ACCELERATOR MASS SPECTROMETRY:
A VIDEO TOUR OF THE CARBON-14 DATING PROCESS

By

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A Thesis Submitted to The Honors College
In Partial Fulfillment of the Bachelors degree
With Honors in
Anthropology

THE UNIVERSITY OF ARIZONA
MAY 2013

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ABSTRACT

The purpose of this project is to create a video that engages and informs an undergraduate audience about the Carbon-14 dating process. The video takes you through the history of the Accelerator Mass Spectrometry Lab at the University of Arizona as well as discussion of what exactly carbon-dating is. The audience is then given a walking tour of the actual accelerator while the steps of Carbon-14 dating are explained.
When I began to start thinking about what I was going to do for my Honors thesis, I had just gotten back from Italy. I had just spent five weeks traveling the country with my advisor Dr. David Soren assisting him and Emmy-award winning director/cinematographer Dan Duncan with a three-part miniseries about Roman archaeology. Needless to say, I was so overwhelmed with that whole experience that every idea I had for a thesis could not compare to what I had already experienced. I credit that trip with solidifying my decision to pursue a career in visual anthropology.

So when I returned to Tucson and Dr. Soren asked if I wanted to help him create a supplemental video about the Carbon-14 dating process for a textbook he was writing, I knew that would be my thesis. Working with an advisor like Dr. Soren is an opportunity one does not pass up.

The purpose of the project is to create a video that engages and informs an undergraduate audience about the Carbon-14 dating process. I decided to utilize the accelerator mass spectrometry lab that is located on the University of Arizona campus since they have been dating artifacts since 1981.

The process I took in completing this film was to contact the director of the accelerator mass spectrometry lab and set up interviews with him and his colleagues. I then developed an interview protocol which included the following broad questions: what is the history of the lab? What are some challenges while dating an artifact? What are the reasons that a date is bracketed and not exact? I also asked them to describe the process of carbon-dating, in layman’s terms, in six-steps or less.
I also felt that including the actual accelerator in the film was an important aspect so I had Dr. Greg Hodgin’s take the audience on a walking tour around the entire accelerator while explaining the steps that were being taken.

This whole experience is significant for the field I wish to pursue because it gave me practical experience in visual anthropology. While I would like to focus more on an ethnographic approach, this film still gave me experience in developing interview questions as well as the nuances of carrying out an interview for film.