

# The mountain and the stone: Reconstructing meaning in material choice at Maucallacta, Peru

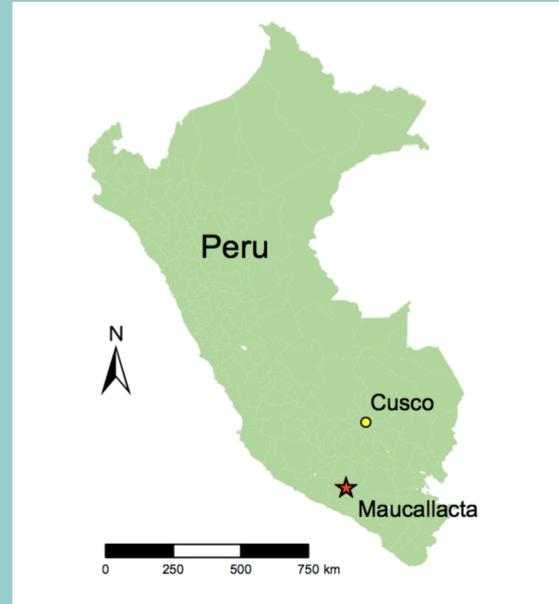
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**Background:** Located in the Arequipa region of Peru, Maucallacta was an administrative center established by the Inca circa the 14<sup>th</sup> century CE to exert control over its surroundings and appease the snowcapped volcano Coropuna (Woloszyn et al. 2010). The Inca's imperial expansion southward was accompanied by a significant investment in ritual activity aimed at sacrificially placating and claiming glacial and volcanic topographic features, which were afforded a great deal of power in the Inca worldview (Reinhard 1985). Coropuna was one of the more potent entities in this pantheon according to Spanish chronicles (Guaman Poma de Ayala 2008[1615]). Given that in some cases the Inca's reverence for powerful topographic features manifested in the use of particular stone for important construction projects (Ogburn 2004), this study addresses the question: Was material selection an important component of placemaking at provincial administrative centers? If non-local stone was employed at Maucallacta, from where did it come and why?

## Project objectives:

- To identify the sources of construction material for the site of Maucallacta.
- To describe masonry technologies and spatial patterns of quarrying activity.
- To elaborate on the potential links between construction materials, labor, and landscape reverence.

**Methods:** My co-researcher and I took 69 samples of stone that had fallen from walls at Maucallacta. For our survey, we assembled a map of potential sources for the material based on geological reports of the region. We collected a total of 176 geological samples from these areas and encountered 11 pre-Hispanic quarries within a 30-kilometer radius of the site. When we compared our samples macroscopically, 24 potential sources for 11 varieties of material were identified. To prepare the samples for subsequent neutron activation analysis (NAA), I have processed each sample into a fine powder using an alumina ceramic puck mill at the Jackson School of Geosciences.



Map of Peru with Maucallacta and Cusco marked.



Satellite image of Maucallacta marked with locations where samples were taken.

**Discussion of preliminary results:** At Maucallacta, the only two structures that exhibit distinctively Inca forms and that are composed of fine masonry throughout are also the sole examples where a single type of stone was used. This preferred stone is a pink ignimbrite that can be found in outcrops behind the site. The remaining structures each employ a distinct combination of at least 29 different varieties of stone, the vast majority of which are not immediately local to the site. In Cusco, the capital of the Inca Empire, stone for temples and palaces was sometimes brought from kilometers away in order to imbue structures with power (Protzen 1985, Hunt 1990). At Maucallacta however, while the masonry and forms of these structures required the specialized knowledge of the Inca's masons and architects, less expenditure of energy was required to procure material for ritual-administrative structures. I propose that local materials were employed for the more prestigious structures such that these structures would take on the 'flesh' of the land Maucallacta was built on. Meanwhile, communities of the surrounding area could have brought their own local materials to construct the other structures. In this way, the ruled region and the energies of its peoples would have been literally incorporated into the structures at Maucallacta. The construction materials, then, might indexically link places and peoples to the structures they built, with the distribution of these materials enacting a hierarchical distinction between Inca and non-Inca.



Example of wall with diverse construction materials.



View of Coropuna with an Inca ritual structure (usna) in the foreground.

Varieties of stone collected at Maucallacta		
Type	Color	Inclusions
Andesite	Greyish green-blue	Pagioclase, feldespar, biotite, quartz Feldespar, amphibole
	Grey	Feldespar, pagioclase, large biotite, iron
	Grey-green	Pagioclase
	Red	Feldespar, pagioclase, biotite
		Pagioclase
	Purple	Pagioclase >50%, feldespar
	Grey	Large feldespars, iron
	Light grey	Pagioclase, pyroxene, feldespar
Large feldespars, pyroxene, iron		
Grey-blue	Feldespar	
Ignimbrite	Pink	Quartz, amphibole, black mica
Rhyolite	Grey	Pyroxene, quartz
	Pink	Pyroxene, quartz
Tuff	Light grey	Pyroxene, quartz
		Large pyroxene, quartz
		Quartz, amphibole
Porphyric quartzite	Red	<50% quartz, <1% amphibole
		>50% quartz
	Light red	Quartz, pyroxene, pagioclase
	Grey	Quartz
	Purple	Quartz, iron
Gneiss		
Slate		

**Next stages of research:** I will collaborate with Dr. Sheldon Landsberger at the Nuclear Engineering Teaching Laboratory (NETL) to perform NAA on the architectural and geological samples that were matched during macroscopic analysis in order to identify the rare earth elemental compositions of each sample. We will then run statistical analyses of the results that will allow us to verify whether these matched samples were truly sourced from the same area. I will return to survey these areas next summer for evidence of pre-Hispanic settlements to test the hypothesis that these materials were brought by local people of each area. An alternative (or complementary) hypothesis is that these sources were associated with other economic resources or ritually important topographic features, so I will also search for evidence that might support this hypothesis, as well as further evidence for quarrying and transportation of material.

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