Material Analysis Subgroup Meeting – Indigenous/Science Research Cluster April 6th, 2018

Co-chairs: Rhy McMillan and Jessica Metcalfe
Attendees: Léa Brunswic, Aviva Finkelstein, Edward Grant, Andrew Martindale, David Pokotylo, Eric Simons, Dominique Weis, Alison Wylie
Regrets: Colin Grier, Camilla Speller, Iain McKechnie, Denis St. Claire, Eric Guiry, Marg Amini

Notes prepared by Eric Simons and Jessica Metcalfe

The purpose of this meeting was to introduce our analytical capabilities and to identify connections between researchers/labs, suggest potential research questions and projects, and frame a more coherent vision for presentations to communities and future funding opportunities. The meeting included:

- A brief tour of a portion of the PCIGR facilities (clean labs)
- Introductions from each 'node' (LOA, PCIGR, the Grant Lab, the Reflections folks) as well as from individual researchers describing their strengths/capabilities, sample research questions, and current and future projects.
- Simultaneous small-group discussions
- Large-group discussion

The following is a summary of each node/individual as summarized in a flipchart poster they produced during the meeting:

LOA (Laboratory of Archaeology): A repository of over 550,000 belongings, archive of field records since 1946. LOA includes laboratory facilities for paleobotany, faunal analysis, lithics analysis, microscopy (light, SEM), and stable isotope (C, N, S, O, H) analysis. LOA maintains good relations with descent communities and co-manages ancestral housing with Musqueam. Research questions: What value is archaeology to communities? How can we make sense of material data? How can we archive and appropriately disseminate data? How can we improve methods of data collection? How can we bring scholars together? Future projects: Securing stable funding for the repository, expanding facilities and capacity.

LOA Isotope Lab (Jess Metcalfe, Eric Guiry): C, N, S, H, O isotope analysis of organic remains (bones, teeth, hair, plants, poop, sediments, leather). Research questions typically focus on diet (long-term and seasonal), climate (temperature and aridity, long-term and seasonal), animal mobility, sourcing organic remains, and human diet/mobility/land management. Jess also specializes in hair identification. Current projects include studying the hunting strategies, environment, and mobility of people living in the Promontory Caves (Utah) during the Late Prehistoric period using stable isotopes in animal remains and understanding modern and ancient bison diet and mobility. Potential projects: fish mobility/sourcing, characterizing hair from blankets (species, location-of-procurement), examining environmental change using isotopes.

PCIGR (Pacific Centre for Isotopic and Geochemical Research) (Dominique Weis, Rhy McMillan, Marg Amini & their team): Chemical analysis (*in situ*, solutions, rocks, fish, bones,

pigments, etc.). Radiogenic and stable isotopic analyses – 'fingerprint' sources and identify the signatures of geologic and biologic processes. Raman spectroscopy, microdrill, photomicroscopy. Research questions include: What is the original context or 'source' of artifacts, bones, teeth? Where did X come from? When did X happen? What geologic/geochemical/biologic processes caused the observed chemical, isotopic, and structural characteristics of bones, teeth, artifacts, etc.? Current and future projects: environmental contaminants of honey, salmon provenance, obsidian/chert/fine grained volcanics (FGV) provenance & characterization.

David Pokotylo (LOA): Lithics, hunter-gatherer-forager technological organization, quantitative analysis. Research question: precontact land use patterns in the intermontaine plateau, quarrying & settlement patterning across the landscape, reliable methods for sourcing lithic raw materials and mapping variabilitiy.

Andrew Martindale (LOA): Strengths: building collaborative partnerships with academic and Indigenous partners, logic/theory/interpretation, spatial/chronological data compilation and modeling, social-spatial analysis. Research questions: relations between anthropological and oral records, different ways of knowing (translation processes), modeling social systems with spatial data, modeling demography with ^{14}C data, causal drivers of history, what generates intergenerational continuity in history? Current projects: cluster development, spiritual cartography (Tsimshian), IRS burials/architecture using GPR.

Grant Lab – Complex Material Microanalysis and Classification (Ed Grant, Léa Brunswic): Strengths: Versatile Raman and laser backscattering microscopy, building adaptable custom instruments, multivariate regression as a classification tool. Research Questions: best practices in spectroscopy, classifying similarities and differences among sets of samples, establishing interactive covariance. Current project: Musqueam stone beads.

Colin Grier (Washington State University): Strengths: geophysical analyses, zooarchaeology, paleoecology reconstruction, Indigenous collaboration. Sample research questions: Can we find plankhouses and village sites with geophysical (non-invasive) methods to better establish settlement patterns on the NWC? Can we systematically connect geophysical methods with archaeology? Current/future projects: Geophysical surveys of potential village sites in the Southern Gulf Islands.

Camilla Speller (LOA; new faculty at UBC as of July 2018): Strengths: ancient DNA and ancient protein analysis (metaproteomics, collagen fingerprinting/ZooMS) for diet reconstruction, species identification, examining domestication processes. Research questions: Which species were present (especially useful for fragmentary remains)? What were people eating? Current/future projects: Human oral microbiome, whale and fish bone identification.

Aspirational Node (Alison Wylie, Eric Simons, Aviva Finkelstein): Non-intrusive, non-destructive field methods. Decolonizing field practices. Integrating oral tradition with/into field survey (and reverse?). Archival research (community and archaeological). Capacity building as

reciprocity (education, field training, cultural heritage). Non-traditional academic 'publication', translational communication. Articulating best practices.

> *We note that the above list is not a complete characterization of our cluster, since all members of this subgroup could not be present at the meeting.*

Small and large-group discussions addressed the following issues:

- **Education**
  - How can we make the Cluster an education process for all involved—and make education a deliverable and/or measure of success? ... a way of framing funding applications?
  - How can we have more students involved in our cluster?
  - We can pursue education and capacity-building amongst First Nations—training, informal orientation, exposure to opportunities at the university.
  - Involve and provide opportunities for First Nations students currently at UBC?
  - Get involved in the existing Native Youth Program at MOA, which occurs each summer?
  - Future funding applications could be oriented toward formal Indigenous education, and also getting money for RA's, student fellowships
  - Our seminar series should include presentations by the scientists

- **Data management**
  - How can we make the products of our research accessible?
  - Accessible archives, aggregating data, RRN, CASA, GEOREM, Dana Lepofsky's system, Musqueam archive and database

- **Funding**
  - Peter Wall Solutions grant – LOI is due May 1. This grant will provide funds to conduct actual research, which our cluster funding cannot be used for.
  - Eventually (next year?) we aspire to a SSHRC Partnership Grant - $2.5 million, but we need to develop better coherence within our researchers and the potential goals of our partner communities.

Next Steps: Jess will add information about the nodes onto the Indigenous/Science cluster website and CASA database. The core group will work on the Peter Wall Solutions application, developing a project proposal that harnesses our research strengths. We hope to develop this project in collaboration with Musqueam.