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INKA ROADS IN THE ATACAMA: EFFECTS OF LATER USE BY MOUNTED TRAVELLERS

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RESUMEN

El sistema vial incaico es complejo y presenta muchas rutas alternativas que, probablemente, fueron usadas en diferentes tiempos y para diferentes propósitos. Poco después de que fueran trazados y marcados, los caminos incaicos del Gran Despoblado fueron modificados y vueltos a trazar para satisfacer las necesidades de las expediciones españolas. Algunos segmentos, incluyendo empinados cruces de quebradas, eran inapropiados para el tránsito de viajeros montados, si bien habían sido transitables para viajeros de a pie y para llamas. Las necesidades de forraje y agua difieren para equinos, camélidos y seres humanos. El caudal de los arroyos era a menudo inadecuado para las necesidades de grandes contingentes de hombres y animales, y las jornadas más largas eran imposibles para todos, salvo para aquellos que transportaban agua consigo. La ruta, tal como fue conocida por los viajeros de tiempos históricos, se halla significativamente desplazada de algunos de los segmentos de caminos descubiertos recientemente, que han estado sin uso y han sido perfectamente preservados debido a la inconveniencia de su uso por caravanas y expediciones coloniales y modernas.

ABSTRACT

After only two or three generations of use, the Inka roads of northern Chile were modified and rerouted to meet the needs of Spanish and Colonial expeditions. Some segments, including steep Quebrada crossings, were unsuitable for horses and mules while passable by foot travelers and llamas. Forage and free water requirements differ for equids, camelids, and hominids. Spring recharges were often inadequate for larger parties, and the longer jornadas of the Gran Despoblado were impossible for all but water-carrying humans. Parts of the "Inka Road," as known to travelers of historical times, are significantly displaced from newly discovered, purely Inka segments that have been unused and perfectly preserved by their unsuitability for most later caravans and expeditions.

It has often been noted that when one is engaged in a difficult task -- let us say a survey for the earliest preceramic inhabitants of the Atacama Desert -- a contrasting, even opposite, activity may become diverting and almost necessary (Lynch, 1990). In my case the irresistible attraction is Inka roads and their accompanying structures. Fortunately, northern Chile's "Gran Despoblado," an immense, high, largely unwatered and unpopulated desert is rich in the well preserved remains of both the earliest and latest prehistoric periods. Modern use of the zone, especially exploration and development of its mineral wealth, threatens the delicate superficial features and requires that they be quickly recorded.

But some Inka roads are more Inka than others. In Peru and Ecuador I often took for granted the well preserved segments of the Inka road, photographing and noting them for the record, but then passing on to continue my survey for other types of sites. In northern Chile it was impossible to note, and then ignore, the Inka road system--for the road and its associated structures are the most extensive and monumental prehistoric remains on the landscape. Certainly they are more impressive than blown-out Archaic campsites. Also, strategically located occupation sites of the Inka period can be said to be a part of the road system itself (Iribarren Charlin and Bergholz, 1971;

Lynch, 1978, 1989; Niemeyer F. and Schiappacasse F., 1988; Raffino, 1981; Stehberg and Carvajal, 1988).

These Inka sites, rather than being pre-existing settlements connected, one to the other, by pieces of roadway, lie on the Inka Road and existed to serve it. In some ways they may have been like, or analogous to, our modern truck stops, highway patrol barracks, wayside rests, plow depots and sand piles. But at least in this part of the Inka world, roads served more for communication than for movement of armies or bulk goods. Rather than connecting centers of production, they seem to have linked mountain top shrines and administrative centers (Le Paige, 1978; Niemeyer F. and Schiappacasse, 1988; Reinhard, 1983; Reinhard and Sanhueza, 1982). (See Figures 1 and 2). Sometimes the Inka roads even seem to avoid centers of population and intensive farming. It may be that there never were many agents of the Inka in the Atacama, that they felt more secure on routes that bypassed areas of congestion and potential conflict.

Moreover, parts of the Inka road system are, or recently were, in active and prominent use by foot or mounted travellers. In North America, it is impossible to confuse the old Indian trails with the superhighways that have covered and destroyed most of them. On the other hand, in the Atacama Desert, my colleague John Alden and I have found that recent explorers of the Inka Road have sometimes taken the wrong route, in effect following the pre-automotive trails of the muleteers rather than the original Inka way. The advice of the oldest travellers, who knew the routes of their parents and grandparents, was valuable, but sometimes wrong. Trying to follow the Inka road by jeep, or even horseback, is a mistake. This is made clear by the difficulties encountered by Hans Niemeyer, John Hyslop, Julio Sanhueza, Klaus Schmidt-Hebbel, and other modern explorers.¹ Even Diego de Almagro and Pedro de Valdivia, in the sixteenth century entrada, with their military expeditions and horses, could only use parts of the Inka system (Gerónimo de Bibar, 1966 [1568]; Hidalgo Lehuedé, 1972).

The Inka road was primarily a foot road, travelled by relatively small parties. The water sources are limited and far between, and the recharge rates for the small springs and waterholes are insufficient for large expeditions. For small groups travelling with llamas, there should have been alternate routes, not quite as direct, with more forage possibilities. Equids consume yet different plants than camelids, and they need more free water. Humans travelling alone can carry their own water and food much farther than horses. Even where plentiful food and free water are found, humans can descend much steeper precipices than equids, or even camelids. This is one, functional, reason why true Inka roads are often more direct than later, so-called "Inka" roads. We have even toyed with the idea that some Inka routes were for travel south, and others for travel north, somewhat like on a divided highway. This appears to be the case for some quebrada crossings, where it is easier to go down one way, but up by another path.

The easiest way to learn about these alternatives is to walk the road yourself, back and forth, rather than riding on the back of a mule or jeep (See Figure 3). Even given both our efforts, and hundreds of miles of walking, John and I did not see the whole system. (See Figure 4). Wherever possible, of course, we walked from, and got picked up from, intersections with modern jeep trails. God bless the Global Positioning Satellite System, which allowed dependable meetings at prearranged coordinates.

To identify the Inka Road is the first aim of our survey. To identify it is, in a sense, almost the same as to determine its purpose, how it was planned and built, and even how its function changed. Parts of it, stylistically quite dissimilar to the Inka Road proper, were in use hundreds of years earlier, at the same time as the associated San Pedro Negro Pulido ceramics. To judge by the amount of sodalite and turquoise

sprinkled along its way and in the wind shelters, one purpose was movement of turquoise, a material which was also of great interest to the Inka. After perhaps only three generations of Inka use, the road was abandoned by the collapsing Inka state, then used and casually misused by others. Even the royal mail between Cuzco and Santiago was carried on this route (Magallanes, 1912).

Incidental travellers, traders, smugglers, prospectors, and suppliers of the small mines have also used the road system. In Inka times, the chief routes went mostly north and south, along the flanks of the Andes and to shrines on the summits (See Figure 5). Later, east-west traffic became increasingly more important, to feed the mines and bring precious mules and cattle from Argentina. Wine bottles, tin cans, and even beer bottles from Argentina are a part of the recent litter (See Figure 6). As late as the second half of the 19th century, Francisco San Román and others were able to chart the general route of the much altered, north-south, Inka road through the Gran Despoblado (Hyslop, 1984).

For what it's worth, Garcilaso de la Vega (1966 [1609]) tells us that the Topa Inka Yupanki ordered the Atacama route surveyed through the wilderness and built to specifications. This would have been in 1470, plus or minus ten years, to facilitate the cultural subjugation and control of the southern Copiapo farming and mining zone. The first Spanish use was for Diego de Almagro's return from Chile, about 1537, but by 1541 (Pedro de Valdivia's trip) the Copiapo Diaguitas had already liberated themselves from the Inka. Whoever was responsible for the original Inka Road, it has certain uniform features from at least Saxamar, in the headwaters of the Azapa, to the Río Frío region, nearly 900 kilometers to the south, where our survey ended.

As noted by Hyslop (1984:153), the imperial roadway was cleared of stone for a width of about 3 meters, but I think that he was wrong to assume that the curbs, or rows of stones, often found along one or both edges, were of later construction (See Figures 7, 8 and 9). Instead, these are elaborations meant to mark the route in especially important or difficult places. Where the roadway has received heavy traffic over the last 450 years, it has been damaged or erased by the typical subparallel paths or grooves worn by hooved animals. These multiple lanes, sometimes spreading out across a width of 20 or more meters, are most certainly not part of the original road. We people, with our big flat feet, and even our llamas with their pad-like camelid feet, do not destroy the road that way. This is why packers on restricted trails of the U.S. National Forest Service are allowed to use llamas, but not horses and mules. Thus, some modern explorers, from San Román onwards, who assiduously followed the clearly visible and nearly parallel tracks across the desert, were following a modern camino de herradura, tropera, pack road, or what the English call a bridle path, rather than the Inka Road itself. Sometimes the herradura covers and obliterates the Inka Road, and sometimes it takes a somewhat different and usually easier course, but the prominent grooved trails that can be seen from a distance, and even on aerial photographs, are not the Inka Road any more than the North American Interstate highways are the old Oregon Trail or the Indian trails that preceded them (See Figures 10 and 11).

One manages to stay on the less visible Inka road by going on foot, as did the Inka's men. The Inka surveyors are said to have gone back and forth, clearing two leagues (roughly 10 kilometers) at a time, and erecting "signs" so the traveller would not lose his way. On parts of the road that have not been used since Inka times, these road markers or hitos are columns of neatly piled stones, sometimes in pairs on either side of the road, with what I call an "ear" on top (See Figures 12 through 15). They are often placed on topographic rises that can be seen from a great distance. In at

least two cases they are joined by a straight row of stones, perpendicular to the roadway, that may separate one administrative or construction district from another (See Figure 16).

There is a sense of immediacy in walking parts of the Inka road that have not been used in modern times. One also sees more, and is more inclined to stoop and pick things up, than if he were mounted or hanging out the door of a jeep. Among our more remarkable finds, beyond the occasional potsherd, are a handmade fiber sandal, an early spur rowel, and a complete olla (See Figure 17). Not a distinctive Inka shape, this pot does, however have the paste, temper, and other characteristics that place it in late prehistoric or early historic times. It was cracked and placed upside down, several meters to the side of the road itself, where the bottom has been severely eroded by the wind and sand.

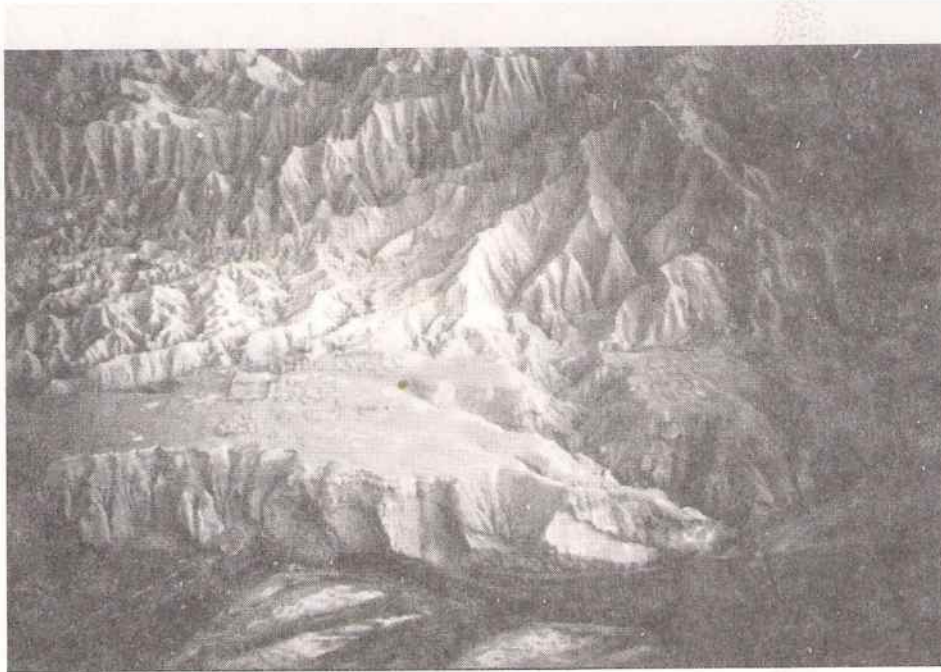
Where other parts of the original Inka roadways remained in later use as herraduras, the neat columns of stone have almost always been tumbled over, possibly deliberately. Sometimes these tumbled hitos are mistaken as sacred apachetas, or one may even be the origin of the other. More often, the common, or should I say vulgar, modern traveller refers to them as "mojones," but he still uses the rock piles on the horizon to find his way. Sometimes, rather ironically, these Inkaic hitos or mojones have been Christianized with a cross.

Thus, what began as simple foot trails for human transport and communication were straightened, marked, and formalized by the Central Andean Inkas. For these intruders, the roads may have been most important in linking mountain-top shrines, but also useful for communication, administration, and light transport of precious goods. The first Spanish invaders tried to convert the Atacama roads to military use by large mounted parties, but with only limited success.

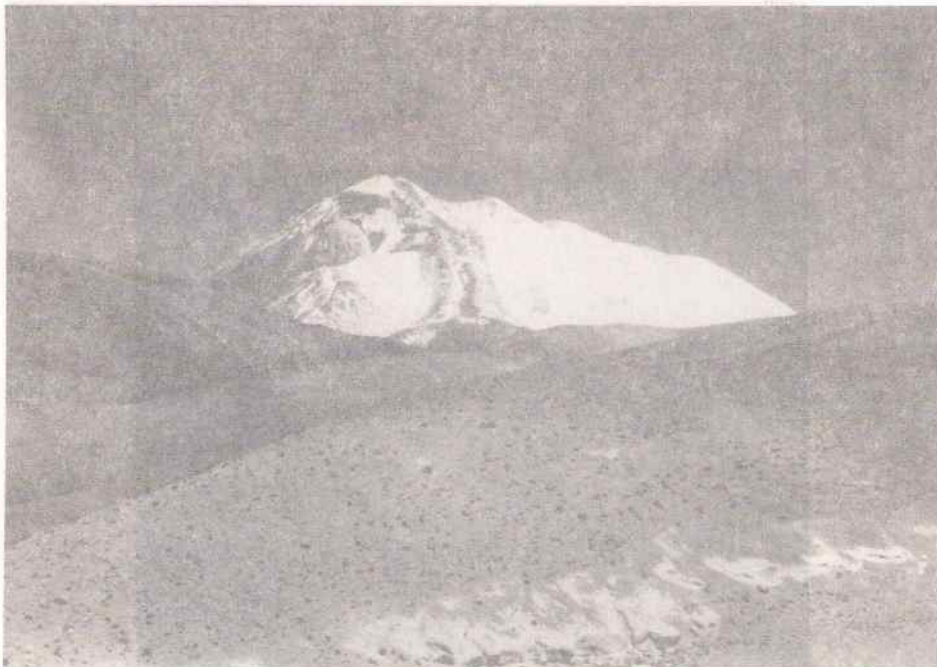
After the first expeditions, much of the road system reverted to its original, preincaic state as a trail system, to be used by mail carriers, mineral prospectors, and suppliers of the small mines. Like many prehispanic artifacts, the "Inka" road has been largely Christianized and destroyed in the process. Precious traces still remain, but most of the road system, and especially the routes unsuited for traffic by wheel, have gone back to the common man, to be walked and ridden by smugglers with light burdens, refugees and hunters, mountaineers and alpinistas, and all those other lost souls and archaeologists, including ourselves and the late Percy Dauelsberg (1983) (See Figure 18).

NOTA:

¹ In 1980 and 1981, John Hyslop, Hans Niemeyer, Patricio Nuñez, Mario Rivera, Julio Sanhueza and Klaus Schmidt surveyed most of a north-south segment of the Inka road between 23° 30' and 25° 30' south latitude (approximately Socaire and Vaquillas) (Hyslop 1984; Hyslop and Rivera 1984; Niemeyer and Rivera 1983). In addition, in 1983, Rivera worked with me for a few days at Catarpe, as did Sanhueza in 1976 and 1983, identifying and exploring a segment of the Inka road leading into the tambo.



1. Catarpe Tambo, an administrative center on the approach to San Pedro de Atacama. Traces of the Inka road, as well as modern paths, cross the terrace in front of the structures.



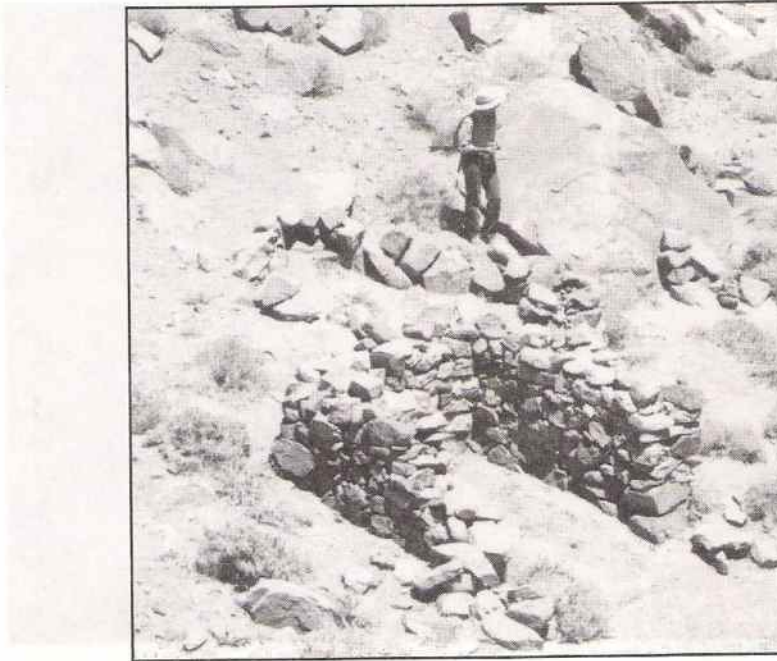
2. Volcán Lullailaco, elevation 6,739 meters, with a Inka shrine on the summit. An Inka road is visible crossing the hill in the foreground.



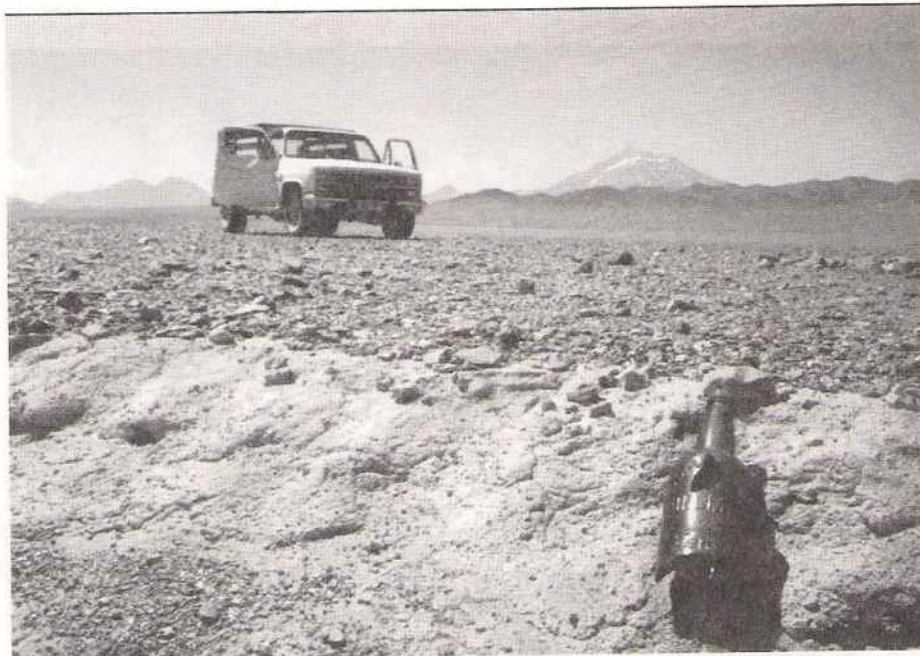
3. "Río Frío Tambo" in the drainage of the Quebrada de Laguna Seca. This site was missed by previous explorers, whose mules had given out, and who had to ride jeeps up the main channel.



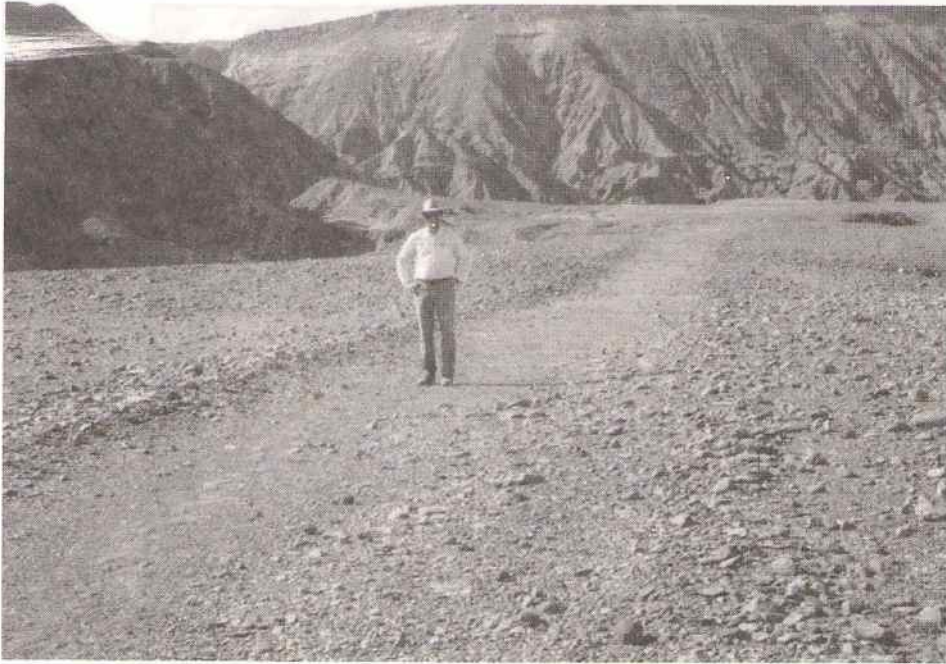
4. John Alden following the much used, sub-parallel tracks worn into the old Inka Road across the Punta Negra pediment.



5. A Chasqui huasi guarding the "chorro" of the Quebrada Guanaqueros, which gives access to a route up Llullaillaco.



6. Bottle from Cervecería Quilmes, abandoned by a later traveller, points the way back to Argentina and the shrine atop Volcán Llullaillaco.



7. The original Inka road, cleared of stones and about 3 meters wide, as it descends to Catarpe. This route was abandoned early and shows no use by equids or carts.



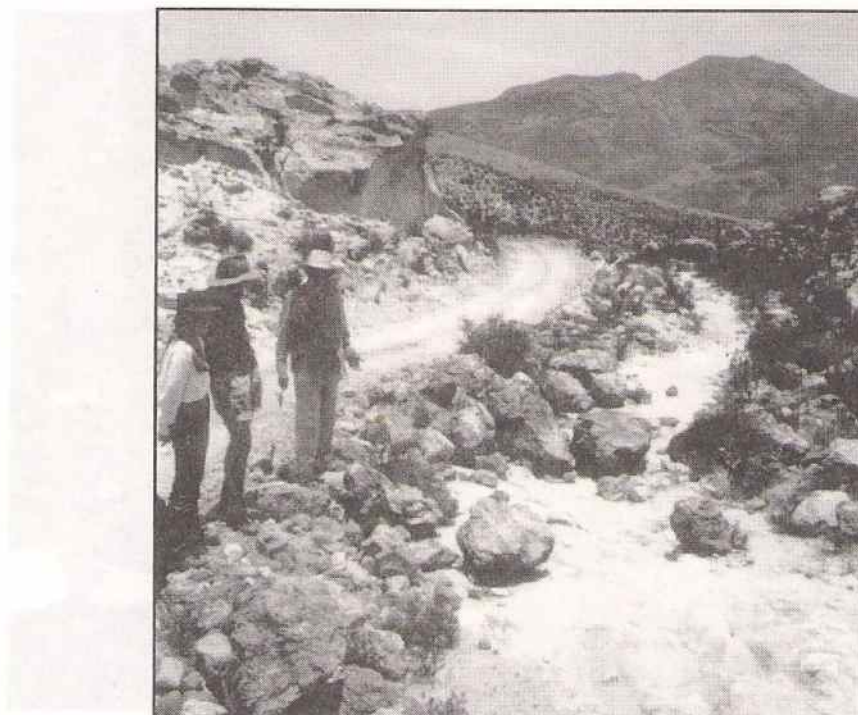
8. Curbed route on the abandoned Inka descent to the Río Salado, impassable by wheeled vehicles.



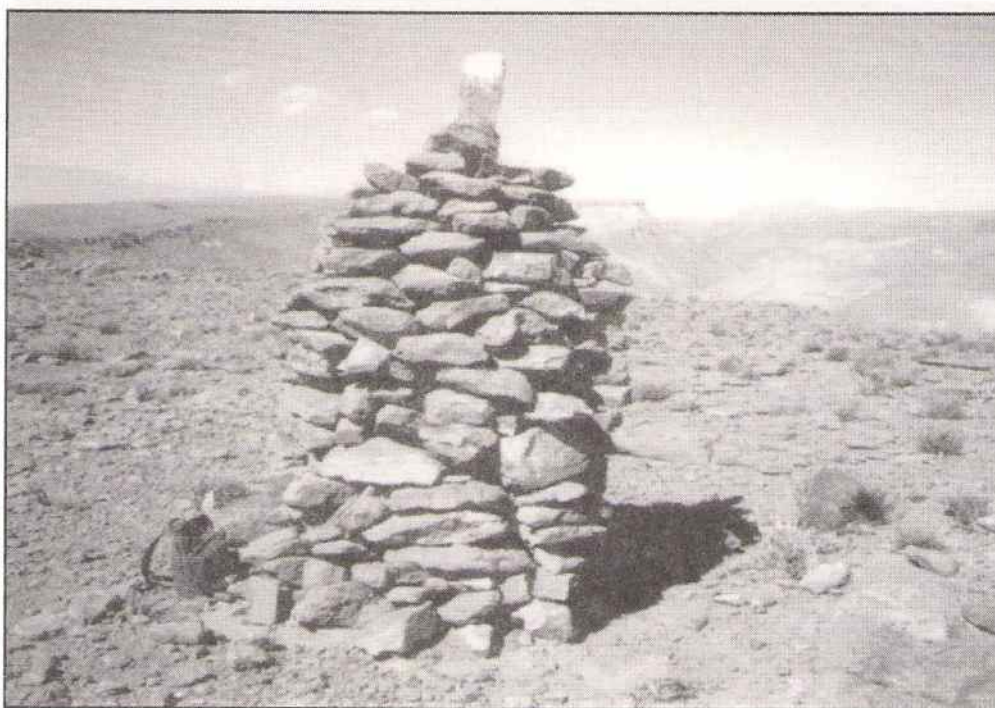
9. Detail of well preserved curbing from Fig. 8.



10. Modern, undisciplined mule and jeep trails often follow the Inka road, more or less, as in this case between the Punta Negra and Barrancas Blancas.



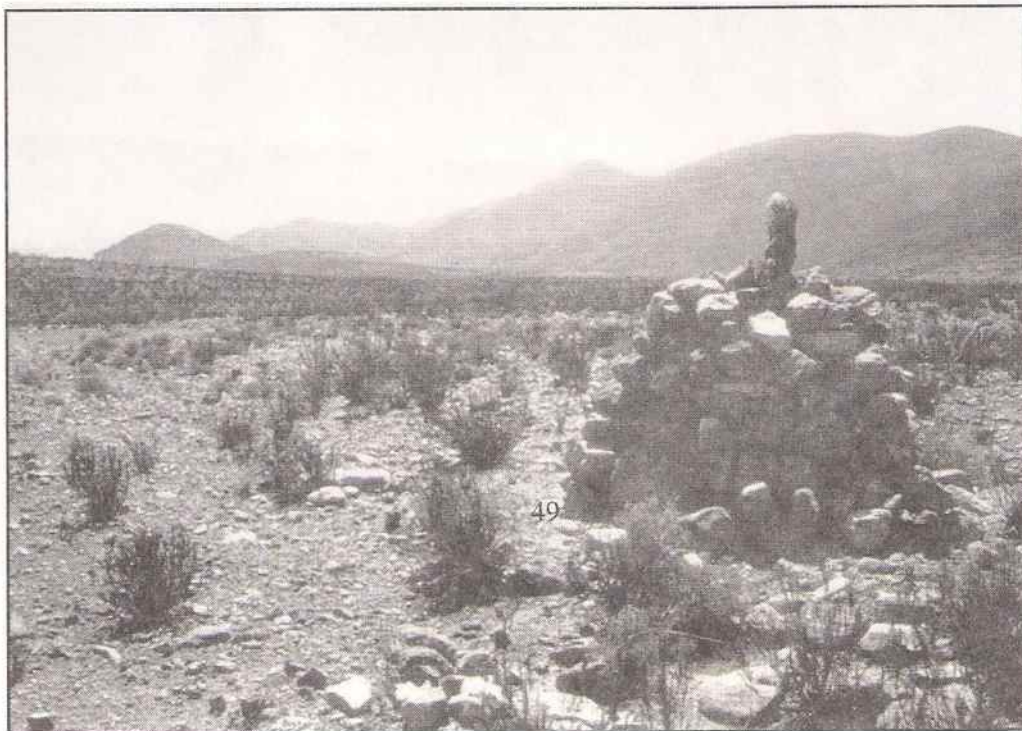
11. Percy Dauelsberg at Tojotojones, showing North Americans the path of the old Inka road, deeply grooved by cart traffic and now mostly obliterated by the new motor road.



12. Original 2 meter-high hito, in perfect condition, on the Inka road north of the Río Grande/Río Salado junction.



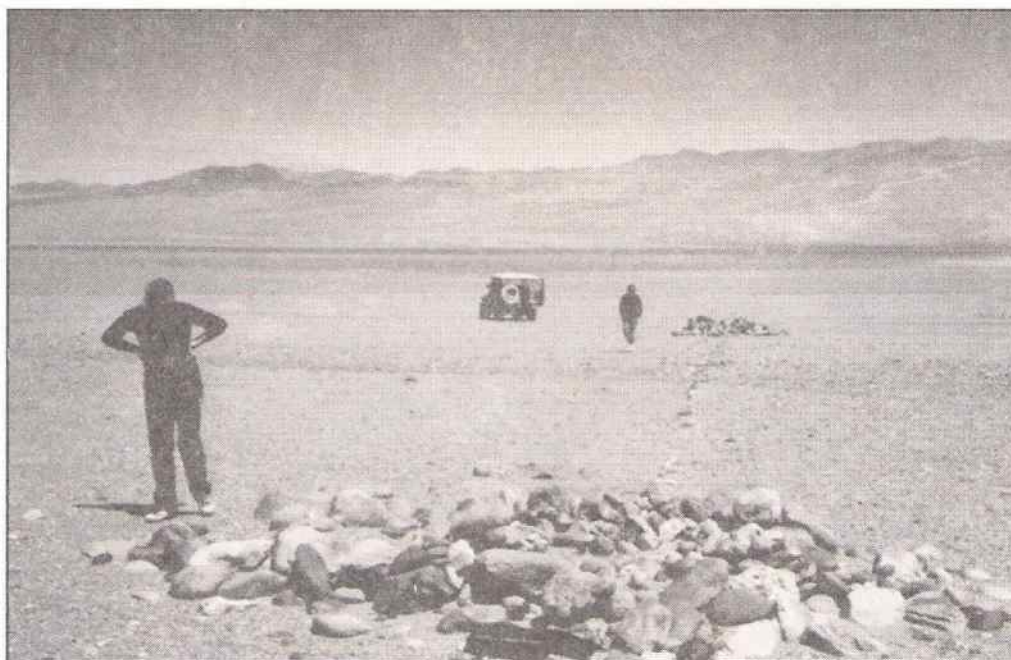
13. Well preserved hitos in pairs, on either side of the road north of Catarpe.



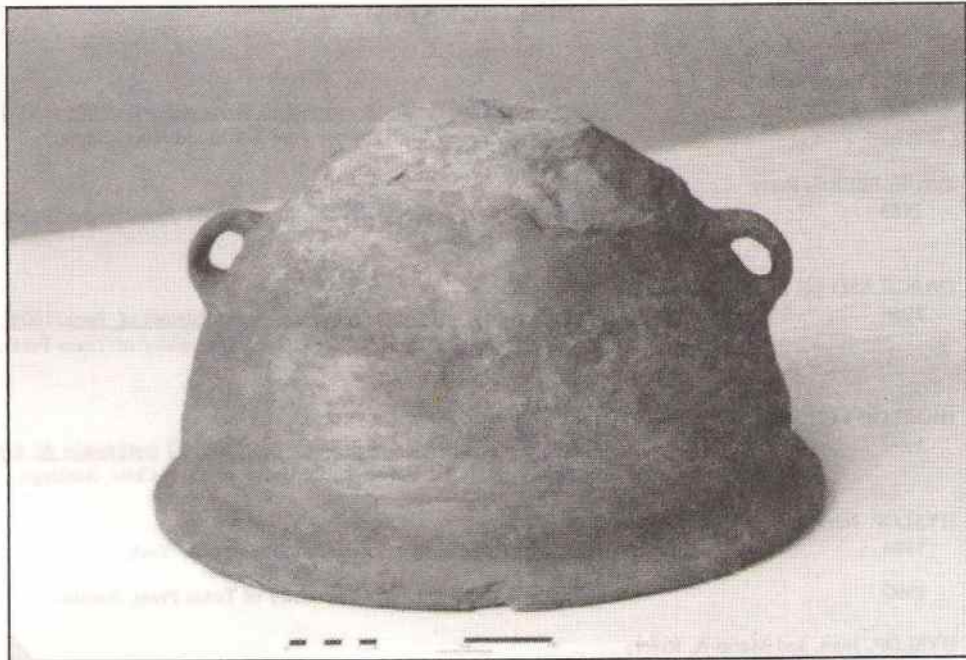
14. Typical "eared" hito on the Inka road near Saxamar, about 18° 35' south latitude.



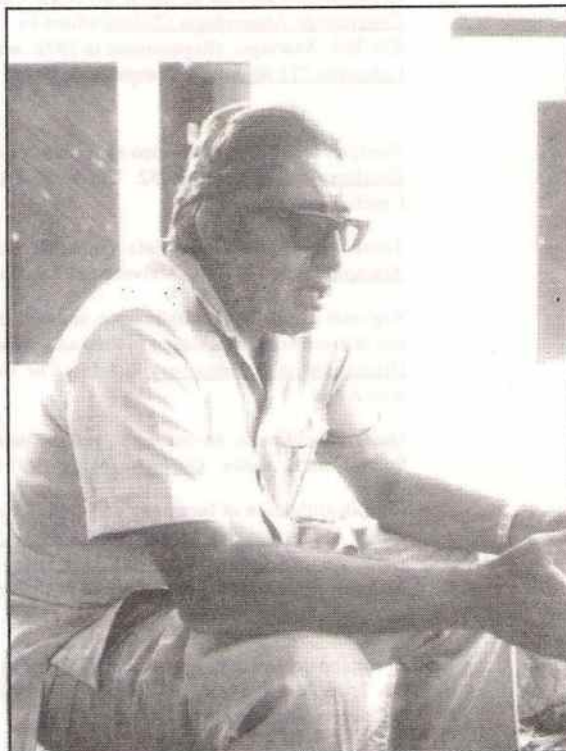
15. Nearly identical hito north of Catarpe, about $22^{\circ} 40'$ south latitude, some 600 kilometers distant from Saxamar. Such hitos were built at least as far south as the Rio Frio, 25° south latitude.



16. Paired hitos, now tumbled over, connected by a line of stones perpendicular to the Inka roadway.



17. Late period olla found alongside the Inka road.



18. Percy Dauelsberg in 1987, at the Museo San Miguel de Azapa.

BIBLIOGRAFIA

- BIBAR, Gerónimo de
1966 Crónica y relación copiosa y verdadera de los reinos de Chile [1558]. Fondo Histórico y Bibliográfico José Toribio Medina, Santiago.
- DAUELSBERG, Percy
1983 Investigaciones arqueológicas en la Sierra de Arica, sector Belén. Chungará 11: 63-83.
- GARCILASO DE LA VEGA, El Inca
1966 Royal commentaries of the Incas and general history of Peru [1609]. 2 vols. Translated by H.V. Livermore. University of Texas Press, Austin.
- HIDALGO LEHUEDÉ, Jorge
1972 Culturas protohistóricas del Norte de Chile: El testimonio de los cronistas. Editorial Universitaria, Universidad de Chile, Santiago.
- HYSLOP, John
1984 The Inka Road System. Academic Press, New York.
1990 Inka Settlement Planning. University of Texas Press, Austin.
- HYSLOP, John, and Mario A. Rivera
1984 An Expedition on the Inca Road in the Atacama Desert. Archaeology 37(November/December): 33-39.
- IRIBARRÉN CHARLIN, Jorge, and Hans Bergholz
1971 El camino del Inca en un sector del Norte Chico. In Actas del VI Congreso de Arqueología Chilena edited by Hans Niemeyer F., pp. 229-265. Santiago. (Republished in 1972 with more illustrations in Colección "11 de Julio", Compañía de Cobre Salvador, Potrerillos.)
- LE PAIGE, Gustavo
1978 Vestigios arqueológicos incaico en las cumbres de la zona atacameña. Estudios Atacameños 6: 36-52. Universidad del Norte, Antofagasta. Lynch, Thomas F.
1978 Tambo incaico Catarpe-Este (informe de avance). Estudios Atacameños 5: 142-147. Universidad del Norte, Antofagasta.
1989 Regional interaction, transhumance, and verticality: Archaeological use of zonal complementarity in Peru and Northern Chile. Michigan Discussions in Anthropology 8: 1-11. The University of Michigan, Ann Arbor.
1990 Quaternary climate, environment, and the human occupation of the South-Central Andes. Geoarchaeology 5(3):199-228.
1993 The identification of Inca posts and roads from Catarpe to Río Frío, Chile. In Provincial Inca: Archaeological and Ethnohistorical Assessment of the Impact of the Inca State, edited by Michael A. Malpass, pp. 117-142. University of Iowa Press, Iowa City.
- MAGALLANES, Manuel M.
1912 El camino del Inca. Revista Chilena de Historia y Geografía, Año 2, No. 7, pp. 44-75. Sociedad Chilena de Historia y Geografía, Imprenta Universitaria, Santiago.

- NIEMEYER F., Hans, and Mario A. Rivera D.
1983 El camino del Inca en el despoblado de Atacama. Boletín de Prehistoria de Chile 9: 91-193. Departamento de Ciencias Sociológicas y Antropológicas, Universidad de Chile, Santiago.
- NIEMEYER F., Hans, and Virgilio Schiappacasse F.
1988 Patrones de asentamiento incaicos en el Norte Grande de Chile. In La Frontera del Estado Inca, edited by Tom Dillehay and Patricia Netherly, pp. 141-179. BAR International Series, No. 442, Oxford.
- RAFFINO, Rodolfo A.
1981 Los Inkas del Kollasuyo. Editorial Ramos Americana, La Plata, Argentina.
- REINHARD, Johan
1983 Las montañas sagradas: Un estudio etnoarqueológico de ruinas en las altas cumbres andinas. Cuadernos de Historia 3 :27-62. Departamento de Ciencias Historicas, Universidad de Chile, Santiago.
Reinhard, Johan, and Julio Sanhueza T.
- 1982 Expedición arqueológica al altiplano de Tarapacá y sus cumbres. Revista de la Corporación para el Desarrollo de la Ciencia 2(2): 17-42. Santiago.
- STEHBERG, Rubén, and Nazareño Carvajal
1988 Road System of the Incas in the Southern Part of their Tawantinsuyu Empire. National Geographic Research 4(1): 74-97). National Geographic Society, Washington, DC. Also as, Red vial incaico en los términos meridionales del imperio: Tramo valle del Limar--valle del Maipo. In La frontera del estado inca, edited by Tom Dillehay and Patricia Netherly, pp. 181-214. B.A.R. International Series 442, Oxford.