EQUIPMENT [1]

GEOCHEMICAL SOURCING

*Bruker Tracer III-V Light Element Analyzer:* In 2008, we obtained STF funds for two completely portable XRF systems. By using characteristic light emissions from x-ray stimulated materials, it can provide detailed information on elemental concentrations in a variety of materials. Archaeologists commonly use this data to match materials, such as obsidian, from sites to their geological source, and thereby elucidating exchange networks. These portable XRF systems provide the most reliable and repeatable results for the highest range of elements, and its general durability and ease in operation allow it to be used in a variety of settings. One system is dedicated to the UW campus while the second may be used at other institutions or in the field.

**Example Research:** This new equipment has already been used successfully for sourcing lithic materials in the Kuril Islands and Pacific Northwest.

- Schwartz, Joel. *Obsidian 'trail' provides clues to how humans settled, interacted in Kuril Islands.* [UW News], June 22, 2009.

DIGITAL RESEARCH ON MUSEUM COLLECTIONS

In 2009, we received an STF grant to purchase two sets of 3D scanning and portable microscopy equipment. This equipment will allow for research on collections held at other institutions that cannot be loaned due to international or preservation restrictions. In addition, it can be used to collect data in field settings when collection of artifacts is not permitted.

*Qualitest DG-3 Advanced Portable Digital Microscope:* This portable microscope allows for perafocal 25x to 200x zoom magnification and image capture without the physical limitations of standard, non-digital microscopes. It includes a 3.5 inch LCD viewing screen, allowing the researcher to quickly and easily identify important microscopic areas on the artifacts and quickly capture digital images. These digital microscopic images can then be stored and transported for future analysis outside of the primary museum setting.

*NextEngine 3D Desktop Scanner:* The 3D Laser scanner can take exact measurements of artifacts and can even be used to reconstruct the entire artifact in a relatively short amount of time. This system provides large amounts of data on the object's shape and size at an accuracy that is comparable to more time consuming manual caliper measurements. The scanned data is easily manipulated statistically and graphically with the corresponding software.

**Additional Equipment:** Each set of equipment for museum research has a dedicated Dell Precision XPS M1530 laptop with Windows 64-bit operating system. Also included is a Nikon D60 10.2 MegaPixel Digital SLR Camera with a 55mm-200mm zoom lens and tripod, providing high resolution and high zoom capabilities necessary for producing high quality images of museum objects. Additional measurement equipment includes an Ohaus Scout Pro Portable Scale 2001 (weighing objects up to 2000 g), Mitutoyo Digital Calipers, a Mitutoyo 293-340 Electronic Digital Outside Micrometer, and a Mitutoyo Digital Depth Gauge, all of which are capable of digitally inputting measurement directly into a database.
Example Research: Although this set of equipment was only recently acquired, one system has already traveled to the Russian Far East to collect data on ceramic technologies by Erik Gjesfjeld.

SURVEY EQUIPMENT

In 2006, we received funding from STF to purchase two Sokkia reflectorless total stations for collecting spatial data at both close range and over longer distances up to 5000m at centimeter-level accuracy. Two TDS Recon data collectors are used for recording and displaying data as it is collected by the total station. Two Trimble GPS Pathfinder ProXH units that can also sync with the Recon data collectors are also regularly used by students to collect spatial data during surveys. We also have a variety of less powerful Garmin handheld units available to students for surveying. Combined with the mobile computing and power sources (below), students can use this equipment virtually anywhere. Other survey supplies include Brunton pocket transits, compasses, levels, pin flags, meter taps, an alidade, plane tables, theodolites, airphoto stereoscopes, and a resistivity meter.

MOBILE COMPUTING AND PHOTOGRAPHY

Students have access to a number of laptops for both field and laboratory conditions. This includes two Panasonic Toughbook T2 laptops, two Panasonic T4 laptops, two Sony VAIO laptops, and two Itronix GoBook XR1 laptops. To support this equipment in the field, a variety of solar power source systems were also acquired. Most of these systems are equipped with GIS software. We have a wide range of digital SLR and point-and-shoot cameras, including two Sony Cybershot DSC-F828 cameras, two Sony Cybershot DSC-V1 cameras, two Nikon D90 digital SLR cameras and a variety of lenses. A variety of digital data collection equipment, such as calipers and scales that can directly input data into a computer, are also available for student research.