisco and Cavernas lots share traits of both Upper Valley Phases 7 (U7) and 8 (U8), so they could be cross-dated with either or both. The Pinta lot, however, has a quite specific type of fret with angular twined elements and dot fillers that occurs only on Phase U7. In addition, still another type of geometric design cross-dates to either U8, O8, or Ica 9, but not earlier. The situation may well arise from a moderate degree of temporal spread in the Upper Pisco and Cavernas lots, but I consider it highly unlikely that the Pinta unit could have been formed during more than one phase. It is, of course, possible that the motif lasted longer in upper valley Ica than was thought.

The situation suggests that the Pinta lot may well be earlier than either the Upper Pisco or Cavernas lots. Also, the ties with the rather distinctive Upper Valley Ica style are strongest with the Upper Pisco lot, still quite strong with the Pinta lot, but not particularly extensive with the Cavernas lot. Interestingly enough, the Upper Pisco valley is quite accessible from upper Ica via a road across the pampa along the base of the Andean foothills, while upper Chincha, where the Pinta site is located, is accessible by a continuation of that road from Pisco. Contact between the Paracas area and Ica would not necessarily avoid

upper Ica, but there are various alternative routes, including that of the modern Panamerican highway.

A distinctive feature of the innovative Ocucaje 8 and subsequent Ica 9 phases are open or empty backgrounds, normally yellow, around motifs within a design panel; a few cases also occur in U8 as part of what is interpreted as heavy influence from the O8 style, but the Pisco and Cavernas cases are much closer to the supposed proto-type. In addition, all 3 of the non-Ica lots have a number of cases of the "incomplete" twine motif, one or more diamond figures linked by extensions of the diamond outlines; this motif is restricted to Ica 9.

While cross-dating to temporally different units may result from temporally mixed data, a unit with evidence of traits from two areally distinct units can not be explained so easily, assuming there is no question about true provenience. Since this mixture is found in all 3 non-Ica units, it is quite difficult to ignore.

The 3 non-Ica lots also share many other features, but are quite distinguishable. The frequent occurrence of the concave-sided outflared bowl with a red slip interior and with or without exterior incised-painted decoration, sets the Pinta lot apart. In the Upper Valley Ica sequence (MRD, p. 80), the occurrence of this bowl form with red slipping as the sole decorative treatment is rather foreign in that sequence and in some ways to the whole Paracas style tradition, since neither the use of red slipping alone nor of undecorated fineware bowl forms is at all common. This vessel form, also slipped red, does occur outside U7 and U8, but only as the lower part of the base of double spout bottles (MRD, Figs. 15,g and 18,b) in Callango and Upper valley phases 8. The Upper Pisco lot has a bowl with red slip interior and exterior plus small isolated rim panel

with incised decoration, unique to this lot.

The occurrences of part of the modeled eye of the Oculate Being in the Pinta lot and of a serpentine figure often associated with the Oculate Being in the Upper Pisco lot are worth noting.

As an overview, these similarities definitely suggest fairly close interaction between the bearers of the Paracas style. Difficulties in the cross-dating of some traits should not overwhelm the many cases where there are no problems. Borrowings between areas should not be expected to be mechanical or from only one source. Nevertheless, the pattern of cross-dating either with Upper Valley phases 7 and 8 or else with lower valley phases 8 and 9 is a rather consistent feature of the comparisons. Some time differences within what are treated here as one lot should not be ruled out. Another possibility is that the traits in question may not be temporally distinct outside of Ica.

For the Pisco and Cavernas lots, no direction of influence is as yet suggested. However, the case is not the same for the Pinta lot. If Ica were proposed as the source of borrowing, it would be necessary to explain why the Pinta artisans would pick a few specific geometric designs and one unusual bowl form and decoration; the concave sided widely outflared bowl with the unique red-slip-only decoration, from the many elements they might have borrowed from the Upper Valley sub-units. They would then have to convert this bowl form into their most common decorated one. At the same time, they would have had to borrow the open, yellow grounds, the use of diamond and tri-band rhomboid elements, the incomplete twined fret design, and the Oculate Being from the Lower Valley sub-style.

Quite aside from any temporal problems between the style units, this scenario makes little sense. However, if the direction of influence is

assumed to be from Chincha to Ica, there would then have been a borrowing by upper valley inhabitants of a technologically more complex production of red slipped interiors, as well as the undecorated red slipped bowl of specific Chincha form. The technological excellence of the Pinta ceramics fit this interpretation. At the same time, there could well have been influence going in a more westerly path, between Chincha, the Paracas area, possibly more southerly sites in the Tablazo de Ica, and the southern part of the Ica valley. The temporal relationship here could be even more complex, given the possibilities of some lag in diffusion.

Whatever the case, it is clear that a great deal more data must be gathered about areal variations of the Paracas Style Tradition before these questions can be answered. At this point, the frequency of one bowl form in the Pinta lot and the intrusiveness of the specific red-slipped concave-sided bowl in U7 argues for direct contact, with influences going from Chincha to Ica. However, the similarities in the non-Ica lots between both Upper Valley 7 and 8 and Ocucaje 8 and Ica 9 are still to be explained.

Seriational Methodology and the Ocucaje Seriation

The Ica Paracas seriation by Menzel, Rowe, and Dawson is ostensibly a fairly straightforward one in which objective identification of a very large number of shared, formal artifact traits and trait clusters or patterns were used to group individual pots or gravelots into a series of stylistic groupings, and then to order these groupings into a series which maximized the continuity of trait distributions. Seriations have usually been relatively simple unilinear ones with the changes interpreted as representing change through time.

A tabulation (MRD, Table 2, p. 290) gives the maximized seriational order for the presence or absence of 461 traits. All the traits noted as present for any given seriational unit, termed a phase, represent a complex linkage or combining of the many traits associated on single pots, in a grave lot, or otherwise judged to be equatable on stylistic grounds. However, this tabulation is stated as being a "selected sample of contrasting stylistic features....that serve to distinguish single phases or groups of phases from each other" and which "illustrate [the sequence] in abbreviated form" (MRD, p. 263). In addition "contrasts in context and patterning....usually require more involved descriptions than are convenient in an abbreviated tabulation, and so are treated in the text" (MRD, p. 263).

Methodologically, the procedure for preparing the one tabulation of style traits is an a posteriori recording of the attributes on which the groupings of pots had previously been based. There are illustrations of the vessel shapes, as well as the design elements, in the phases of the proposed ordering, but the associations of traits on individual pots or in grave lots is not given, except for some statements to be gleaned from the text. The heart of the presentation is the highly detailed prose descriptions and interpretative art historical analyses in the lengthy section of text.

This approach is a classic example of humanistic scholarship. It is basically a detailed interpretation of stylistic development in the Paracas pottery of Ica. An underlying premise is that the patterns on which this development is based are highly complex, so that no description of the data would do justice to this complexity. Therefore, the elements on which the seriation is built, the traits or features

can be listed, but they can not "prove" the seriation. The essential result is that the ultimate proof of the correctness of the seriation lies in the trust extended to the authors.

One feature that distinguishes humanistic and scientific studies is how explicitly the weighting of explanatory factors must be expressed. The scientific approach demands that such decisions be stated decisively and be verifiable. The humanist would answer that such decisiveness can be restrictive, can mask real problems, and not do justice to complex arguments. A scientist would reply that all conclusions and interpretations are based on weighting of evidence and that expressing these weightings may be difficult, but that there is no reason or excuse for not presenting them.

This is not the place for a discussion of theory, so the subject can be dropped after pointing out that weighting can be done in various ways, one of which is to have relative weight expressed by the relative number of traits recognized. In this way, the importance of the feline representation in the Ocucaje seriation is more or less accurately reflected by having 179 out of 461 traits to describing the different decorative elements and their variants that are found associated as parts of the representation of the feline itself. In short, the authors did put a great deal of weight on the feline in arriving at their sequence. This emphasis is due to the complexity of the feline motif, which in turn reflects its importance in the Paracas style. A way of pinpointing this importance is to state it as 179/461. Unfortunately, such precision would be ridiculed by both sides, with fairly good reason. However, if we feel compelled to make any statements concerning the relative importance of features of the sequence,"about 179/461" is not much different from "very

important" in describing the role of the feline in the Ica Paracas style.

To turn to a direct discussion of quantification, the authors state that formal statistical analyses were not used "because the traits recorded were not equivalent to one another for counting purposes" (MRD, p. 265). While there is no question that the range of quantitative methods would be limited, a great deal of research in the social sciences is done with nominal variables, the type of trait used in the Ocucaje study. Analyses of these types do not deal with the equivalence of traits, but with their associations, such as that of the various features associated on pots or in graves. "Patterns" are basically associational phenomena, emphasizing the nature of the associations and not merely the type or number of elements involved.

The question is not one of simply equating 10 felines with curly eyebrows and 10 cases of gliding birds with clothespin beaks, but of recognizing both cases as equally significant by establishing that they are not idiosyncratic or stylistically minor associations. The equating of rare associations and frequent ones by classing both as "present" misses a great deal of significant data. It is unfortunate that the authors did not present this data, as it would have been important in any future attempt to re-align any of the data. It would not have been necessary to use counts; a ranking from rare to very common, using any scale, would be sufficient.

Lack of proper sampling has been claimed for data from grave lots, particularly with grave lots of doubtful associations. In fact, the adequacy of any sample depends on the questions that are asked of the sample; all bias is relative. Since the Ocucaje study does not attempt to make statements about the full range of ceramic output, using grave

wares is no problem. Similarly, the obvious reliance on "fancy ware" is not a restriction for a study which emphasizes elaborate decoration, an obvious focus in an art historical study which makes no claims about a full range of designs. The only serious problem would be if pots existed elsewhere showing stylistic associations contrary to those of the study. The possibility of bias in collecting the pots is high; however, the probability that certain types of complex design were sorted out of the sample is too low to seriously consider. Questions concerning the validity of the phases as distinct time periods is quite another problem; the final seriation is a sequence of style variations--how valid it is as a temporal sequence is quite another question.

A more serious question of sampling is the low number of pots or even sherds that represent some of the phases. The authors note that the first two phases are not well represented: 6 pots for Phase 1, 2 for Phase 2, and 3 as transitional between Phases 2 and 3 (MRD, p. 9). In addition, the Callango 7 phase is represented by 5 sherds, Upper Valley 9 by 20 pots "probably" assignable to this phase, and no sherds or pots are assignable to Phase 10 in the upper valley. Phases 4 and 5 are represented by 12 pots and 18 pots respectively, Phases 3, Callango 6, and Upper Valley 6 are all represented by between 34 and 38 pots. In the latter cases, any statements concerning what is absent would be inadvisable. Turning back to some general methodological features, the recognition that the presence of the areal substyles during the course of style development immediately makes the seriation more complex is obvious. When space and time are both factors, applying the seriational method is complicated in that temporal and spatial differences can not be separated without a great deal of supporting evidence. On top of this,

the presence of a number of innovations immediately injects discontinuities into the problem, and these are anathema to a clear-cut seriation. In addition, continuities and discontinuities are not, in fact, givens in the data as much as they are the results of the seriation, at least in the seriation of single pots or gravelots. The most successful seriations, from the methodological viewpoint, are those with a balance of continuities and discontinuities and involving one major dimension, whether time, space, style, or some other factor.

The resulting multilinearity of the Ocucaje sequence emphasizes the point concerning the dimensions represented in a seriation. There are a number of possible dimensions, of which space and time are probably the most usual. There are other possibilities, however, and my main point here is that style is one of them; it is not to be confused with time, however common their association may be. Especially when dealing with short and/or conservative style units, stylistic differences may well represent coeval substyles, and the presence of different areal styles in one time period immediately raises the possibility of conservative and foreign-influenced styles in one time and place. Such differences could even be reflected in differing gravelots. A major point here is that the Ocucaje seriation should be interpreted as a stylistic one first; only then can the interpretation of time differences be attempted.

The necessity for distinguishing between stylistic and temporal changes is also true when interpreting the tempo of change. Stylistic trait seriations, when successful, give stylistic sequences, and any translation into time units must assume some type of equation between stylistic and temporal change. None, in fact, is generally agreed upon. The argument becomes entirely circular if similar degrees of style change

are also used as time measures, and these time units are then used to interpret the tempo of stylistic change.

A Plot of Similarity:

The essence of all seriational methods is one of identifying relative similarity between some objectively defined groupings. A basic difficulty is that "similarity" is not a closely defined condition, in either humanistic or scientific terms. There is little problem in identifying shared attributes--beyond questions of the validity of attribute identification. Problems arise mainly from the common desire to assign relative importance or weights to the variables exhibited by the entities being compared; there is also the problem of what relative importance to assign those traits shared vs. those not shared. The problem is not solved by dealing just with traits that are easily measured: would a tall narrow jar be more like a tall broad one than like a short narrow one?

There is one type of quantitative analysis that can be done with the data presented in the Ocucaje study. Frequency counts can be made of the number of traits or features shared by any given pair of groupings or, in the authors' term, any pair of phases. Such data would simply reveal more easily what is already contained in the existing tabular presentation. Stated another way, the resulting frequencies are a straight count of the number of times any two phases share X's (i.e., presences) in Table 2 of the Ocucaje report (MRD, pp. 290-303).

To convert the frequency counts into a form suitable for comparisons, two forumlas for similarity indices were used. They are fairly simple ones, both based on the number of shared attributes divided by the number of those not shared in a given pair of phases. The formulas are:

$SI.1 = Ns / (Na + Nb - Ns)$ and $SI.2 = 2Ns / (Na + Nb)$

where SI is an index of similarity, Ns is the number of traits shared, while Na and Nb are the total number of traits recorded for two different lots. Many similarity indices weight the variables, usually so that the proportion of shared traits is emphasized. However, both of the above formulas are direct expressions of the proportion of shared to unshared traits; each shared or unshared trait has the same effect on the numerical value of the resultant index. Index #1 is the proportion of shared traits to the total of the unshared (or unique) traits in the two entities compared. Index #2 is essentially an average of the proportions of shared to total traits in each of the entities compared. In no case did the results of using one or the other index change the general pattern of similarities between all pairs of units.

In addition, calculations were made for each formula that both included and excluded the unique traits. Excluding unique attributes gives an artificial, but interesting picture of the traits shared when the "weighting" of the attributes not shared is removed from the pair of units under comparison. In essence, it gives a picture of how many traits are shared which are also shared by previous ("earlier") units and subsequent ("later") ones in the sequential arrangement of units. The value of this approach would be especially great when a large number of traits briefly flood a particular temporal or sub-areal unit.

An additional way in which similarity indices can be used with the Ocucaje study is to make separate matrices using traits only of certain sub-groups of traits. The obvious ones in the present case are each type of representational "theme" used in the study for which a quantity of traits have been identified; these would include representations of

felines, mythical feline-humans, the Oculate BEing, humans, birds, and broad band and/or narrow band geometric motifs. By comparing these plots with each other and with that for all traits combined, it is possible to see the roles played by each in the total seriation. For example, the feline representations play by far the greatest role of all motifs, since they contribute the largest number of traits and cover more of the sequence than almost any other type of motif. The fact that there are two distinct sequences, the upper valley and lower valley, is still one further basis for setting up distinct matrices.

Since a large number of tables could have been presented, the ones in figures 2 and 3 are selected to show some of the variety of possible comparisons as well as ones which illustrate a major point that will be made later. The frequency counts on which the indices were based could be used directly; the indices simply take into account the varying numbers of cases for each unit.

The tables shown here are in the common correlation matrix form. This form of presentation serves other purposes than the straightforward, feature by feature presentation in the Ocucaje report. But the data on which the tables are constructed should be recognized as simply another method of presenting the same data. One of the advantages of the use of such a matrix is that it can be used to arrive at and also demonstrate the validity of a unilinear seriation; if phases (or "units", as I prefer to call them) can be successfully arranged, the higher counts of shared attributes will occur on the diagonal.

The purpose for the use of the similarity indices in this paper was not to re-examine the sequence in detail, but to assess any problems in its use for cross-dating with other areas. The many possible tables

UPPER VALLEY: ALL ATTRIBUTES

UNIT	3	4	5	U6	U7	U8	9
4	40						
5	27	62					
U6	16	31	45				
U7	12	21	29	46			
U8	14	18	24	32	54		
9	2	6	8	7	8	11	
10	1	3	3	5	5	5	40

UPPER VALLEY: FELINE-MYTHIC

UNIT	3	4	5	U6	U7	U8	9
4	36						
5	25	59					
U6	19	35	56				
U7	14	21	34	49			
U8	20	21	31	37	61		
9	2	5	8	8	11	10	
10	2	2	3	3	3	4	27

UPPER VALLEY: HUMAN ATTRIBUTES

UNIT	3	4	5	U6	U7	U8	9
4	83						
5	62	71					
U6	20	22	30				
U7	11	12	10	25			
U8	12	14	11	12	75		
9	0	0	7	0	0	0	
10	0	0	0	0	0	9	42

UPPER VALLEY: GLIDING BIRD

UNIT	3	4	5	U6	U7	U8	9
4	0						
5	0	85					
U6	0	33	30				
U7	0	29	26	37			
U8	0	16	15	27	52		
9	0	19	17	19	15	22	
10	0	24	21	23	18	13	60

UPPER VALLEY: GEOMETRIC

UNIT	3	4	5	U6	U7	U8	9
4	50						
5	27	55					
U6	20	25	43				
U7	12	16	23	39			
U8	7	6	14	22	26		
9	0	0	0	5	7	18	
10	0	0	0	11	6	8	8

UPPER VALLEY: VESSEL SHAPES

UNIT	3	4	5	U6	U7	U8	9
4	60						
5	42	70					
U6	23	23	42				
U7	29	29	36	64			
U8	15	15	26	35	56		
9	4	4	4	9	8	7	
10	0	0	0	0	0	0	44

LOWER VALLEY: ALL ATTRIBUTES

UNIT	3	4	5	C67	C8	08	L9
4	40						
5	27	62					
C67	13	30	48				
C8	14	17	25	38			
08	8	12	13	17	42		
L9	2	6	8	8	21	26	
10	1	3	3	6	9	13	40

LOWER VALLEY: FELINE-MYTHIC

UNIT	3	4	5	C67	C8	08	L9
4	36						
5	25	59					
C67	17	33	53				
C8	21	18	29	48			
08	13	20	20	30	48		
L9	2	5	8	13	19	36	
10	2	2	3	4	9	12	27

LOWER VALLEY: HUMAN ATTRIBUTES

UNIT	3	4	5	C67	C8	08	L9
4	83						
5	62	71					
C67	20	22	44				
C8	18	20	17	30			
08	14	17	12	14	12		
L9	0	0	7	8	7	0	
10	0	0	0	0	0	0	42

LOWER VALLEY: GLIDING BIRD

UNIT	3	4	5	C67	C8	08	L9
4	0						
5	0	85					
C67	0	39	50				
C8	0	25	32	58			
08	0	22	20	19	46		
L9	0	19	17	22	46	47	
10	0	24	21	26	31	40	60

LOWER VALLEY: GEOMETRIC

UNIT	3	4	5	C67	C8	08	L9
4	50						
5	27	55					
C67	20	36	43				
C8	5	21	27	30			
08	0	0	6	6	39		
L9	0	0	0	0	15	31	
10	0	0	0	0	6	0	8

LOWER VALLEY: VESSEL SHAPES

UNIT	3	4	5	C67	C8	08	L9
4	60						
5	42	70					
C67	8	18	40				
C8	5	5	5	6			
08	0	0	0	0	64		
L9	4	4	4	0	35	30	
10	0	0	0	0	10	12	44

FIGURE 2. Similarity indices [Ns/Na+Nb-Ns] for the distinguishable Ica Paracas sequences for the upper and lower valley, with breakdown into the component attribute categories. The Oculate Being and Other Representations are not included, being limited in extent or small in number. Callango 6 has 34 pots, C7 only 5 sherds, so are combined. Unit 9 is best considered as lower valley; only 20 "probable" upper valley specimens exist.

ALL ATTRIBUTES (N = 1065)

Upper Valley \ Lower Valley	3	4	5	C6-7	C8	08	9	10
3	100	58	42	23	24	14	29	1
4	58	100	76	47	30	22	11	7
5	42	76	100	64	40	23	14	7
U6	27	48	62	76	41	27	13	10
U7	22	35	45	61	46	31	15	9
U8	25	31	38	46	57	39	19	10
9	29	11	14	14	35	41	100	57
10	1	7	7	10	17	24	57	100

FELINE-MYTHIC ATTRIBUTES (N = 438)

Upper Valley \ Lower Valley	3	4	5	C6-7	C8	08	9	10
3	100	53	40	29	34	23	4	5
4	53	100	75	50	31	34	9	3
5	40	75	100	69	44	33	15	6
U6	31	52	72	78	48	37	14	6
U7	24	34	50	71	61	45	20	6
U8	33	34	48	58	63	43	18	8
9	4	9	15	23	32	53	100	43
10	5	3	6	7	17	22	43	100

HUMAN ATTRIBUTES (N = 59)

Upper Valley \ Lower Valley	3	4	5	C6-7	C8	08	9	10
3	100	91	77	33	31	25	0	0
4	91	100	83	36	33	29	0	0
5	77	83	100	62	29	22	13	0
U6	33	36	46	83	15	25	0	0
U7	20	22	18	40	18	33	0	0
U8	22	25	20	22	40	40	0	17
9	0	0	13	14	13	0	100	59
10	0	0	0	0	0	0	59	100

GLIDING BIRD ATTRIBUTES (N = 152)

Upper Valley \ Lower Valley	3	4	5	C6-7	C8	08	9	10
3	0	0	0	0	0	0	0	0
4	0	100	92	56	40	36	32	38
5	0	92	100	67	49	33	30	35
U6	0	50	47	71	54	29	32	37
U7	0	44	41	47	45	37	27	31
U8	0	28	26	36	49	44	36	23
9	0	32	30	36	63	64	100	75
10	0	38	35	42	47	57	75	100

GEOMETRIC ATTRIBUTES (N = 110)

Upper Valley \ Lower Valley	3	4	5	C6-7	C8	08	9	10
3	100	67	43	33	10	0	0	0
4	67	100	71	53	35	0	0	0
5	43	71	100	60	43	11	0	0
U6	33	40	60	67	38	24	9	20
U7	21	27	37	56	36	25	14	12
U8	0	11	17	36	60	57	31	14
9	0	0	0	0	27	48	100	14
10	0	0	0	20	11	0	14	100

VESSEL SHAPE ATTRIBUTES (N = 109)

Upper Valley \ Lower Valley	3	4	5	C6-7	C8	08	9	10
3	100	75	59	15	9	0	8	0
4	75	100	82	31	9	0	8	0
5	59	82	100	57	9	0	1	0
U6	37	37	59	77	18	12	16	0
U7	44	44	53	53	33	11	15	0
U8	26	26	42	40	55	33	12	0
9	8	8	8	0	52	48	100	59
10	0	0	0	0	17	21	59	100

FIGURE 3. Similarity indices [Ns/(Na/2+Nb/2)] comparing the sequences of the upper (U) and lower valley (C = Callango, O = Ocucaje). The number of attributes (N) in the analyses of all or any one category of attributes helps in assessing the reliability of the indices and the weightings for the attribute categories; the feline-mythic motif obviously dominates. Contouring (lower right) emphasizes degree of asymmetry, in this case the greater similarities between upper valley vessel shapes in units 3 through 8.

that could have been presented do have bearing on this question, but the general results have upheld the claims made in the informal type of presentation of the original sequence. For this reason, only a few of the tables have been presented here.

What the use of the indices and their presentation in matrices has accomplished here is to point out weaknesses in the sequence more clearly than was apparent in the original publication. The method used here is different in that each trait is given the same weighting. The similarity between the results here and in the original publication is not so great; this situation can be explained fairly simply by noting that there was an inherent weighting in the original tabular presentation, given by the differing number of traits noted as associated with the different "themes" in that study.

While the values in the matrices do show certain important patterns, the complex interrelationships between the degrees of similarity shown between all unit pairs are even more clearly seen in a three-dimensional plotting of these indices, as shown in Fig. 4. The quantities by which similarity indices differ is not automatically translatable into Euclidean distances. Nevertheless, an attempt to construct a model was made, and it was found to be possible to create one in which the "distances" between all pairs of units could be plotted within 5 points of their similarity indices. Feline figures were noted earlier as entailing most traits and being represented in all the units, more than any other set of traits; therefore they were used for the model. Callango Phase 7 was combined with 6, as it had only 5 sherds. Constructing the model was possible only for the phases between 4 and 8, but did include all areal substyles. The reason for this limitation is that there were a

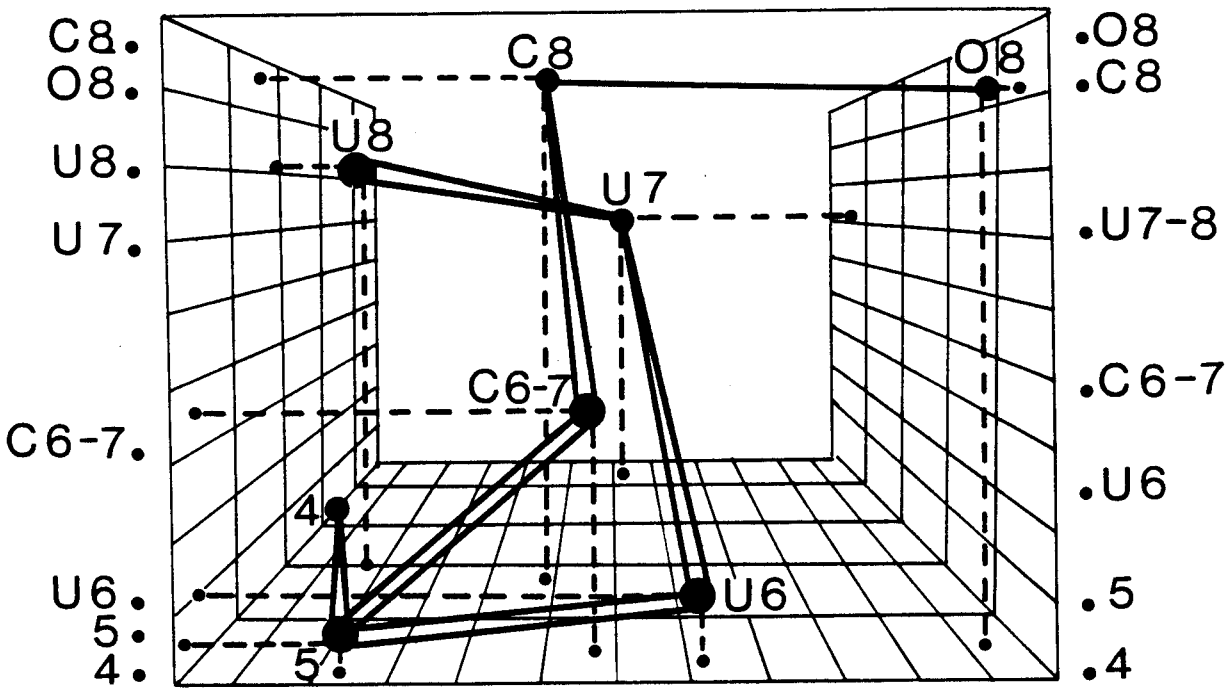

FIGURE 4. INVERSE SIMILARITY INDICES FOR OCUCAJE FELINE DESIGN DATA FROM MENZEL, ROWE, AND DAWSON 1964.

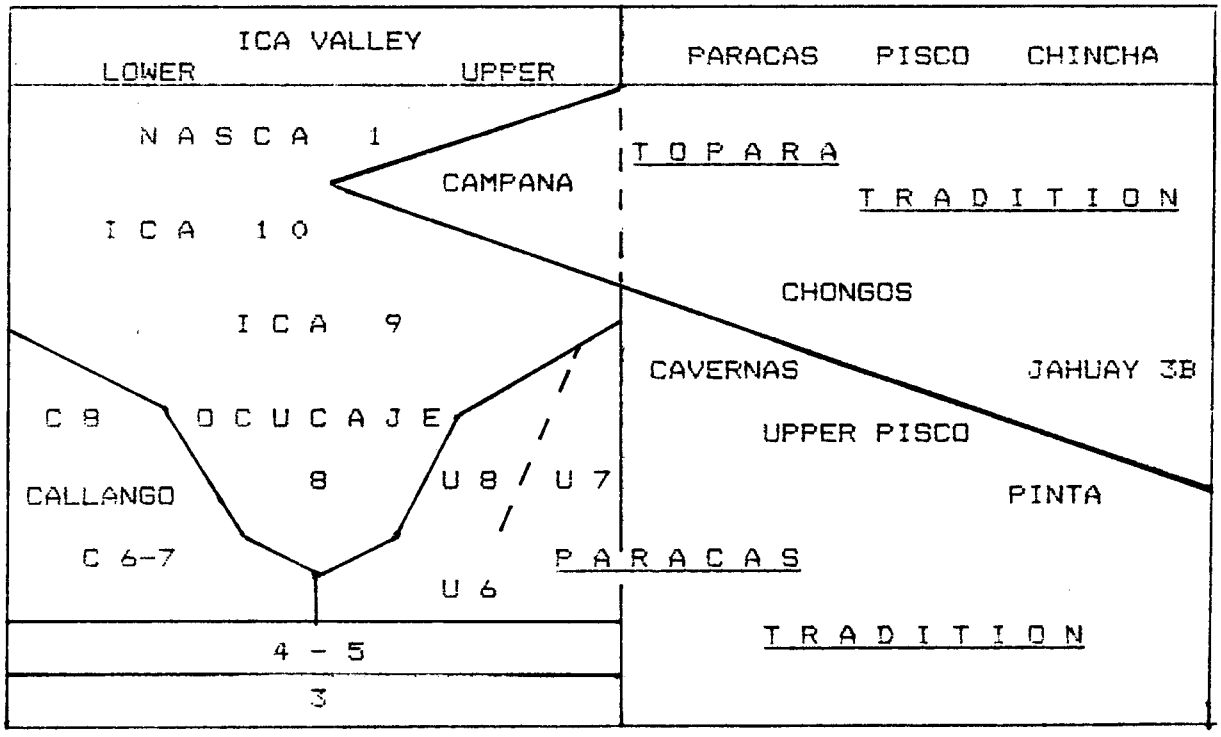

FIG. 5 REVISED CHRONOLOGICAL CHART FOR ICA, PISCO, AND CHINCHA

large number of traits for comparing Phase 3 with Phases 6 and later, but few for Phases 4 and 5 with the same later phases. At the other end, the innovations marking the phases after Phase 8 introduce distortions that simply do not permit this type of plotting.

Fig. 4 gives the placement of each proposed temporal and sub-areal variant identified in the Ocucaje report. Lines connect these points in the graph to show the temporal order which has been proposed, but it should be realized that each point was placed in space according to its similarities with each and every one of the other points. One sequence runs from Phase 4 through Callango 8, the other through Upper Valley 8, with Ocucaje 8 as the unit with a particularly large number of innovations.

In the manner of all seriations, the identification of the nature of the changes that create the series must be supplied in part by the types of variables used, as well as by external data. One of the intriguing and useful things about this plot (Fig. 4) is that if any temporal and sub-areal variability are represented, it must be possible to turn the model in such a way that, for example, the temporal axis will be vertical and the spatial axis horizontal. If it is impossible to find some orientation that will align the units in one plane so that the proposed temporal order is achieved, then that order is not upheld.

The model has been positioned in Fig. 4 in such a way that the best possible order of the phase units as given in the Ocucaje report is on the vertical plane. Presenting the 3-dimensional quality of the plot makes use of perspective viewing, but also distorts the distributions on the individual planes; therefore, the heights of the units above the base plane are given at the side of the 3-dimensional plot without any other dimensions shown.

The results show some quite interesting features. For example, the Upper Valley and Callango sequences, after diverging during Phase 6, do move off in separate directions, thus fitting the picture of areal variation. However, Callango 8 is pulled forward almost into the area occupied by the Upper Valley sequence on the horizontal plane. This situation fits the interpretation that the two are areally separate but, as might be expected of local developments with continuing ties, they do not continue to diverge; some degree of continual cross-influencing is suggested.

The same general type of situation occurs within each localized sequence. The distance between units in each sequence is roughly the same, indicating a reasonable amount of continuing change. But both create spiraling figures, indicating that there is a core of traits that are maintained throughout much of the sequence, so that the later units are all drawn toward their antecedent units. This type of change can be contrasted with another type of "good" seriation that entails few or no discontinuities and a good balance between traits shared and not shared by any two subsequent units or phases, but few cases of long persistences of traits. A good contrast to these patterns is shown by the Ocucaje 8 unit, which simply goes off by itself, increasingly further from the proposed earlier units. In fact, the "distances" between the Ocucaje 8 unit and the increasingly "older" ones does show this pattern.

The claim for conservatism in the Upper Valley developmental sequence is upheld by the fact that each subsequent unit in the sequence remains relatively closer to Phases 4 and 5 than do the Callango units, which are interpreted as being coeval and also developing from the same source.

The use of this 3-dimensional plot does fit to a fair degree the spatial and temporal interpretations of the sequence that were presented in the Ocucaje study. But there were difficulties: while the proposed temporal order can be attained, it was just barely possible to do so. If an attempt to move the 3 phases closer to each other by 8 units on the vertical plane, the Upper Valley 6 unit ends up in a lower position than the Phase 5 unit. Removing the Ocucaje 8 units, the obvious odd man out, does not appreciably improve the ability to manipulate the model to give a better arrangement in the proposed temporal order. There is only one way to do this and that is to place the Upper Valley Phases 7 and 8 at the same horizontal level; then the various phases appear at more evenly spaced intervals on the vertical scale. If one mentally tips Fig. 4 so that Upper Valley 7 and 8 are aligned horizontally, the spacing to the right of the plot shows the vertical spacing that results from this rotation.

An Alternate Sequence

To examine the results of what seemed to be a confusing attempt to cross-date some collections from Chincha, Pisco and Paracas, I tried to test the possibilities for alternative interpretations of the Ica data. Using the data available resulted in a limited number of possibilities, which not surprisingly are similar to those of the original study. Similarity indices were calculated for all pairs of units in the study, both the spatially and temporally diferentiated ones, based on counts of cases of shared and unique traits, that is, the number of "X's" denoting presence of a trait, when shared by each pair of units. The results seemed to be rather close to those of the original study. This fact should not be surprising, as the same type of implicit weighting of traits

and trait clusters results from larger numbers of traits defined for given "themes", such as the feline representation or the Oculate Being. The emphasis on details of design, as opposed to features of form or technology, is shown by the fact that over 400 of the total of 461 traits used were design elements.

The type of problem identified in the discussion of methodology was well illustrated by the results of using the similarity indices. To take an obvious case, the innovative Ocucaje 8 lot was found to be quite "distant" (i.e., with low similarity index) from the two other variants interpreted as coeval in the original study. However, it was not much further from the Upper Valley and Callango 6 or 7 units than from the other Phase 8 lots, and even from the earlier phases. This situation is exactly what was interpreted as conservatism especially in the upper valley sequence; however, it indicated a particular type of conservatism, in which a core of traits generic to the upper valley substyle were found among the Ocucaje 8 traits, rather than mainly traits of the kind that distinguished the different upper valley temporal phases.

This situation illustrates clearly the point made above, namely that stylistic difference need not be interpreted as temporal, and that it is continuities rather than discontinuities that result in clear cut seriations. As a result, the Ocucaje unit, recognized as very innovative, was temporally aligned with two units with which it did not share many traits, few more in fact, than it shared with other units. The authors were clearly aware of the problem, but did not attempt alternative interpretations.

In order to present what would be a fairly drastic extreme from the alignment given in the original study, the scheme shown in Fig. 5

was formulated. There was a conscious attempt not to horizontally align units any more than necessary, a distinct contrast from most chronological charts; this fits an assumption of normal lags in style diffusion.

The basic assumption required of the arrangement in Fig. 5 is that the innovations associated with the Ocucaje 8 substyle were introduced into Ica very abruptly, with no or very few earlier precedents. If it is interpreted as the force which resulted in the split of the Ica style into upper and lower valley substyles, the intrusion of the Ocucaje substyle makes a great deal of sense. An allied assumption is that the source of this intrusion was one or a set of areal substyles in the Paracas, Pisco, and Chincha areas to the north, and also that these northern substyles were rather different in style and fairly advanced technologically. The fact that there are access routes between the Ocucaje and Paracas areas that do not pass through the rest of the valley upholds this interpretation.

One of the major features of this particular scheme is that the Upper Valley Phases 7 and 8 are recombined, much as they were in Dawson's original seriation into 4 phases. Support for this combination comes from what can otherwise be interpreted as the conservatism of the Upper Valley substyle. Here, the traits associated with the Phase 8 unit which seemed closer to earlier units than might have been expected, and therefore suggested conservatism, are now interpreted as due to the simple fact that the Phase 8 unit represents the influence from the Ocucaje 8 style on the coeval style of the Upper Valley 7 units, rather than differences of dating. Such influence could also have reached the upper valley from Pisco or Chincha, since many of the same traits

occurred there; this interpretation fits well with the closer access of upper valley Ica with parts of Pisco and Chincha, routes over which other similarities between the northern outside sources and the upper valley area have been noted.

The rest of the sequence as presented here follows the original one fairly closely. Phases 4 and 5 have been combined, mainly as a reminder that they are based on few pots and, even though logical as separate stylistic units, their temporal distinctiveness remains to be shown. Since Callango 7 is represented by only 5 surface sherds, it was combined to arrive at the indices. Here also, the early influence of Ocucaje 8 on the Callango style may have resulted in an acceleration of normal style change so that there is no Callango 7 as a temporal phase.

An additional assumption fits the lack of Phase 9 and 10 ceramics in the upper valley; the Topara Style Tradition to the north is here cross-dated earlier than previously and is interpreted as swamping the upper valley with direct occupation during Phases 9 and 10. The fortified towns in middle Ica during Phase 9 would reflect these pressures. The Topara pottery of the period strongly influenced Ica 10, but showed little interest in Paracas Style decoration. Without this decoration, it is impossible to cross-date accurately, particularly as exact copying was not done. The alignment with Topara phases is also facilitated by the earlier dating of the Pinta style.

These various assumptions and interpretations also fit into a logical whole, as did the original overview. The main feature is the earlier placement of the spread of the Topara Tradition southwards through Chincha, Pisco, Paracas, and upper Ica. This dating fits an

interpretation that ties the innovations of style phase 8 to those of phase 10. If the obviously devastating effect of the Topara advance is dated earlier, it can be seen as exerting pressures on the people of Chincha, Pisco and Paracas, resulting in an actual intrusion into Ica. Phase 9 can be seen as a breathing period before the onslaught, during which there was little further direct contact. Finally the direct influence of the Topara Tradition, now no longer buffered by intervening Paracas Tradition substyles, results in a spate of innovations especially in ceramic technology. What graphic style influences it may have had are obscured by the lack of representational decoration in the Topara Tradition. But it can be assumed that the Oculate Being was introduced quite early into the Ica sequence from the northern variants of the Paracas styles, if not from the Topara Tradition itself.

This concluding section has largely concerned itself with describing an alternate temporal sequence. That, however, is exactly what the original study was aimed at and what derives from the various discussions and reviews of data in the body of this paper. If any truly concluding--but not conclusive--statements can be made, they would include the recognition that the course of developments in the Ica valley during the Early Horizon are very complicated and not easily amenable to the application of normal archaeological approaches short of a massive attack on a whole series of field projects in all parts of the Ica, Nasca, Pisco, and Chincha valleys and especially Paracas and the Tablazo de Ica.

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