The Squier Causeway at Lake Umayo

Notes on Ancient Travel in the Northern Lake Titicaca Basin

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When Ephraim George Squier embarked on his exploration of highland Peru and Bolivia in 1864-65, he rode on muleback across routes that had served travelers for centuries. His published accounts of these journeys are still of value to archaeologists in this century, providing information about moments that have since deteriorated.

Squier made a special trip to Lake Umayo, a small lake northeast of Lake Titicaca and located at the same high altitude, just over 3800 m (1877.377). His interest was fanned by the finely fitted stone burial towers, known locally as chullpas, which are found on the peninsula of Sillustani (Figs. 1, 2). He drew a map of the peninsula, noting a causeway in the shallow lagoon of Lake Umayo (Figs. 3, 4).

When I began to conduct fieldwork in the Umayo area in 1974, I did not observe the causeway; however, when the dry seasons of 1975 and 1976 brought the lake to a shallow level, I began to recognize its remains. Submerged during periods when the lake level was high, the causeway had escaped scholarly attention since Squier's day and had been long forgotten.

Squier's Visit to Umayo

Squier traveled through the southern Andes with a small party, including a guide, a muleteer and several additional attendants (see box). An illustrator named Harvey and a photographer were the only project staff. The party left the port of Ane ca in the spring of 1864.

Traveling with pack animals, the group established camps in deserted archaeological sites, rock shelters, or native villages along the way. Squier describes how a canvas stretched over their gear was often used as a tent, and mentions one night spent hovering under a poncho near the Lake Titicaca shore. We can sympathize with him, for he picked the coldest time of year to travel: the highland Andean winter and dry season lasts from May to October.

The dates of Squier's trip can be reconstructed from the festivals he mentions. Squier left the Desaguadero River at the southern end of Lake Titicaca, en route north, on St. John's eve, June 24. He reached Puno at the north end of the lake and made a balsa (reed boat) trip with another scholar traveler, the naturalist Antonio Raimondi. They voyaged to the islands of Titicaca and Coati in Lake Titicaca and then were blown off course on the return trip, reaching Ecomao on the northeastern shore of the lake before the winds allowed a return to Puno. In the meantime, Squier was given up for dead by some American friends in Puno. They should have been more patient; he arrived in Puno in time for the 4th of July.

Between July 4 and July 28, when he celebrated Peruvian Independence Day in Ollantay, Squier made a number of short trips out of Puno. He visited the Lake Umayo area at this time, and may have spent as much as a week there.

In his travels, Squier relied mainly on a map of the southern Andean highlands by John Barclay Pentland, first drafted in 1837-28, and then redrafted in 1837 (Fig. 7). Squier made a number of corrections to this map, largely hydrographical in nature. Nevertheless, Squier's map of Lake Umayo still only roughly approximates the landscapes in the area. He appears not to have made any more detailed surveys of the lake area, as his description of the lake suggests he only visited the southern part.
to have traveled the entire circumference of the lake, but rather to have drafted his map from a viewpoint point along the shore in the vicinity of the Sillustani peninsula. His rendering of the peninsula's contours, of the headlands west of it, and of the eastern shore of Umayo island and the lake itself accord better with a modern map than his rendering of the lakeshore on the opposite side of the lake from Sillustani. Also, he appears to have been unaware of the Malachane inlet just beyond the headlands west of Sillustani and out of view from a vantage point of the shore near or at Sillustani. That inlet would have been inundated at the time Squier collected his information, but given the level of the lake indicated by his drawing.

Squier may have visited Umayo island (Fig. 9). He correctly showed a wall across the island's terrenplein, though he misrepresents its length as well as the contours of the western shoreline of the islands (compare Figs. 3 and 4). If he did actually visit the island, he may not have explored very much of it, since from the western part of the island he would have gotten a better view of the Malachane inlet than his map indicates. The main contribution of Squier's map lies in its depiction of a causeway in the Umayo lagoon, connecting its shore with the neck of the Sillustani peninsula. Of interest to us here is his description of the lagoon:

The bay that sweeps behind the peninsula of Sillustani is shallow, with water up with reeds, and with the lake- weed which has described as affording food for cattle in the dry season, and which is called nahueta. We observe a line of wall resembling a causeway, running from shore to shore, within which, just traceable above the water, are lines of stone work, such as might really be left by the sinking or submergence of buildings, and which give some sort of sanction to the tradition, that here the Apus or Cañeros (lords) of Hatuncocha had a palace and a town, which sunk, and were covered by the waters of the lake during a great earthquake. I went to the supposed walls in a balsa, and satisfied myself that they were really the remains of buildings, but whether originally these were erected on low grounds, with the supposed causeway as a dike to prevent the encroachments of the water when the lake rose during heavy rains, or whether there was a real subsidence of the grounds due to the earthquake, I am unprepared to say. I incline, however, to the former hypothesis. (1857: 384-385)

Squier's map shows the traces of stone foundations in the shallow bay nearest the Umayo hacienda. During the winter of 1909, when the lake was near its shallowest ebb in more than a decade, no remains of buildings could be seen in the caked mud. There is, however, a causeway like the one shown on Squier's map. It departs from a headland in the Umayo lagoon, borders another headland above and middle of its course, and reaches the Sillustani peninsula near the hacienda (Fig. 5).

Ephraim Squier

E. G. Squier presents an interesting figure in the annals of American archaeology. An engineer by training, but a journalist, diplomat, and archaeologist by calling, his multifaceted career has recently sparked scholarly interest (Mould de Pease 1996; Hobot 1972; McElroy 1988). His involvement in archaeological field study occurred when modern archaeology was in its infancy. His monograph on the cultural remains of the Mississippians, along with Edwin Hamilton David was the first study ever published in the series Smithsonian Contributions to Knowledge in 1849 (see Expedition 20 [2]: 27-29).

Outside the United States, Squier's studies were facilitated by diplomatic appointments, one to Peru and one to Argentina. He published popular articles on Central America, and a strong motivation for him to serve on a bilateral commission to arbitrate disputes over Peruvian guano was a desire to encourage another series of articles. When his work with the commission was done in Lima, Squier embarked on a lengthy tour of the southern Andean highlands (Fig. 5).

Squier's sojourn in the Andes coincided with the beginning of a period of mortal instability which lasted to the end of his life. His book was seen into print by his brother after Squier's institutionalization. Perhaps it is the book's inner turmoil, as his archaeological observations are everywhere interwoven with his own reactions to the people and events of the trip. More than once this credentialed gentleman had to make a rapid retreat from a highland town. Today the misanthropic Squier seems ill-suited to have been a diplomat (Mould de Pease 1996).

The Squier Causeway at Lake Umayo

Two bridges were recorded by Squier, one at Nascaura (shown here) and another at Desaguadero. Both were floating bridges supported by bundles of reeds; causeways led to each end. When the current was very strong, one end of the bridge was cut free so that it would not be swept away. (From Squier 1857: 265)

A detail of Penndale's map. Squier's detail of Lake Umayo is more reliable than Penndale's rendering. (Photo courtesy of the Royal Geographical Society)

My relocation of the causeway, now in very poor condition, can be attributed to a peculiar combination of circumstances. At the time, I was engaged in the excavation of habitation remains at Hatuncocha, 4 km from Sillustani (see below). Temporarily without a vehicle, for three weeks I had to walk from our camp at Sillustani to Hatuncocha. Accompanied by a Peruvian colleague, Mario Núñez, we spent the time collecting refuse from the surface of the site at Hatuncocha, preparatory to planning an excavation program, and we had to carry each day's collections back to camp at Sillustani. The task was exhausting, especially at more than 3000 m of altitude, and we traveled little along the way. The low water level made a natural desire to look for any kind of shortcut—brought my attention to an older road near the lagoon where this road skirted the lagoon and, past a headland, headed directly into the water toward the buildings of the Umayo hacienda (Fig. 10) as shown on Squier's map. The road, and the portion of it now submerged, was bordered by white...
Umuyo Island, seen from Sillustani.

stones (Fig. 11). These stones later caught my attention in various efforts made over the years to photograph the causeway at different times when the lighting for the fluctuating level of the lagoon might provide new information (Fig. 12). What I had observed was the use of white stones to outline the border of the lagoon. A geometrical shape had been imposed on the shore, and the causeway itself was part of this artificial contouring.

Who built the Umuyo causeway and for what purpose? An attempt to answer this question can only be made after an examination of its relation to other archaeological remains in the area and comparison with other causeways in the region.

Archaeological Sites Near the Umuyo Causeway

Other archaeological remains in the vicinity of the causeway were observed by Squier. He mentions a structure built on the neck of the peninsula that was similar to the Palace of the Inca on Titicaca Island that he had previously described. Since Squier often cited local tradition, he may not have actually seen the remains of such a structure. Buildings dating to the 17th century are included within the Umuyo hacienda, but none of the hacienda structures can be identified as pre-hispanic. A few stones used in enclosure walls are finely fitted stones in good Corico-style masonry (see Niles, this issue); these, however, appear to have been re-used, taken from straight walls made with evenly coursed square or rectangular stones. Intact walls constructed with fitted stones have been found at several sites in the immediate vicinity of the hacienda. Some of the chullpas at Sillustani are built with dressed stones of this type, but all of these structures are circular and could not have pro-

vided the masonry now within the hacienda. The remains of walls Squier saw in the shallows near the Umuyo hacienda were exposed at some point, and the enclosure walls may have been built with stones from this source. However, such stones are also seen, re-used as well, in relatively recent constructions at the site of Hatancca. Therefore, the stones at Umuyo may have been removed from an original location in Hatancca.

The settlement at Hatancca and the chullpas at Sillustani have been closely related from the time of Inca domination to the present. My study of Hatancca, therefore, helps to establish the archaeological context of the causeway leading to the Sillustani peninsula. Hatancca was initially thought to have been the pre-Inca seat of the Qolla kings, as well as their place of residence during the time of Inca control. After systematically testing the site for any pre-Inca remains, however, 13 (Top) The Umuyo lagoon reached its lowest ebb since 1975 when I began to document the causeway, in mid-1986. The shallows near the Umuyo Hacienda at the far right were completely exposed, and the stones bordering the lagoon edge and the causeway could be clearly seen.

13 (center) View of the Chucuito-Camata causeway from Concachi south to Camata. Some sections of the Concachi-Camata segment of the causeway have been destroyed by inundations, and only the portion nearest Concachi is still in use. This photograph was taken in 1986 when the level of Lake Titicaca was near its lowest ebb since 1975. Even at that time, there was still water on both sides of the causeway in some areas. (Photo courtesy of John Hydorn)

14 (bottom) Map showing the Chucuito-Camata causeway. Darker areas are above 3590 m elevation.
I concluded that the site was authorized, if not planned, by the Incas (Julian 1983). If the Qollas kings did have a seat of government before the time of Inca control, the best candidate for this seat is the peninsula of Sillustani, on terraces facing the lagoon. Habitation refuse in this area is associated with a number of stone circles (including a circle described by Squier) that may be interpreted as house foundations based on comparisons with other sites in the area and as far away as highland Bolivia (Hylton 1947; Squier 1877).

Remains of occupation contemporary with Inca Hatunucalla are not found on the Sillustani terraces, but are scattered across the neck of the peninsula and extend outward along the southern flank of the ridge behind the peninsula. Potsherds found in the refuse show an even higher degree of Inca influence than is evident in the already heavily Inca-influenced ceramic material found at Hatunucalla, suggesting an even stronger link to the empire (see Caravello, this issue, for a similar case). An Inca-authorized settlement on the neck of the peninsula may have motivated the construction of a causeway.

**Other Causeways in the Lake Titicaca Basin**

Was the Umayo causeway constructed during the time of Inca control, as Squier’s local informants told him, or was it constructed in even earlier times? The Incas do appear to have been involved in causeway construction in the northern Lake Titicaca basin, as evidenced by the association of many causeways in the area with Inca roads. For example, a causeway still in use today crosses the peninsula of Carpa near Vilquequenico. The modern road almost certainly follows the same course as the Umayo branch of the Collasuyo road, the Inca highway that transversed the southern quarter of the empire. Squier visited the Carpa peninsula, referring to it as Acaurap, and described its monumental remains (1877:393). Revisited by other archaeologists, the buildings at the site have a number of clearly Cuzco features (Neutra 1987; Tschopp 1946).

A second causeway, first described by John Hyslop, was part of the Urcosuyo branch of the Collasuyo road. Connecting the Inca and modern sites of Choquecante and Carnata, the road is still in use, becoming a causeway only when the level of Lake Titicaca is fairly high (Figs. 13-14). Hyslop has attributed the causeway to the Incas, since his survey of archaeological sites revealed that the causeway/road passes through three sites first occupied during the time of Inca control (1996:122).

Another portion of the Urcosuyo branch of the main Inca highway which would have been a causeway in times of high water is the modern highway across the pampa to the south of the town of Pucarohlla (Figs. 15-16). Pucarohlla, like Hatunucalla, was founded under Inca rule. Stratified ceramic fragments from the road cut which crosses the town’s grid can be dated to the time of Inca domination. They occur in deposits lying above refuse from a much earlier occupation. We can only assume that the modern road overruns an Inca road, because all traces of an Inca highway have been obliterated. Another portion of the Urcosuyo road, a causeway leading out of the town of Puno southward to Choquecante, may also have been obliterated by the modern highway (Fig. 16).

The causeways in the Titicaca area are not so clearly tied to the major Inca highway. One connects Esteves Island near Puno with the mainland (Fig. 16). One, located south of Choquecante, leads from the lake to the island of Quippata (Figs. 14, 17), extending 1.75 km across a bay. Another causeway connects Huaca Island in Lake Arapa with the lakeshore near Arapa (Figs. 18, 19). All three of these causeways have had water adjacent to them even during the driest years of the last decade.

In some cases, these causeways are near sites that are dated before the time of Inca control, suggesting a local precedent for causeway building. Take, for example, the Esteves Island-Puno causeway. Psyches is the site of a Tiahuanaco cemetery and habitation site, dating the Inca expansion by half a millennium (Nîñez and Pareddy 1978), and several areas of Tiahuanaco habitation have been identified in the modern town of Puno. Huaca Island and Arapa were both inhabited during the time of Inca domination, but earlier material is also present. Two pieces of Puca- style stone sculpture were said to have been originally located at the Arapa end of the causeway (see S. Chávez, this issue; one of them is the famous Arapa stone. These sculptures are dated to the Early Intermediate Period, a millennium before the Inca (see chronological chart, p. 2).

**Purpose of the Highland Causeways**

Sites and other monuments do not provide conclusive dates for the causeways. Perhaps a better way to frame the problem is examine the purpose of the causeways and then ask whether their purpose better suited Inca or local interests. Some causeways were clearly a practical solution to the difficulties of traveling near the often inundated shores of Lake Titicaca and other bodies of water in the region, providing shorter, easier routes. This can be clearly illustrated by Squier’s account of his trip from Desaguadero to Copacabana:

At intervals we reach long, straight, narrow causeways built through shallow channels and marshes left by the submergence of some ancient bay penetrating deep into the land, which were built by the Incas, and have been suffered to fall into ruin by the Spaniards. Some of these are now so ruined as to be unrecognizable, and we find ourselves compelled to take tedious circuits along the basis of the hills to reach a spot on the other side of the marsh not a thousand yards distant in a direct line (1877:348).

Squier echoes the lamentations of earlier travelers over the deterioration of the causeways. This was already a concern in the late 16th and early 17th centuries (Cobo 1698; Lázaro 1909), indicating to us that the Spanish administration did not concern itself with the building and maintenance of such roads to the same degree as the Incas had.

The Incas developed a major road system in the Andes and may well have carried out engineering projects in connection with it. They built causeways near their capital at Cuzco and in areas as distant as the southern highlands of Ecuador (Hyslop 1986). We must therefore ask whether or not the causeways originated under Inca rule.

As yet, no Inca causeways have been directly observed. We have noted that Inca causeways were built of sod, but had culverts made of stone slabs to permit the free passage of water beneath the roadway. Squier provided details on the
A map showing the Arapa causeway.

The Squirt Causeway at Lake Uruaru

construction of a causeway between Zepita and Yunguayo on what may have been the Urcosuyo branch of the Inca road and not the actual Arapa causeway. The site was made of sod, but its culverts were constructed of corbeled sod and not stone. The Sillustani peninsula served as the burial place of the Qolla kings and is still visited by the local inhabitants. The Hatuncocha district.

The Incaos were aware of these shrines, cladding the picture of what might have constructed a causeway for the purpose of gaining special access. The Incaos usurped local cult practices at Titicaca and Ccoa Island, near Copacabana. There, they placed administrators from their own royal lineages, and adorned the islands with a number of Inca constructions (Ramón Galván 1976:229). If they were involved in construction projects at local shrines, they then may have authorized the building of causeways.

An easy answer to the question of who built the causeways and for what purpose is not forthcoming. The perspective of a 19th-century traveler like Squier has directed our attention to the difficulties of traveling in the Lake Titicaca region, where changes in rainfall and lake level affect human activities. Archaeological survey and excavation in several areas of the northern Lake Titicaca basin have frayed our questions more effectively than the notes made by Squier more than a century ago, but real answers remain to be found.  

Bibliography


