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Pintoscayoc and the archaeology of the arid Humahuaca Rift Valley, north-western Argentina

This chapter reviews the archaeology of the arid Humahuaca Rift Valley in north-western Argentina. The valley represents a large block of highland desert that goes from 1500 to 4000 metres above sea level, crossed by the Tropic of Capricorn. This sector of the highlands has ready access to the Puna de Atacama Desert and the history of human settlement in the two regions is closely linked. Their geography, human traditions and culture also link these highland regions with the Pacific coast to the west, and with the *yungas* or high tropical rainforest to the east. One of the key sites for understanding the human history of the rift valley region is Pintoscayoc 1 (Fig. 14.1), a rock-shelter with a long sequence of occupation beginning before 10,000 years BP. The Pintoscayoc sequence (Fig. 14.2) shows a series of changes through time:

- from initial exploration of the region by seasonal hunters (11,000 to 9000 years ago)
- through to colonisation of the region by hunters and gatherers (9000 to 7000 years ago)
- and later abandonment (7000 to 5000 years ago).

Changes in the archaeological record reflect not only different phases of exploration and colonisation of these drylands, but also wider changes in economic patterns, regional interactions and trade, and in social and political systems. The upper half of the sequence records the establishment of farming and herding societies in this region (3000 to 1000 years ago).

Figure 14.1
Pintoscayoc 1 rock-shelter
This site, in arid north-western Argentina, has one of the longest sequences available for the drylands of South America.
photograph by MI Hernández Llosas

Phase	Layer	Radiocarbon dates
Initial hunter-gatherer occupation of the region		
Exploration	Lower layer 6	10,720 ± 150 (LP503) 10,340 ± 70 (Beta79849)
Installation	Upper layer 6	9,190 ± 110 (LP628) 9,180 ± 230 (LP449)
	Mortuary deposit 1	9,080 ± 50 (CAMS39041)
Colonisation	Lower layer 5	7,850 ± 110 (URU0084)
Regional abandonment	Unconformity	
Transition to food producing economies		
	Mortuary deposit 2	5,260 ± 75 (HELA556)
Start-up phase	Mortuary deposit 3	2,906 ± 53 (GX20443)
Consolidation	Upper layer 5	960 ± 40 (LP688)
Inka conquest	Lower layer 4	
	Mortuary deposit 4	450 ± 50 (CAMS41069)
Spanish period	Upper layer 4	270 ± 80 (LP487)

Figure 14.2
Summary of the sequence at Pintoscayoc 1 rock-shelter

Regional background

The Quebrada de Humahuaca is a long and large rift valley system located in the south-central Andes in north-western Argentina, close to the border with Bolivia. It forms part of the eastern ranges which extend from Bolivia south to Argentina and which constitute the eastern limit of the Andes cordillera. Quebrada de Humahuaca is bounded on the north and west by the high plateau (the *puna*) and to the south and east by the lowlands, where the tropical rainforest (*yungas*) begins. The valley straddles two very different environments with access to both geographic regions. For instance, the rift valley system begins in the *puna* at 4000 metres above sea level and runs for 166 kilometres southwards until the rift system goes into the *yungas* at 1500 metres above sea-level. The present environment is arid, with 300 millimetres annual rainfall, but the rift valley has good water resources.

The rift valley system itself is a geographical and cultural unit. Within this unit, two different sectors can be defined, taking into account different altitudinal steps (Ruthsatz and Movia 1975):

- The lower sector, or rift valley basin, extends from 1500 to 3000 metres above sea level. This has a 'mountain subtropical' climate (Buitrago and Larran 1994). The topography is less steep and the valley is wider with more availability of water and plant resources than in the high rift valley. Typical native flora include the very characteristic cactus (*Trichocereus pasacana* and *Opuntia*) (Cabrera 1957b; Ruthsatz and Movia 1975).
- The upper sector, or high rift valley, extends from 3000 to 4000 metres above sea-level. This sector has an 'arid high plateau' climate (Buitrago and Larran 1994), and the topography is steeper, more dissected and more rocky. Water resources are constrained to springs, where the plant resources are concentrated, with more steppe species such as *Baccharis boliviensis*, *Adesmia tucumanensis*, and *Prosopis ferox* (Cabrera 1957b; Ruthsatz and Movia 1975).

Both sectors have an Andean fauna, but today the high rift valley has a greater concentration and availability of wild animals. These include large rodents such as viscacha (*Lagidium viscacia*) and chinchilla (*Chinchilla brevicaudata*), carnivores such as foxes (*Dusycium culpacus*) and pumas (*Felis concolor*), and herbivores such as deer (*Hippocamelus antisensis*), camelids (guanaco, *Lama guanicoe*) and vicuña (*Vicugna vicugna*). This differentiation between upper and lower sectors has importance for the human history of the rift valley, and can be traced in the archaeological record.

Research at Pintoscayoc

Pintoscayoc archaeological locality is located in the upper sector of Quebrada de Humahuaca at 3000 to 4000 metres above sea level. The altitude of the rock-shelter named Pintoscayoc 1 is 3.780 metres. The area surrounding Pintoscayoc is a typical high rift valley environment with a steep topography, outcrops with rock-shelters, and limited water in the form of springs. This location gives ready access to the *puna*, as well as rift valley habitats.

Since 1982 I have directed a comprehensive archaeological project in this section of the rift valley, under the auspices of the National Council for Scientific and Technical Research in Argentina (CONICET). The aim of the project has been to research a specific location in the high rift valley, looking at the continuity of human occupation through time, including the historical and modern eras as well as the archaeological sequence. The rationale for this was not only the scarcity of information on the archaeology of the high rift valley, but also a lack of basic data on the sequence of human occupation in this region. Most previous archaeological work focused on the richer agricultural and village systems (about 1000 to 1400 AD) in the lower sector of the rift valley. Although some recent projects have been looking for earlier archaeological occupation in caves and rock-shelters in the upper sector of the rift valley, these are strongly focused on the earliest human occupation of the region (Aschero and Yacobaccio 1994; Fernández Distel 1974, 1980, 1986; Yacobaccio 1991). The Pintoscayoc project is one of the few to consider the human history of the rift valley as a unit.

Early colonisation of the highlands

Within the Quebrada de Humahuaca, archaeological evidence relating to initial human colonisation of the highlands is restricted to sites in the high valley. Even within the high rift valley, it is only the lower sedimentary units in caves and rock-shelters that preserve evidence of this period. It appears that heavy post-depositional activity has affected the entire rift valley system, erasing traces of early human presence around the caves in the high rift valley, and also in the basin rift valley, where the bigger campsites may have been situated.

Current evidence comes from three caves and rock-shelters: Pintoscayoc 1 (Hernández Llosas 1998, 2000), Inca Cueva 4 (García 1997; Yacobaccio 1991, 1997) and Huachichocana III (Fernández Distel 1974, 1980, 1986; Yacobaccio 1997). These three sites show similar evidence of domestic occupation of caves and rock-shelters as temporary seasonal campsites with brief but intense occupation. The earliest archaeological evidence of human presence in the area dates to about 10,700 BP but all three sites have occupation before about 10,000 BP. The activities represented in these early deposits are associated with

hunting, such as preparation and consumption of game, repair and production of hunting tools, and hide-working. Pintoscayoc 1 and Huachichocana III also have mortuary deposits, while Inca Cueva 4 has rock art which may correlate with this phase of occupation.

Pintoscayoc 1

The lower levels of Pintoscayoc 1 provide the most detailed picture of initial occupation of the rift valley. The evidence suggests that the early pattern of use of this site changed over 3000 years, and that this involved changes in artefacts and faunas, as well as changes in the intensity of use of the site. In broad terms, this pattern of changes corresponds to the process described by Borrero (1994) for Patagonia: colonisation of new lands is a process which proceeds from initial exploration, to 'installation' (that is, effective occupation of a region), through to colonisation.

Exploration

People began visiting Pintoscayoc 1 around 10,700 BP. The archaeological evidence suggests that the site was lightly used as a temporary campsite during summer, with rodents forming the main game animals, comprising 95 per cent of the number of identified specimens (NISP). These included the rock cavy (*Galea sp*, a small colonial rodent), viscacha, *Ctenomys* (a medium-sized burrowing rodent), and chinchilla — but always together with guanaco and vicuña. The stone-tool kit consists mainly of expedient tools, with only a single broken projectile point reflecting curation of implements.

Installation

The installation phase is represented at Pintoscayoc 1 by two different kinds of deposits: Upper Layer 6 and Mortuary Deposit 1, both with radiocarbon ages around 9000 years BP. By this time the site was used both as a temporary campsite with summer seasonal occupation for hunting, and as a place where the dead were interred. Upper Layer 6 shows a high intensity of occupation remains, suggesting repeated intensive use of the site. The lithic assemblage includes heavily used, reshaped and resharpened tools, and is dominated by triangular stone projectile points and scrapers. Few of these were made on site: most appear to have been manufactured elsewhere. The few bone artefacts include spear-thrower hooks, needles and awls. The faunal

remains show that rodents, cervids and camelids were hunted, processed and consumed on site. Hide-working is another activity well represented in this assemblage. Mortuary Deposit 1 was a deep pit covered with large rock, containing the skeletons of two individual adults — male and female — in a flexed position. At about 9000 BP, these are the oldest dated human remains in the region.

Colonisation

A radiocarbon date of 7850 ± 110 (URU0084) for Lower Layer 5 marks the end of the colonisation process. Pintoscayoc 1 reverted to a temporary campsite with low intensity and brief occupation. The artefact assemblage is a hunting and processing stone-tool kit, but there are fewer pieces than in the previous phase. Stone projectile points still dominate the assemblage, but a new leaf-shaped bifacial point appears alongside the earlier triangular projectile points. The faunal remains continue the trend observed in earlier levels: rodents comprise the majority of the game (56 per cent NISP), but the remains of artiodactyla (especially cervids and camelids) increased dramatically (43 per cent NISP).

Huachichocana III

This site is located in the upper rift valley of Purmamarca, which enters the central part of the Quebrada de Humahuaca. For the earliest levels, radiocarbon dates range from 10,000 to 8600 BP (10,200 ± 420; 9620 ± 130 P2236; 8930 ± 300 Gak5847; 8670 ± 500 P2280) but it was impossible to discriminate between discrete time phases. As at Pintoscayoc, the artefacts consist of stone projectile points and scrapers. Although rodents are present, the faunal remains are dominated by artiodactyla, consistent with the latter age of this occupation. Huachichocana also contains an early mortuary deposit. This was not directly dated but the excavators argue it is roughly contemporaneous with the adjacent occupation levels dated to 9620 years BP (P2236). The mortuary deposit contained a secondary burial, with parts of the skeleton and skull intentionally burnt. All bones were wrapped with plant fibres and human hair, close to which several projectile points were found (Fernández Distel 1986:379).

Inca Cueva 4

This site is located in the upper part of the Inca Cueva rift valley, which enters the Humahuaca Valley in the northern sector, very close to its beginning. As with Huachichocana, the radiocarbon dates for the earliest occupation (10,620 ± 140 LP-137; 9900 ± 200 AC-564; 9650 ± 110 LP-102; 9230 ± 70 CSIC-498) were considered together, and no discrimination in phases was attempted in the analysis (García 1997; Yacobaccio 1991). As at Pintoscayoc, the faunal remains are dominated by rodents. One striking feature of the site is the presence of rock art indirectly associated with the early occupation (Aschero and Podestá 1986:43).

Mid-Holocene abandonment?

Within the Humahuaca Valley as a whole, there is no evidence of human presence during the mid-Holocene. At Pintoscayoc, this time period is represented by an unconformity. This absence matches similar evidence for regional abandonment on the western side of the cordillera in the Puna de Atacama Desert (see Grosjean et al., this volume). Most researchers ascribe this to unfavourable climatic changes at this time, which disrupted hunter-gatherer settlement. Whatever the cause, it is interesting to note that it had similar effects on hunter-gatherer settlement in drylands on either side of the Andes.

The transition to food production

At the beginning of the late Holocene, 3000–5000 BP, the Quebrada de Humahuaca was repopulated by people with a more elaborate tool technology and materials — including hallucinogenic substances — brought from the *yungas* and from the tropical eastern forest. The archaeological evidence suggests the development of animal and plant domestication was beginning by that time in neighbouring regions and in the Humahuaca Rift Valley. As in earlier periods, much of the archaeological evidence is restricted to caves and rock-shelters in the high rift valley. The key sites are:

- Pintoscayoc 1 (Hernández Llosas 1998, 2000)
- Huachichocana III (Fernández Distel 1986)
- Inca Cueva 4 (García 1997)

- Inca Cueva 7 (Aguerre et al. 1973, 1975; Aschero and Yacobaccio 1994)
- Peña 'Aujero' de Coraya (Fernández Distel et al. 1981)
- El Portillo (Fernández 1997)
- Tomayoc (Lavallé et al. 1997).

Three of these sites — Tomayoc, Coraya and El Portillo — show very low intensity domestic occupation associated with consumption and processing of game animals. Huachichocana and Inca Cueva 7 also produced evidence of plants and animals in the process of domestication (such as early camelid domestic species, beans and red pepper). Several sites also show non-domestic contexts: Huachichocana, Inca Cueva 4 and Pintoscayoc 1 have human mortuary deposits and Inca Cueva 7 has a context of selected sanctuary objects. In the case of Pintoscayoc 1 these changes are reflected in the deposition of a human skull inside a small pit (Mortuary Deposit 2, dated directly on human bone to 5260 ± 75 BP, HELA-556). No artefacts were associated and no domestic use of the site was evident. The case of Huachichocana is especially remarkable because the skeletal remains were deposited together with stone pipes containing hallucinogenic substances, feathers and bones from eastern forest animals and wood carved with complex designs. At Inca Cueva 7 the special deposit of sanctuary artefacts also included some from the eastern forest.

All of this suggests that this was a period not just of economic change but also of profound changes in the structure of the societies themselves, at social, political and ideological levels (Nielsen 1997; Yacobaccio 1997). This archaeological evidence suggests that the changes that were taking place at a regional level made it impossible to maintain a hunter-gatherer way of life. As a result, groups of people may have been pushed towards the adoption of new ways of relating to the environment, which acted as a trigger not only for economic but also for social and ideological changes (Hernández Llosas 2000).

New economic strategies

After 3000 BP, there is evidence that farming and herding communities with ceramics and grinding stones were established in the Humahuaca Rift Valley, sometimes combining these economic strategies with hunting. In this region, societies never reached the complexity of those in the Central Andes in Peru

or the Valley of Mexico, but they reached a situation of initial concentration of power, social stratification and intensification of food production (Hernández Llosas 1998, 2000) prior to the Inka conquest about 1470 AD. In Argentina, changes in these food-producing societies within the last 3000 years can be described in terms of several phases: start-up, development, consolidation and intensification (Hernández Llosas 1998, 2000).

Start-up phase

From about 3000 BP, four sites have evidence of low intensity domestic occupation related to cooking, with ceramics and consumption of domesticated and wild animals: Inca Cueva Alero 1 (García 1997; García and Carrión 1992; 2900 ± 70 BP Beta 25116), Inca Cueva 5 (García 1997; 2120 ± 90 BP LP-357), Tomayoc (Lavallé et al. 1997; 3000 ± 60 BP Gif7914), and Cueva Cristóbal (Fernández 1988–1989; 2860 ± 160 BP Ingeis AC-1210). At Pintoscayoc 1, Mortuary Deposit 3, AMS ^{14}C dated to 2906 ± 53 BP (GX20443), gives a remarkable reflection of the changes affecting the valley. This feature consisted of the legs (in anatomical position) and the teeth (without any cranial remain) of a child aged six to eight years old, together with a ceramic bowl, deposited in a pit and covered by grinding slabs. The bowl is one of the oldest pieces of ceramic found in the area, and the grinding stones are associated with the beginning of agricultural practices.

Development phase

After 2000 BP, archaeological sites appear for the first time not only in the high rift valley sector but also in the lower valley. Sites located in the high valley appear to have been strongly associated with herding of domestic animals such as llama. These sites also have a very characteristic rock art, characterised by figurative motifs of humans and llamas, together with geometric compositions (see Hernández Llosas 2001). Some of the key evidence comes from Media Agua 1, a site where the rock paintings have been directly dated by AMS to 1880 ± 110 BP (CAMS-25383) (Hernández Llosas et al. 1998, 1999). Sites located in the lower rift valley are mainly dispersed hamlets, associated with farming and agricultural activities, such as El Alfarcito (Zaburlin et al. 1994) which has been radiocarbon dated to 2020 ± 100 years BP (LP-442) and Estancia Grande (in Quebrada de Purmamarca) (Olivera and Palma 1997) dated to 1900 ± 60 BP (LP-539).

Consolidation phase

Between 1500 and 1000 BP, as the new economy consolidated, a clear differentiation between economic activities in the upper and the lower sectors of the rift valley emerged. In the upper valley, the mixed nature of activities (agriculture, herding and hunting) was strongly maintained. In the lower sector of the valley, there is evidence of an expansion of agricultural acreage, and a corresponding increase in the number and size of hamlets. Several of these sites have now been excavated and dated: Estancia Grande (1510 ± 70 BP LP-310; Olivera and Palma 1997); Antumpa (1360 ± 70 BP LP-105; Hernández Llosas et al. 1983); Pueblo Viejo de la Cueva (1180 ± 50 BP LP-142; Basílico 1992); Till 22 (1190 ± 90 BP LP-346; Rivolta 1996); Vizcarra (1220 ± 55 BP AA-12139; Nielsen 1997:151); and Falda del Cerro (1210 ± 30 BP, GRN 5190; Nielsen 1996).

Intensification phase

After 1000 BP, intensive irrigation agricultural systems appeared in the valley, and the population was increasingly concentrated around these systems in the lower sector of the Quebrada de Humahuaca. In fact, the concentration and intense use of the lower part of the valley is so clear in the archaeological record that there is scarcely any evidence of use of caves and rock-shelters in the high rift valley at this time. This period also saw the concentration of the population in towns, often with defensive constructions. Within these towns, there is also evidence of craft specialisation, with specific sectors of the towns associated with ceramics, metallurgy, and textiles. Nielsen (1996) has suggested that these changes reflect a process of intra-group social differentiation and concentration of power, together with an increase in inter-group conflict.

The Inka conquest and Spanish invasion

The Inka conquest of the area around 1470 AD brought the Humahuaca valley under imperial control as part of the Inka empire (known as Tawantinsuyu). Although there are very few sites with radiocarbon dates, the Inka presence in the area is easily detectable in the characteristic building techniques, distinctive artefacts and iconography. Some caves and shelters in the high

rift valley became transit sites, clearly related to the Inka road system or with connecting paths between sites. Huachichocana III (Fernández Distel 1986) and Inca Cueva 5 (García 1997) have evidence of Inka presence by this time. Others, such as Pintoscayoc 1, appear to have been offering places. For instance, Mortuary Deposit 4 at Pintoscayoc consisted of a stone feature with paving on top and a stone-lined cist below. Within the cist, the disarticulated bones of several different people formed a package, which also contained silver and copper *tupus* (objects used with textiles, often found as offerings in different types of Inka ceremonial deposits) and a piece of textile. On top of the paving, fine ceramic bowls and traces of food were displayed. These features are characteristic of an Inka *waka* (or ceremonial cache). In contrast, sites in the lower valley were not only towns used as administrative centres, residential bases, and centres of craft production, but also fortresses, storage places, and *tampus* (buildings associated with the Inka imperial roads). Most of the available fields for agriculture were intensively used under the Inka administration.

The Spanish invasion around 1535 AD followed only a generation or two after the Inka conquest, and brought further dramatic changes to the drylands of north-western Argentina. From an archaeological perspective, there are two lines of evidence documenting these events: the presence of European artefacts, plants and animals; and the depiction in the rock art of figures of horsemen or battle scenes. Both types of evidence are present at Pintoscayoc and other sites in the Humahuaca valley. For instance, the upper levels of Pintoscayoc contained colonial cooking ceramics, iron objects, fragments of European glass and blue glass trade beads. By 1650 AD the Spanish had consolidated their control over the valley and the local population was under the control of *encomenderos* on agricultural estates.

Southern deserts: A South American perspective

The initial movement of people into the drylands of north-western Argentina was largely controlled by global climatic factors: global warming at the end of the Pleistocene allowed human groups to occupy land previously covered by ice, or subject to rigorous periglacial conditions. It also seems likely that, with

the first traces of people in these regions at 10,700 BP, people were not only very well established in the lowlands east of the Andes cordillera by this time, but also actively looking for new territories to colonise. If so, demographic levels may have reached carrying capacity for a hunter-gather economy in the lowlands well before 10,000 BP.

During the mid-Holocene, the high drylands (in particular the upper sector of the Quebrada de Humahuaca) were largely abandoned by people, or saw only occasional occupation of the territory. This may have been due to a drastic reduction in humidity and precipitation at this time (a climatic phenomenon sometimes known as the 'hypsithermal'), but whatever the cause, it resulted in abandonment of the highlands.

At the beginning of the late Holocene, from 5000 BP, the human population returned to reoccupy these territories, but now with a range of new economic systems, including herding and agriculture. The cause of this population expansion into the drylands is still unknown but several factors may have acted together: population increase at a supraregional level together with the demands of the new economic systems could have exceeded available land. In the Quebrada de Humahuaca, the following millennia show not only the introduction of plant cultivars and domestic animals but also profound changes in the structure of the human societies themselves, at a social, political and ideological level (Nielsen 1997; Yacobaccio 1997).

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Levi Range, Central Australia
photograph by Mike Smith