

Rise of Andean Civilization

Anthropology G4210

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Paleoindian/Archaic Occupations in the Andes (?-2500 BC)

Introduction

1. initial peopling of South America: issue of great controversy
 - a. significant advances in recent years
 - b. dates are getting pushed back at least to 10-12,000 yrs BP (i.e., Before Present)
 - c. but there is considerable disagreement over
 1. reliability of radiocarbon assays
 2. accuracy of interpretations
 - d. very personalized disputes
2. Archaic is least well understood aspect of the prehistoric occupation of Andes: several reasons
 - a. e.g., time depth: the farther removed human activity is in time, the more difficult it is to ascertain patterns of activity
 1. recognizable slices of time and contemporaneity among sites are hard to define
 - b. poor preservation
 1. few material remains pertinent to this period have been encountered
 2. or recognized as belonging to this time
 - c. identification of remains
 1. dispute as to whether some materials were the products of human action or not
 - d. relatively little research: few archaeologists
 - e. inaccessibility of the sites
 1. mostly in very high, inhospitable locations
 - f. lack of agreement of the significance of the remains
3. major issues that have been dealt with
 - a. time depth: earliest occupations
 1. size of occupation populations
 - b. adaptive strategies
 - c. social organization
 1. e.g., group affiliation: Rick
 2. agglomeration-dispersion patterns: MacNeish
 - d. reality of occupation: tools or not?
 - e. domestication of animals and perhaps plants

[Paleoindian and Archaic]

4. together, the authors emphasize
 - a. remarkable variety of localized adaptations in the Andean Archaic
 - b. fostered by the variegated natural environment
5. lecture today
 - a. sketch out the conditions
 - b. review at some early occupations
 - c. examine some models for early social organization and adaptation

Impacts of Climatic Setting on Early Occupations

[main sources: Rick 1988; Dillehay et al. 1992]

1. climatic changes important
 - a. different temperature regimes would have shifted climatic zones
 1. colder: ecozones would have moved downhill
 2. warmer: ecozones would have moved uphill
2. driest and coldest period: 21,000-14,000 BP
 - a. glaciers' maximum extent: 28,000-20,000 BP
 1. lowered snowline about 300-500 m from present levels
 2. ice may have come down to 4600-4500 m
 - b. last advance: 14,000 BP
 1. retreat 12,000 BP
 - c. some Pleistocene advances may have come down to 3700 in north Peru and 4300 m in central Peru
 1. may have preceded human occupation
 - d. puna would have been uninhabitable
3. pollen evidence from Lake Junín: H. Wright
 - a. no major shifts of flora since at least 10,000 BP
 - b. but there were some changes in vegetation that correlate with the last glacial advance in Junín that ended about 12,000-13,000 BP
4. more recent climate
 - a. may not have been constant
 - b. but no radical changes seem to have occurred that would have substantially altered subsistence patterns in postglacial preceramic times

[Paleoindian and Archaic]

5. highland Peru: modern environment
 - a. puna: highest zone people can live in [3900-4600 m]
 1. altitude range has relatively little effect on climate
 2. fine-grained variability in moisture retention and heat protection
 3. little puna in north Andes
 4. central Peru: large puna
 - a. non-seasonal in temperature
 - b. wet: Nov-April
dry: May-October
 5. year-round herding in same pastures
 6. more seasonality in the south
 7. vicuña at home either center or south year-round
 8. south is relatively unpredictable climatically for modern herder-agriculturalists
 - a. except for lake shores

6. highland valley macrozone
 - a. watercourses important because of rainfall patterns
 - b. lack of perennial grazing
 - c. microzones
 1. narrow riparian corridors: low trees, shrubs, herbaceous growth
 2. barren xerophytic areas away from streams and in rain shadows
 3. increasing shrubby and thorn forest farther down
 - d. marked seasonality: affects availability of plant foods
 - e. significant seasonality
 1. dry season: resources concentrated around water
 2. wet season: dispersal of food resources
 - a. lower areas become relatively more productive
 3. low predictability of rainfall
 - f. land areas
 1. puna: 14.1% of land in Peru
 2. highland valleys: 11.4%

7. exploitable resources
 - a. fauna
 1. mastodon, horse, ground sloth, glyptodon, deer
 2. megafauna extinction
 - a. coincidence of extinction and warming trend
 - b. perhaps reduction of habitat
 - c. changing breeding habits

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- d. natural corralling of animals: easy prey
- b. flora
 1. tubers, rhizomes, nuts, berries, soft leafy vegetables
 2. interaction set stage for domestication
 - a. e.g., domestic potatoes in Bolivia 8,000 BP
 3. use difficult to assess: preservation a problem

Initial Occupations

[sources: Aldenderfer 1989; Dillehay et al. 1992]

1. defining initial occupations is problematical: several reasons
 - a. lack of clear correlation of projectile point types between NAm and SAm
 1. NAm: Clovis – fluted lanceolate points
 2. SAm: fluting is on stemmed points
 - a. appears as early as in NAm
 - b. much local cultural variation
 1. at least 11,000-10,500 BP
 2. maybe 12,000⁺ BP
2. at least 95 well-defined early sites: in SAm
 - a. 35-40 partially excavated
 - b. 10-15 reliably radiocarbon-dated
3. most known sites found
 - a. under favorable circumstances
 - b. chance preservation
 - c. arid or semi-arid environments
 - d. soils that do not favor preservation of organics
4. biased sample and interpretation toward hunting economies in open environments
 - a. limited sample sizes of artifacts
 1. make questions of assemblage composition problematical
 - b. result: we are still at the stage of
 1. recording associations among
 - a. different types of ecological types
 - b. and archaeological materials
 2. attempting to recognize patterning among formal taxonomic units
 - a. esp. projectile points

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5. main locations of pre-10,000 BP occupation
 - a. arid Atacama of N. Chile: Lynch 1990
 - b. cool, temperate forest of S. Chile: Dillehay 1981, 1984, 1989
 - c. semitropical areas of N Colombia: Ardila 1987
 - d. tropical coast of SW Ecuador: Stothert 1985
 - e. arid regions of E Brazil: Schmitz 1987
 - f. classic areas
 1. Andean puna
 2. grasslands of Pampa and Patagonia

6. most solidly-dated sites take us as far back as 13,000-12,000 BP
 - a. perhaps a series considerably earlier
 1. Taima-Taima, el Abra, Tibitó, Tequendama, Monte Verde
 2. sites of Ubcui and Itaparica phases
 - b. keep in mind that the glacial period ends ca. 10,000 BP
 1. but several lithic traditions continue into the Holocene

7. some earlier occupations suggested: controversial
 - a. Pikimachay: 15,000-20,000 B.P. [MacNeish]
 - b. Monte Verde: 20,000 BP possible [Dillehay]

Monte Verde, Chile: Dillehay et al.

1. setting
 - a. forests of southern Chile
 1. mixture of deciduous and coniferous species
 2. tubers, nuts, berries, soft leafy plants
 - b. radiocarbon dates: 13,000 B.P.
 1. perhaps as early as 33,000 BP
 - a. more tentative
 - b. slimmer evidence
 - c. significant climatic changes about 15-14,000 BP
 1. terminal date of Llanquihue Glaciation
 2. by 13,000 BP: climate similar to that of today
 3. botanical reconstruction shows similar pattern
 - a. based on major indicator species

2. earliest possible occupation (MV I): 33,000 BP
 - a. 26 cultural features or stones

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- b. located on sandy embankment: next to what would have been a stream
 - c. several stones show clear marks of human striking or use-wear: Dillehay's interpretation
 - 1. located in geological context foreign to their own nature
 - d. other scholars not so convinced of the human agency behind the form of the objects
3. second occupation (MV II): 13,000 BP
- a. site lies on river terrace: Chinchihuapi Creek
 - 1. on bed dating to 20,000-14,000 B.P.
 - b. site covered with peat
 - c. covers area: 70 x 100m
 - 1. divided into northern and southern sections
4. community divided into living areas and areas used for other purposes
- a. eastern part of north bank: 12 dwellings
 - 1. huts joined by walls to form two parallel rows
 - 2. foundations: hardwood planks and stakes
 - 3. frames: local hardwoods and branches
 - 4. coverings: perhaps skins
 - 5. dimensions vary: 3-4.5 m
 - 6. rectangular form
 - b. structure 30m west of dwellings: 3.9 m across
 - 1. wishbone shape to this structure
 - 2. raised platform in central protrusion
 - 3. brazier remains: preserved animal hide, burnt seeds, and stalks of totora reed (medicinal?)
 - 4. concentration of mammoth bone, wood piles, wood artifacts, and stone tools in ring around structure
 - a. suggests meat dressing from big kill
 - 5. manufacture of specialized stone tools
 - 6. maybe specialized medicinal practices
 - c. geological stratigraphy suggests that all dwellings were contemporaneous
 - 1. also lack of overlap in structures
 - 2. also similarities in hearths, wood and stone tools, plant remains, animal bones throughout site
 - d. earliest architecture found in Americas
 - 1. Dillehay: arrangement of buildings suggests well-defined division of labor

5. ecofactual remains
 - a. varied collection of stone and bone tools
 1. wood artifacts and plant remains
 - b. macrobotanical remains
 1. very selective: 93% of identifiable plant remains are from useful fruits, cuticles, roots, stalks, berries, leaves, and bark
 2. at least 30 of 75 plant species foreign to locale
 - a. i.e., they were brought in from coastal and mountain environments
 - b. only selected useful parts of foreign plants present
 3. 33% of material were burned: hearths, braziers, etc.
 4. unusual diversity for such a small area

6. stone technology: 715 objects total recovered
 - a. flaking
 1. 11 flaked tools found
 2. only four are bifacial: found among mastodon bones
 3. bifacial tools were much more sophisticated than unifacial tools
 4. relative absence of flaking debris
 - b. pecking and grinding: about 600 artifacts
 1. bola stones: hunting
 2. domestic activities: hammerstones, grinding stones
 3. mostly local stone
 - c. casual modification of pebbles
 1. not found elsewhere in Americas
 - d. also a few bone tools
 1. perhaps for stone flaking

7. features: suggest collective cooking
 - a. two large hearths in central positions outside huts
 - b. flotation: carbon, edible seeds, nuts, fruits, and berries
 - c. 3 rough wood mortars
 1. several grinding stones
 - d. other evidence of wood tools
 1. e.g., hafts with wood scrapers
 2. lance
 3. digging sticks

8. coprolite evidence
 - a. analysis under way

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9. diet: preliminary results
 - a. mainly wild plants: from nearby bogs, marshes, and forests
 1. also from delta of Maullín River
 2. tubers: including wild potato
 3. other plants mature over all seasons
 4. come from a range of ecozones: people ranged for food
 - a. suggests sedentism
 - b. supplemented by several types of meat
 1. mastodon and smaller game
 2. freshwater mollusks recovered
 3. one paleocamelid scapula found

10. Dillehay concludes: that late Pleistocene culture was more sophisticated than previously thought
 - a. evidence suggests that New World was occupied perhaps 20,000 B.P. or earlier

11. Lynch (1990) disagrees
 - a. takes an especially conservative perspective on the material
 - b. skeptical about the antiquity of numerous occupations
 1. or the interpretive accuracy of their researchers
 - c. skepticism has heated and focused the discussion of the antiquity of human society in the Andes

12. tour organized to Monte Verde for sceptics
 - d. controversy settled essentially unanimously in favor of Dillehay's position

Later Archaic Occupations

1. archaeologists tend to divide Archaic occupations into
 - a. coastal adaptations
 - b. highland adaptations

Coastal strategies

1. Paijan: 12,000-7,000 BP
 - a. most widely discussed materials
 - b. sites focus of ongoing debate over the relative importance of
 1. terrestrial

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- 2. maritime foraging
 - c. most characteristic artifact: long, slender Paijan point
 - 1. inference: associated with maritime hunting
 - a. esp. Chauchat, 1991; Chauchat, Wing, et al., 1992
 - 2. Moseley: probably not used for hunting, since points are not found at camps
 - d. surprisingly large number of early sites: focused on Peruvian north coast
 - 1. quarry
 - 2. workshop
 - 3. camping
 - e. example: La Cumbre: Moche Valley
 - 1. 4,500+ artifacts
 - 2. lots of lithic preforms: for projectile points, knives, side scrapers, notches, beaks, denticulates, and pebble tools
 - f. dietary remains recovered include lizards, birds, vizcacha, fish, and crabs
2. Peruvian south coast to Chilean north coast (Llagostera 1992)
- a. varied local strategies that seem to have often been tied to increasing sedentism
 - b. long-term trend toward greater exploitation of marine resources
 - 1. to complement gathered terrestrial foods
 - 2. especially after ca. 4000 BC
 - c. changes associated with a range of technological innovations
 - 1. e.g., fishhooks and fine mesh nets, harpoons and composite hooks
 - 2. facilitated fishing
 - d. Chinchorros: main culture, by 5,000 BC
 - 1. earliest known artificial mummification in the world
 - a. removed various innards
 - b. corpse reassembled
 - c. internal cane supports installed: e.g., in spine, arms, legs
 - 2. some individuals treated much more elaborately than others
 - a. may imply incipient social differentiation
 - 3. infants and children of both sexes treated
3. Shady (1993): emphasizes the variety of adaptive strategies pursued by foraging peoples
- a. people mixed foraging and farming in the Andes very early
 - b. several different kinds of specialized subsistence strategies probably antedated 3000 BC
 - c. increasing use of multiple cultigens
 - 1. associated with incipient social complexity in the highlands
 - 2. reflected in

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- a. modest mound constructions
- b. differential access to exotic materials

Early plant domestication: Pearsall 1992

1. by 5th millennium BC: maize, beans, squash, ají, quinoa, potato, guava
 - a. domestication occurred in many locations
 - b. plants not domesticated as a suite or complex of crops
2. domesticating flora
 - a. potatoes: northern Bolivia at least 10,000 years ago
 1. recovered from a contemporaneous archaeological context at Tres Ventanas Cave, Peru (Hawkes 1989:495)
 - b. domesticated maize:
 1. highland Ecuador: 6,000-5,000 BC
 2. Colima Valley, Colombia: 5000 BC
 3. coastal Valdivia (Ecuador): 2500 BC (Pearsall and Piperno 1990:331-34)
 - c. beans and peppers: highland valleys by 8500 BC
 1. best early evidence from Guitarrero Cave, Peru
 2. beans in coastal Ecuador: ca 3,700-4,350 BC (corrected) (Smith 1980; Kaplan 1980)
 3. various bean species probably domesticated in several other locations
 - a. e.g., northwest Argentina
 - d. coastal and lowland cultivars
 1. cotton, squash, and lúcuma: in central sierra sites between 4,200 and 2,500 BC (Pearsall 1978)

Preceramic Animal Domestication

[sources: Pires-Ferreira et al., Wing, Flannery et al.]

1. domesticating fauna
 - a. location
 1. Andean domesticates: llamas, alpacas, and the guinea pig
 2. dog: arrived as a domesticate
 1. maybe with first immigrants (Wing 1978:167)
 - b. dates
 1. domesticated camelids: cave deposits in central Peru dating as early as 4500 BC (Flannery et al. 1989:91)

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2. guinea pigs: culinary favorite
 - a. 40%+ of the fauna in Peruvian highland occupations: 7150-4750 BC
 - b. not fully domesticated until 4200-2500 BC (Wing 1978:176)

Table 1. Faunal use at Uhcumachay and Panalauca

Level	Date (BC)	Equus	Cervid	Camelid	Dog	Misc.
7	10,000-7,000	+	+	-	-	
6	8,000-6,000	-	41.7	54.9	-	
			74.0	26.0		P
5	5,500-4,200	-	17.3	82.3	-	
			12.3	87.6	0.1	P
4	4,200-2,500	-	14.0	84.8	-	
			13.9	85.8	-	

P: 0.3% mountain lion

2. Uhcumachay Cave: sequence
 - a. 4050 m elevation
 - b. 376 m²
 - c. trench: 1 x 10.5 m; max depth 1.20 m
 - d. 7 levels
 - a. top three mixed: not treated here
 - e. Level 7
 - a. 1 m²
 - b. a few lithics
 - c. extinct Pleistocene cervids
 - d. probable date: 10,000-7,000 BC
 - f. Level 6
 - a. 78 artifacts: points, bifacial tools, etc.
 - b. stone is local
 - c. stylistically similar to Lauricocha I: 8,000-6,000 BC
 - g. Level 5: 5,500-4,200 BC
 - a. 442 artifacts
 1. points (28.5%)
 2. other bifacial artifacts

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- b. volume of debitage is three times that of artifacts
 - c. point types go from 6 to 16 and number increases from Level 6 to 5
- h. Level 4: 4,200-2,500 BC
 - a. 491 artifacts
 - 1. points: 37.7%
 - 2. bifacial artifacts, etc.
 - b. debitage 3x other artifacts
 - c. point frequency increases: 14 types
- 3. Uchcumachay Cave: faunal remains
 - a. basic change in use of animals is reflected in the sequence
 - b. 13,016 bones analyzed
 - 1. 2,258 assigned species of genus
 - c. Level 7
 - 1. Pleistocene Cervidae and Equidae
 - 2. first report of Equid species in cultural context in Peru
 - a. association of extinct species with human remains
 - d. Level 6
 - 1. represents a transitional stage in a long-term trend toward increasing use of camelids
 - 2. 54.9% camelids; 41.7% cervids
 - 3. Panalauca: 26.0% camelid; 74% cervid
 - e. Level 5
 - 1. 82.3% camelids; 17.3% cervids
 - 2. domestic dog
 - 3. Panalauca: 87.6% camelid; 12.3% cervid; 0.1% dog
 - f. Level 4
 - 1. no significant change: 84.8% camelid, 14.0% cervid
 - 2. Panalauca: 85.8% camelid; 13.9% cervid; 0.3% mountain lion
 - g. general sequence documents process of stable economic adaption based on primary camelid use
 - 1. began with the first appearance of the animals around 7,000 BC
 - 2. domestication: 2,500-1,750 BC
- 4. phenomenon of primary camelid use
 - a. decrease in cervid remains reflects a decrease in hunting
 - b. shift in tool types toward hunting suggests that early procurement cannot be seen solely in terms of domestication
- 5. four models of animal use
 - a. specialized hunting

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1. characterized by primary dependence on wild camelids
 2. infrequent exploitation of other species
 3. social behavior of camelids conducive to stable hunting among vicuña
 4. single adult male in camelid group: 4-7 adult females
 - a. clearly defined, defended territory
 - b. male and female juveniles expelled
 - c. population maintained, with careful hunting
 5. vicuña and guanaco territories are interspaced
 - a. conducive to hunting
 - b. control of semidomesticated camelids
 1. primary dependence on herds of semi-domesticated animals which interbreed with wild animals
 - a. results in a single gene pool
 2. similar to Chukchi reindeer herding patterns
 3. ethnographic studies show that human presence does not disturb camelids
 - a. but overhunting will cause them to move
 4. objective of early domestication: maintain balance of meat supply with human population
 5. crossbreeding produces fertile offspring
 - a. family structure and territorial defense mechanisms occur in modern hybrids
 - b. suggests that early predomesticates had behavior patterns similar to those of modern wild species
 - c. herding of domesticated camelids
 1. implies breeding control
 2. may have led to the development of the alpaca and llama
 - a. and other specialized breeds
 - d. hunting of wild camelids combined with herding of domesticated camelids
6. a model of camelid domestication
 - a. first three models may be considered a sequence, combined with model 4
 - b. territorial characteristics and social organization are key elements in the domestication process
 1. early territoriality may have led to early semi-domestication
 - c. Junín puna may have been a center of domestication
 1. natural corral with ecologically optimum conditions for support of large and seasonally stable camelid populations
 2. quantities of bones suggest early intensive exploitation
 - d. apparent sequence in Junín
 1. 7,000-5,500 BC: generalized hunting economy
 2. 2,500-1,750 BC: domesticates present

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3. transition apparently occurred somewhere in between

The evidence for Early Social Organization

(after Rick 1988)

Highland preceramic: the earliest sites

1. societies probably organized around relatively small residential groups
 - a. i.e., 20-50 persons
 - b. obtained majority of subsistence from wild foods
 - c. probably had relatively egalitarian relations

2. key question: are archaeological data sufficient to test environmentally-derived models of human occupation
 - a. three sites with good data:
 1. Pikimachay (Ayacucho)
 2. Pachamachay (Junín)
 3. Guitarrero Cave (Callejón de Huaylas)
 - b. and maybe Uhcumachay (Junín)

3. evidence is not strong
 - a. Pachamachay: 11,800±930 BP for second lowest of 33 strata
 1. pretty scant remains
 2. various tools, 162 seeds, 13 animal bones
 3. tools from 8000 yr-long tradition: probably late in the sequence
 - b. Guitarrero dates
 1. one early: 12,560±360 BP
 2. four ranging from 9,140±90 to 9,740±240 BP
 3. Uhcumachay data are thin: include material that could have sifted down

4. Pikimachay
 - a. MacNeish dates Pacaicasa and Ayacucho phase material to 20,000-11,000 BC
 - b. dates taken totally from animal bone
 1. questioned by Lynch
 - c. Rick doubts the artifacts
 1. drawn from cave tuff
 2. two tools of non-cave material included
 3. tools too worn to determine their validity
 4. no evidence of fire
 5. animal bones seem to be randomly distributed

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- 6. tools appropriate to hunting big game are not present
 - a. e.g., projectile points or sharp knives
- 7. scratches on bones could be the result of carnivore activity
- d. Pacaicasa phase material is therefore questionable
- e. but Ayacucho phase material is good
 - 1. unknown number of 206 tools are the real thing
 - 2. MacNeish's interpretation of seasonal microbands is unsupported
 - 3. no definition of microband, nor proof of seasonality
 - 4. but occupation by 12,000 BC seems to be definitely supported
 - a. at least partially involved with exploiting Pleistocene game
- 5. major human occupation: starting 9,000 BC and blossoming by 8,000 BC
 - a. sites from Callejón de Huaylas, Huánuco puna at Lauricocha, Junín puna, Huarochirí, Ayacucho, far south highlands
 - b. chipped stone tool industries are relatively uniform
 - c. tools are much more numerous in the highlands than on the coast
 - 1. used as chronological indicators
 - d. changes in tool types are used to form the basis of chronological periods: esp. projectile points
 - 1. changes in prehistoric adaptation would be more useful
 - 2. contemporaneity of point changes throughout the Andes has not been tested
 - 3. imply widespread rapid economic shifts that are as yet unsupported
- 6. problems with projectile point chronologies: significant change in prehistoric adaptation may not be adequately reflected in tool types
 - a. esp. projectile points
- 7. uniform changes in projectile points types would require acceptance of several processes: none adequately demonstrated to date
 - a. sweeping economic transformations
 - b. rapid transfer of style between innovator and acceptor
 - c. fast expansion of style-bearing populations

Material remains

- 1. chipped stone tools are the only widely distributed, uniformly preserved artifacts of the Andean preceramic
 - a. assemblages are similar: only at general level
 - b. i.e., same tool technology and functions at most sites

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1. small projectile points
 2. flake uniface complex of 'scrapers' or 'knives'
 3. mixture of larger core tools: probably choppers
 - c. importance of blades is unclear
 - d. but utilized flakes and other casual tools are important
 1. but often ignored
2. proportions of different functional tool types change over time
 - a. general increase in projectile points production across time in puna
 - b. highland valleys don't show this
 - c. puna sites have higher proportion of points than adjacent valleys in the Callejón
 3. proportions of unifaces and chopping tools differ between puna hunting and base camps
 - a. probably reflects different economic processes in different zones
 - b. and/or across time
 4. temporal sequences of points seem reasonable
 - a. shouldered points first
leaf-shaped points next
smaller or less elongate points last
 - b. contemporaneity of similar points across landscape (MacNeish) not supported by available data
 5. evidence for temporal variability in similar projectile points types
 - a. shouldered points appear earlier in north
 1. later in south
 - b. earliest known points from central puna: concave base, triangular forms
 1. they are terminal preceramic artifacts from the south
 - c. points from base camp sites of Pachamachay and Panalauca show notably different forms in contemporaneous levels
 6. ground or pecked stone tools are rare compared to chipped tools
 - a. hammerstones are reasonably frequent
 - b. groundstone more common in highland valleys
 1. suggests greater use of plants
 - c. non-utilitarian items are rare
 1. e.g., quartz crystal balls, beads, paint grinding tools
 7. bone tools are present, but not common
 - a. e.g., awls, needles, flakers, fleshers

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- b. maybe lots of casual tools have gone unnoticed
 - c. perishable tools reported well only from Guitarrero Cave
 - 1. wood and fiber artifacts
8. subsistence remains vary considerably with the zone involved
- a. diversity of game in highland valleys
 - b. puna bag: primarily camelids and deer
 - 1. camelids cannot yet be separated
 - c. puna plants: wide range of wild plants
 - 1. grains and cactus fruit
 - 2. medicinal plants
9. almost all domestic plants are absent in the puna preceramic
10. architecture from highland sites is rare
- a. primarily in cave sites
 - b. small, stone or post-walled structures
 - c. some found in puna base camps as early as 10,000 BC
11. burials
- a. Lauricocha Cave L-2, Tres Ventanas, Quiche caves
 - b. flexed on sides
 - c. Lauricocha: 11 burials
 - 1. 3 children got more than the adults
 - a. food, stone tools, beads, colorants
12. rock art
- a. red-colored pictographs are found throughout Peru
 - b. usually camelids
 - 1. occasionally pursued by hunters or accompanied by geometric designs
13. preceramic site distribution
- a. known distribution is a mixture
 - 1. sampling bias
 - 2. true distribution
 - b. no complex below 2,000 m
 - c. only one site below 2,500 m
 - d. most sites known in caves
 - 1. shelter in puna
 - 2. cool in valleys

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- e. two major open-air sites have been described
 - 1. Quishqui Puncu (3040 m): Callejón
 - 2. Ambo (2065 m): near Huánuco
- f. small surveys in Junín puna show densities of
 - 1. .07-.13 sites per km²
 - 2. .03-.08

Interpreting the Central Andean Sequence

Mobility, seasonality, and sedentism

1. Lynch (early view): seasonal transhumance
 - a. round included sierra and coastal areas
 1. highland valleys: dry May-Oct
 2. coastal lomas: dry Dec.-March
 - b. problem: coastal bloom occurs during the lomas off-season
 1. attributable to highlands runoff
2. Patterson: more probable seasonal round within coastal areas
3. Engel: dry north puna might require movement down to coast in off-season
4. Lynch (later view)
 - a. transhumance within highland valleys, reaching into puna
 - b. motivated by water-dependent green seasons
 1. and accompanying game distribution
 - c. lowest zones dry out first
 1. therefore occupied during max rainfall (Dec.-Mar)
 - d. puna: June-Sept.
 - e. whether game migrated this way is not known
 - f. round specifically suggested for the Callejón
 1. reconstruction built around a series of known sites: 2580-4130 m
 2. Guitarrero Cave and Quishqui Puncu (250-3000 m)
 - a. wet season camps
 3. movement (probably) west to puna: about 30 km
 - a. during dry season
5. Rick's commentary on Lynch
 - a. a number of higher sites are known in Callejón area

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- b. groups could move either
 - 1. west: mtn sites for dry season (10-30 km)
 - 2. south: puna sites (up to 100 km)
 - c. may have conflicted with territories of other groups
 - d. seems possible that valley groups would have used nearby puna in short seasonal movements
 - 1. would have permitted a series of groups to exploit resources found on east-west transects of the valley
6. MacNeish, Patterson, Browman: mobility and seasonality patterns
- a. 10,000-2,500 BC: seasonal movement from
 - 1. low altitude valley camps (2800 m) to
 - 2. high valley or puna camps (3300-4000 m)
 - b. 2500-1700 BC: less mobile and larger groups specialize in low or high altitude areas
 - 1. considerable exchange of resources needed to maintain themselves
7. different pattern seen by investigators working on puna sites not directly adjacent to lower valleys: Cardich and Rick
- a. puna dwellers could have stayed there year around
 - b. central puna inhabitable year around since major game never leave
 - c. seasonality in plant resources
 - 1. tubers and seeds in dry season
 - 2. herbaceous, leafy growth more common in wet season
8. Rick: single settlement pattern for entire environmentally complex Andes seems unlikely
- a. given resource distribution: should be considerable variation in
 - 1. seasonal movement
 - 2. general level of mobility
 - b. more unpredictable, less productive valleys: more movement
 - c. more secure puna: more sedentary
 - 1. puna dwellers might not have wanted to share resources with mobile highland valleys peoples

Evidence for patterns

1. Lynch
 - a. no evidence for seasonality
 1. even though he says that was the pattern
 - b. Rick: Guitarrero Cave likely a special function camp
 1. emphasis on fibers
 2. few lithics
 - c. nearby Quishqui Puncu (open air)
 1. more likely base camp
 2. lots more lithics
 - d. high altitude sites have smaller areas
 1. Lynch says therefore short-term hunting sites
 - e. artifact similarities: Lynch says therefore cultural linkage among all sites
 - f. Rick: arguments needs
 1. demonstration of seasonality
 2. sourcing studies of lithic materials
 - g. some level of mobility remains a strong possibility
2. MacNeish et al: concrete series of movements posited
 - a. Rick: few concrete data to support models
 - b. analysis thus far mostly of surface materials
 1. seasonality suspect
 2. macroband-microband suspect
 - a. lack of data analysis
 - c. cultural linkages again posited: not demonstrated
 - d. Ayacucho tool similarities no reconstructible
 1. described by type
 2. not by site
3. Rick: puna sites contain both wet season camelid remains and dry season plant remains
 - a. provides hint at year-round occupation
 - b. survey of 200 km² shows well-developed settlement pattern
 1. base camp surrounded by temporary camps
 - a. not likely the result of temporary or short seasonal occupation
 2. sites linked by raw materials and by finely defined point types
 3. lack of intervening sites suggests functional associations among sites that have been found

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- 4. significant differences between assemblages
 - a. base camp
 - b. temporary camp
 - 5. rock art common in temporary hunting camps
 - a. absent in base camps
 - c. year-round occupation supported by total lack of non-puna resources at Pachamachay (base camp)
 - 1. all cherts are puna chert
 - 2. no evidence of non-puna plants or animal foods
 - d. evidence for sedentism
 - 1. long-term base camp use
 - 2. short-term hunting camp use
 - 3. great quantity of material at Pachamachay must be attributable to long-term occupation
 - a. not intermittent short-term
 - 4. living structures
 - 5. cleaning of cave mouth
 - 6. 85% of region's material in base camp
 - a. 15% in temporary camps
 - b. implies preferential use of base camp
 - c. trips out to foraging camps
 - e. pattern in highland valleys is more evenly distributed
-
- 4. comparison of tool densities, total tools, and altitude
 - a. total tools and density increase with altitude
 - b. apparent lack of remains between 3,300 and 3,900 m
 - c. question: how to account for puna sites with 100x tools in valleys?
 - 1. keep in mind
 - a. chipped tools are likely to be common in hunting areas: i.e., puna
 - b. cold climate of puna might concentrate population in caves: ergo, concentration of tools
 - 2. two possible models
 - a. improbable: near-permanent puna occupation visited highland valleys on occasion, leaving sparse record
 - b. probable: two populations
 - 1. one in valleys
 - 2. one in puna

5. seasonality of water resources might have concentrated population in dry season, dispersed them in wet
 - a. so in valleys: people should be concentrated in dry seasons at higher elevations
 1. dispersed at lower elevation in wet season
 2. corresponds to data available for tool densities
6. more on tool densities
 - a. highland valleys: increasing density of stone tools in higher sites
 1. total tools are not well correlated with altitude in highland valleys
 2. but for specific valleys (e.g., Ayacucho): there is a positive correlation
 - b. lack of important sites in 3,300-3,900 m could indicate
 1. isolated of highland valley groups from puna
 2. or groups jumped straight up to puna
 - a. did not occupy that zone

Interaction

1. MacNeish et al.: major interaction among puna, highland valleys, coastal groups
 - a. general similarity of tools indicates some level of interaction
 - b. splitters and lumpers differ as to the intensity and significance of this interaction
2. trade is one way to get raw materials moving
 - a. Burger: obsidian occurs only near source in preceramic
 1. Junín sites lack obsidian entirely
 2. Ayacucho sites have lots
 - b. pan-highlands interaction thus seems unlikely
3. coast-highlands interaction:
 - a. shell is notably absent in almost all highland preceramic components
 1. although used on the coast
 - b. notable exception: westward facing puna sites of Huarochirí (Engel)
 - c. coastal-highlands interaction must have been slight to avoid evidence of shell
4. MacNeish et al.: widespread distribution of plant remains indicates widespread exchange
 - a. Rick: if plant can be grown in new area
 1. that's all that's needed
 2. domesticates not found at Pachamachay

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- a. e.g., fruits, vegetables, and grains
 - b. seem likely candidates for trade
5. some interaction clearly took place: tool types
- a. mechanism unclear: trade, mate exchange, warfare, or population displacement

Conclusions

1. highland environment was fit for habitation throughout at least the later Pleistocene
2. climatic change does not seem to have been sufficiently severe in highlands to have been major impetus for social change
 - a. post-glacial changes in social organization just not worked out yet
 - b. likely variability in acceptance of domestication and social change
3. wide variety of occupations very early in sequence
 - a. local adaptations
 - b. even so, sharing of notions of appropriate ways of manufacturing certain tools over large areas
 1. probably reflects conservatism
 2. and social interaction
4. domestication was a long-term process
 - a. plant domestication probably started as early as 10,000 BP
 - b. animal domestication by 2,500 BC or somewhat earlier

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