Amphibious Amazon: Traditional Approaches to Amphibiation in Peru

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Abstract

The Peruvian Amazon and its tributary rivers experience drastic seasonal water level changes, with the rainy season at its worst from January to April. Nevertheless, the capital of Peru's Loreto district, Iquitos – the world's largest settlement inaccessible by land – is home to over 400,000 people. Of this, 75,000 live in Belén, a low-income port community on the crook of the Itaya river. At its mouth, the Itaya river chronically experiences up to 6 metres of seasonal water level change from storm runoff. As a substantial portion of the homes in Belén lie in the floodplain, the neighbourhood has grown to be called the "Venice of South America". The community has adapted to the extreme change in water levels by creating three typological variations of houses: floating, elevated, and an elevated/floating amphibious hybrid. Logs are stacked under the floating and hybrid houses to create a buoyant platform; the floating houses are moored with a rope and posts to the bottom of the river, whereas the hybrid houses rest on a platform of stilts from which they detach during flood conditions but stay moored through ropes and, at times, a vertical guidance system of long tree branches. This paper will outline the different typologies present in Belén and propose a solution for detaching elevated houses from their platforms to transform elevated homes into hybrid amphibious houses. This paper will also examine other floating communities in Peru, such as the Uros people in the Peruvian Highlands and other forms of vernacular Amazonian construction in Pucallpa.

Keywords: amphibious design ; Peru ; vernacular typologies ; Iquitos ; Belén; flooding ; climate change adaptation ; amphibious retrofit

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