

Statement of Purpose:
American Institute of Pakistani Studies Short Term Research Grant Award

Project Title: Early Iron Production in Northwestern South Asia: Technology and Power in the Early Historic Period, 800 BCE to 400 CE

I am requesting funding from the American Institute of Pakistani Studies for pre-dissertation travel to Pakistan from August 1st, 2019 to August 31, 2019.

My dissertation will focus on the development of iron technology during the Early Historic period in northern South Asia. I am specifically investigating how ancient iron workers controlled the hardness, ductility, and toughness of iron and steel. These developments in iron technology were essential to the development of iron ornaments, tools, weapons, architecture and transportation that supported the emerging state powers in this region. I have already completed preliminary studies of iron objects from the site of Bhamala Stupa, Taxila and will return to work with the Directorate of Archaeology, the Taxila museum, and the Taxila Institute for Asian Civilizations at Quaid-i-Azam University. I will obtain approvals to study materials from the Directorates of Archaeology in both KPK and the Punjab from authorities such as Abdul Samad the Director General of Archaeology KPK. When I arrive in Pakistan, I will also obtain any other relevant permissions. Thanks to the support from FLAS fellowships over the past two years, I have learned Urdu and Pashto and thus will be able to speak to my colleagues in their native language which will further help the project. The samples will be collected and partially processed in Pakistan and final analysis will take place here at the UW Material Science Labs.

Iron technology is one of the world's most fundamental technologies and has a deep history in South Asia that extends beyond the start of Early Historic Period (~800 BC). My research project employs innovative archeometallurgical techniques to quantify how South Asia blacksmiths controlled and improved their steel over time relative to their contemporaries in Persia, Rome, and China. Preliminary results from iron samples from the Bhamala Stupa in Pakistan suggest that by the 2nd Century AD, the blacksmiths in South Asia created iron objects with different techniques to influence desired properties. I have presented this work at the EASAA conference in Naples (2018) and the South Asia Conference in Madison (2018) However, the number of samples I have analyzed has been limited, and my research plan requires a larger sample size in order to be statistically significant. This travel grant will allow me to collect enough material to complete my basic research for my dissertation and I will finalize the analysis back in Madison. This project will contribute a new set of data for understanding of the development of South Asian iron technology.

I will be applying for additional funds from the Department of Anthropology and the International Institute as well as from other sources such as the Center of South Asia in Madison, Wisconsin.

Budget: International Airfare to Islamabad:	\$ 1750
Local Per Diem:	\$ 1000
Local Travel:	<u>\$ 500</u>
Total:	\$3250