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# Career of the Month

January 2005

Science in the  
Workplace

## Art Conservation Scientist

Conservation scientists gather clues and evidence with scientific tools to help curators and conservators uncover mysteries of art. M. Susan Barger sees herself as a pathologist of art objects—she biopsies material for research, determines what went wrong, and then gives a diagnosis for treatment. As she investigates the best way to care for an object, Barger must consider science, art techniques, and materials history.

### Describe your work.

Conservation scientists conduct research to evaluate the chemical, optical, mechanical, and physical properties of historic and artistic objects. We gather information that can help restore, conserve, and care for artwork, using various tools such as x-rays to scan for cracks, infrared cameras to look beneath painted surfaces for underdrawings and original plans, and microscopes to examine tiny fragments of material. We examine the physical, biological, and chemical effects of temperature, humidity, light, and pollutants on different materials. The research allows us to determine the condition of objects, the need for treatment or conservation, and the best methods for preservation. With the resulting information, we advise curators and art conservators on the best way to stabilize, conserve, and care for artwork.

Currently, as a research consultant, I am asked to analyze objects and answer particular questions for a curator or art dealer such as, "What is this object made of?", "Is

the object as old as it is purported to be?", "Is it stable?", and "What is making this object fail?" I identify materials, attempt to understand how they age, and determine what that means to the care of art and heritage materials. Once these analyses are done, I deliver reports to a client detailing my findings.

### How did you choose this field?

In high school, I loved both science and art. I thought I could major in art and chemistry in college, but I was advised to not do this and instead obtained a double degree in art and French. When I was 24 years old, I went back to school for a master's in fine arts. However, my desire to involve more chemistry in my studies led to my dismissal from art school; I was told, "science destroys creativity." Determined that science and creativity were not so unrelated, I spent a summer soul searching and returned to school, this time for graduate studies in photographic science. I then went on to receive an interdisciplinary doctorate in materials science, chemistry, and history of technology. When I got my degree, very few scientists had pursued scientific doctoral research using art objects and artifacts as subjects. I knew early on that I did not want to work on objects the way a conservator does, but I realized the need for people who could merge science and art to solve problems for conservators.



HARVARD UNIV. ART MUSEUMS

**Infrared technology is used to study the underdrawings of *Portrait of a Man*.**

### What skills are needed?

To analyze a piece of art, you need to be good scientist and know a great deal about not only art, but also about the technology and history of materials. This knowledge is crucial when working with art professionals in order to understand what problems you are being asked to solve. Curators, conservators, or art dealers may not be able to describe their needs in scientific language; conservation scientists often must pinpoint questions and communicate findings in a way that clients understand.

### Why is this career unique?

Conservation science presents very interesting and difficult problems that have to be approached in special ways—you cannot take large samples from a precious painting or take a hunk out of a sculpture to perform an analysis. And when determining how to care for a work of art, you must deal with the original material as it is, not how you wish it would be. The materials in some artwork may be unstable, but they are part of the object, and not something you can change.

—By Megan Sullivan