

Art  
ToGo

The Cleveland  
Museum of Art

Materials and  
Techniques  
of the Artist

Nancy Prudic



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## **Also in Your Folder**

### **a. Presentation Evaluation**

Please fill out and return to the museum after the presentation. Thank you!

### **b. Fax Sheet**

Use this form for shorter questions or concerns relating to the Art To Go visit.

Cover: Shawabty of Nectanebo II, Egypt, Dynasty 30 (380–343 BCE). Pale turquoise faience, H. 19 cm. Gift of the John Huntington Art and Polytechnic Trust 1920.1989.

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Written and assembled by Nancy Prudic and edited by Kathryn Klein.

## Introduction

The purpose of this Teacher Preview Packet is to prepare you for an Art To Go visit of the Cleveland Museum of Art. The materials included in this packet should help you to become more familiar with the Art To Go program, as well as with the content of the presentation.

The presentation *Materials and Techniques of the Artist* contains nine works of art gathered from a wide variety of cultures. These objects, dating from the fourth century BCE onward, give us a good sense of art production. Some of the objects represent artistic processes, styles, and themes that are much older than the objects themselves. Some of the objects demonstrate methods for making art that are particular to one geographical area, while others feature techniques pioneered in one place and perfected elsewhere. Although these objects are considered art, some are functional and were used by people for various social and religious purposes. The suitcase also contains decorative items that were worn or used within the home. Through this small selection of objects, we can learn more about some of the materials and techniques discovered by artists and craftsmen of several different periods and geographical locations.

Artists find ideas for materials and techniques the same way that people always have: they explored the world around them and invented things to make their lives better and their tasks easier. They also invented materials to imitate the qualities they observed in nature. For example, appreciation for the shiny, transparent surfaces of quartz and other minerals may have motivated artists to create glass objects. Artists are also inspired by new technology. Whether it is the discovery that when salt is heated to a certain temperature it turns into a glaze or the invention of a new tool, fresh information can spur artists to experiment and play with ideas using new materials and techniques.

Geographical location, climate, natural resources, and experimentation all influenced the way artists made art. Five thousand years ago in Egypt, sand, seawater, and shells were available and enabled artists to experiment and discover faience, a mixture of silica (sand), soda (salt from ocean plants), and lime (present in seashells). Egyptian faience became so popular that it was exported all over the Mediterranean and later was produced in Greece and Rome. The Art To Go visit includes an Egyptian Shawabti made of faience.

One might wonder what caused people to experiment with these materials in the first place. Often some accident occurred that produced a new medium for artists. For example, 40,000 years ago, fired clay was discovered while heating water in baskets that were lined with clay. Glass was discovered, according to Pliny the Elder, by Phoenician sailors who used large chunks of natron (a form of soda

shipped all over the Mediterranean for mummification purposes) to support their pots when cooking on the beach. After their fires had burned all night long the sailors noticed that shiny bits of glass were left in the morning.

Often people experiment with new materials, not just out of natural curiosity, but to find a way to substitute one material for another or replace a scarce natural resource. Even though Egypt is geologically rich, quarrying stone is time consuming and labor intensive. Egyptian artists sometimes substituted faience—the first high tech ceramic material. It glistened, resembled precious stone, and could be made into many different colors. Best of all, it was easy to produce. The ceramic tile included in the presentation illustrates how the Moors of Spain and North Africa elaborately decorated the walls of buildings by placing many of these wonderfully colored tiles next to each other.

Artists also experimented to find different uses for the same materials. Egyptian faience, glass, enamels on metal, and glazes on clay are basically the same substances: silica, soda, and lime, used in different proportions and processes, such as heat generated by various fuels. If an artist were to add water to Egyptian faience to the point where it became a slurry with the consistency of heavy cream, it would work very nicely as a glaze for a tile or piece of pottery. These same substances heated at much higher temperatures will form molten glass, which is manipulated in a variety of ways through slumping, casting, or blowing. The Art To Go presentation includes a hand-blown glass vessel.

Melting and casting are important in the making of metal objects. The metal of the bracelet from the

Ivory Coast shown in the Art To Go visit was heated to a molten state and poured into a mold to cast its shape. To make the basic shape of a vessel to be enameled, bronze was heated, and then hammered around a form; soldered wire was added to define areas in which thin layers of enamel were applied over the metal. This technique is called cloisonné, and the process is represented by several examples in the Art To Go presentation.

Metal can even be used to make textiles. To make the fabric of the bodice of a girl's dress from Spain, artists hammered silver until it was paper-thin and then wrapped it around fibers of silk to make a metallic thread. The threads were then hand woven on a loom to make this luxurious fabric.

The idea of heating a material to shape it applies to many techniques. Native Americans used steam to change the shape of wood as well as the horn of animals such as antelope, goat, and buffalo. Native Americans used wood and animal horn for utensils because these materials were once plentiful. Horn, like wood, can also be carved, as shown in the intricately carved handle of a Potlatch spoon from Northwest Alaska.

In Japan, the coniferous forests in the mountains provided a readily available resource for carving. The Japanese woodblocks and prints in the presentation show how the Japanese perfected this print-making process by using multiple blocks to print additional colors on paper. Each step of this process is illustrated during the Art To Go presentation.

Artists are inspired to make art objects for many reasons. Some have a desire to adorn the human body by weaving lustrous fabrics for clothing or creating beautiful jewelry. Others make objects that will

enhance everyday life by making a task easier, a space more beautiful, or a ritual more meaningful. Artists are driven to continue to experiment and make new forms in art by playing with color, line, and shape. While motivation or inspiration differs from person to person, all artists strive to better understand their materials and techniques in order to turn their creative ideas into realities.

## Questions and Answers

### **How did people make materials from natural resources?**

Often the properties of natural resources were discovered by accident. Sometimes people were inspired by observing nature closely. For example, in ancient China wasps were observed chewing up bits of wood and regurgitating it to build their nests. The process of making paper by mixing wood pulp with water and rice was invented through experimentation.

People observed that wherever there was water, in a lake or river, clay was often present. Someone along the way reasoned that clay had natural water retaining properties and began to add clay to vessels designed to hold water. This led to the discovery that if clay were left in a fire that burned long and hot enough it would change into a stone-like substance that could be used for all kinds of things from tiles to cooking utensils.

## **How did the artists make each object shown in the Art To Go presentation?**

**SEEDED GLASS VESSEL.** Cold crushed glass and metallic oxides for color are heated to a liquid state. Blowing air into the molten glass with a blowpipe creates a bubble, which forms the basic shape of the vessel. The surface is manipulated and other chemicals, such as silver nitrate or powdered metals, are added for special effects. A final casing of glass is added for a smooth finish. Special tools are used to smooth and shape the top of the vessel and it is placed in an annealing kiln for gradual cooling.

**WOODBLOCK PRINTS.** The wood is precisely carved with special tools. The design to be printed remains after the negative spaces are cut away. Color woodcut prints require a separate woodblock for each color. Ink is rolled over the surfaces of the blocks, which are then placed on paper and rubbed or pressed to transfer the inked image onto the paper surface. Each block is inked with a different color to create a complete printed image.

**EGYPTIAN FAIENCE.** Faience is composed of silica (found in sand), soda, seawater, sea plants or natron, combined with lime, a calcium carbonate found in seashells and limestone. Different minerals that form metallic oxides are used to create its color. These ingredients are mixed together to form a paste that is pressed into a mold. While the mixture dries, the salts migrate to the surface to form a layer of soda crystals. When fired, the crystals combine with the silica in the object to form a type of glass that glazes the surface.

**CERAMIC MOORISH TILE.** Ceramic tiles are formed either by rolling thin slabs of clay or pressing clay into molds. They are dried and then fired in a kiln before they receive a layer of glaze to strengthen and decorate the surface. During the glaze firing, other substances, such as grass or oil-soaked rags, are introduced into the kiln at approximately 1300 degrees F. to create a smoky atmosphere. The smoke causes the oxides in the glaze to rise to the surface and produce a metallic gold or copper finish on the tile.

**IVORY COAST BRACELET.** A model for the bracelet is formed using wax that has been softened in the sun. Pressing clay onto the wax model forms a mold. The mold is reinforced with bark and animal hair as it dries. Brass, a combination of copper and zinc, is melted and poured into the clay mold. When it is cool the mold is broken off the brass object. The bracelet is then cleaned and burnished.

**HORN SPOON.** Horn can be carved or molded to create objects. The same types of tools used to shape wood can be used on horn as well. In order to shape the bowl of the spoon the artist softened the horn with hot water or direct heat. Once the horn was heated, it was shaped by placing it in a mold made of wood and keeping it in place with clamps or heavy objects until it was cool. It was smoothed by polishing with water and pumice.

**GIRL'S BODICE.** The bodice of a dress was made of hand-woven silk thread combined with metallic silk thread. Silk comes from the cocoons of silkworms. After the cocoons are boiled, a long silk filament is unwound from the cocoon and then twisted or plied

into a thread. A metallic thread is made by wrapping hammered silver around the silk fibers. The fabric for this garment was hand woven on a loom.

Supplementary wefts of metallic silk thread were used to make the brocaded patterns of flowers. The fabric was then cut and sewn in order to create the shape of the garment.

**CLOISONNÉ ENAMELS.** Enamel is composed of the same substances that are used to make glass and faience. It is actually a glaze on metal. The silica, soda, and lime are finely ground and mixed with metal oxides and water to form a slurry. The metal is cleaned with chemicals or heat so it will accept the enamel. The chambers to hold the enamel are created by soldering flattened pieces of wire to the metal. Several applications of enamel are required to create a durable opaque color on the surface of the piece. When firing is complete the surface is ground and polished to create a smooth finish.

### Things to Think About

- When you blow a bubble, what is trapped inside? What is the basic shape of a glass vessel? (Relates to Seeded Glass Vessel.)
- Metal is a popular material is because of its versatility. What are the different ways metal is shaped? (Relates to Ivory Coast Bracelet and Cloisonné Bottles.)
- How is thread made from animal or plant fibers? How is fabric made from thread? (Relates to the Girl's Bodice.)

- What can you use to change the shape of an animal horn? (Relates to Potlatch Spoon.)
- When you look at a stamp with writing on it, what do you notice about the direction of the letters? (Relates to Japanese Woodblock Prints.)
- What did people use to fasten their clothes at other times in history? (Relates to the Girl's Bodice.)

## List of Objects

- Bracelet. Ivory Coast, Africa, brass.
- Cloisonné Bottles. China, enamel on bronze.
- Seeded Glass Vessel. Venice, Italy, hand-blown glass.
- Shawabti. Egypt, faience.
- Printing Blocks. Japan, wood.
- Printing Baren. Japan, wood and bamboo or banana leaf.
- Woodblock Prints. Japan, ink on paper.
- Tile. Moorish, possibly from Granada, Spain, ceramic lusterware.
- Potlatch Spoon. Northwest Alaska (Haida or Tlingit), goat horn.
- Girl's Bodice. Spain, silk and metallic thread.

Note: All of the objects in the suitcase are not suitable for handling. However, all works may be observed closely. Supervision of object

handling is the responsibility of the Art To Go volunteer teacher. Suitcase contents may be affected by weather and object condition.

The Cleveland Museum of Art reserves the right to change the objects in the suitcase at any time.

### Getting Ready for the Visit

#### General Information

- The Art To Go presentation will take approximately 40 minutes.
- Anyone who wishes to handle objects must wear gloves, which will be provided by the Art To Go staff.
- We respectfully request that a homeroom teacher or events coordinator be present and attentive during the lesson.

#### Classroom Setup

- Please have a small table or desk available at the front of the room.
- If possible, arrange the students in a semicircle facing the presentation. This allows the Art To Go staff to pass works of art among the students.
- Please provide student identification so that the Art To Go teachers may call students by name.

### Suggestions for Further Reading

Note: Slide packets and other teacher resources are available for purchase or loan through the Teacher Resource Center, Department of Education and Public Programs. For further information and a list of resources, please call the Cleveland Museum of Art.

#### ESPECIALLY FOR STUDENTS AND YOUNG READERS

Batho, Margot. *Sandcasting*. Minneapolis: Learner Publications Co., 1973. An exploration of sand, its properties, and tools and methods for using sand to make art. Includes illustrations of techniques and projects.

Chanda, Jacqueline. *African Arts and Cultures*. Worcester: Davis Publications, Inc., 1993. Topics include examinations of art from the personal, social, religious, royal, and commercial points of view. The photographs illustrate these points effectively.

Chapman, Gillian, and Pam Robson. *Art From Sand and Earth*. Austin: Steck-Vaughn Co., 1997. Covers a history of art making as well as materials used from the earth. Includes detailed instructions for a variety of projects from mud prints and weaving to modeling with clay. Color photographs.

Greenberg, Jan, and Sandra Jordan. *The Sculptor's Eye*. New York: Delacorte Press, 1993. Thorough discussion of sculptural issues including subject matter, space, and materials. The authors discuss these issues with the artists featured in the book. Amply illustrated with color and black-and-white photographs.

Harden, Elisabeth. *Print Making*. Edison: Chartwell Books, 1995. Contains history, techniques, and several projects with lists of tools and materials needed for each. Full of color photographs.

Houston, James. *Fire into Ice: Adventures in Glassmaking*. Toronto: Tundra Books, 1998. Walks the reader through inspiration, techniques and materials used in glassmaking. Color photographs.

O'Reilly, Susie. *Weaving*. New York: Thomson Learning, 1993. A world history of weaving with discussion of equipment and construction of simple tools for easy projects. Nicely illustrated with color photographs.

#### FOR ADULT READERS

Benjamin, Susan. *Enamels*. Washington, D.C.: Cooper-Hewitt Museum, 1983. A historical survey of enamel-

ing from all over the world, covering techniques employed over time. Includes a full glossary.

Borglund, Erland, and Jacob Flauensgaard. *Working in Bone, Amber and Horn*. New York: Reinhold Book Corp., 1968. Includes equipment, tools and a variety of methods concerning these materials. Photographed step-by-step instructions.

Friedman, Florence Dunn, ed. et al. *Gifts of the Nile*. London and Providence: Thames and Hudson in association with the Rhode Island School of Design Museum of Art, 1998. A complete examination of the techniques, materials, and history of Egyptian faience.

Gunther, Charles. *How Glass is Made*. Toledo: Toledo Museum of Art. A thorough and concise book covering equipment, tools, and several methods of glass forming, with photographs of examples for each technique.

Jerde, Judith. *The Encyclopedia of Textiles*. New York: Facts on File, Inc., 1992. A thorough glossary of terms, techniques, and historical information with illustrations.

Johnson, Barbara. *Four Dan Sculptors: Continuity and Change*. San Francisco: The Fine Arts Museums of San Francisco, 1986. An in-depth investigation of the Dan culture including historic traditions, religion, and politics. The book focuses on the ancestry and techniques of four artists. Beautifully illustrated with color photographs.

Mayer, Ralph. *Art Terms and Techniques*. New York: HarperCollins, 1991. An encyclopedia of terminology and methods of the artist.

Peterson, Susan. *The Craft and Art of Clay*. Upper Saddle River: Prentice Hall, 2000. A thorough investigation of clay and all the things that artists do with it. Includes clay and glaze formulas, firing techniques, historical

overview and glossary. Lots of color photographs and “how to” information.

Plowman, John. *The Encyclopedia of Sculpting Techniques*. Philadelphia, London: Running Press, 1995. A very thorough instruction book that covers sculpture materials, techniques, tools, and themes. Includes full color step-by-step approaches to figurative sculpture, assemblage, modeling, mold making, and welding methods.

Sayre, Henry M. *A World of Art*. Saddle River: Prentice Hall, 1999. An art appreciation textbook covering the visual experience and visual literacy, formal elements and their design, fine arts media, visual arts in everyday life, and a brief survey of art history.

Schuman, Jo Miles. *Art from Many Hands: Multicultural Art Projects*. Worcester: Davis Publications, 1981. This book includes projects drawn from a variety of cultures integrating the study of culture with specific materials and techniques. Those projects related to the presentation include Asian woodblock printing, African metalwork, and Middle Eastern mosaics.

#### WEBSITE

[www.clevelandart.org](http://www.clevelandart.org)

We encourage teachers and students alike to visit the museum in person. We also encourage teachers and students to visit the museum’s website, where information about the museum’s permanent collection and educational programs can be found.

## Lesson Plan

### Focus

As they observe original works of art, students will use deductive reasoning to understand why artists chose various techniques and materials, and how their times and cultures informed these choices.

### Purpose

To transport us to different times and places by observing art, and to understand how artists of various cultures adapted to their geographic locations and sought to improve their means of producing objects that celebrate individual and cultural values.

### Motivation

Handling objects that were made and used in a variety of geographical locations will strengthen a sense of the history of artistic practice.

### Objectives

- Through direct observation, students will learn to identify art materials and understand their use.
- Students will learn the importance of geography and natural resources in art history.
- Students will see how technology affects the production and use of art.
- Students will learn how areas of study such as math and science are intimately involved in the making of art.

### Participation

Introductory talking points will be used to promote discussion. Art To Go staff will help students to build upon their existing knowledge through questions and responses as the lesson proceeds.

### Comprehension Check

As Art To Go staff introduce new objects, students will be encouraged to build upon what they have learned earlier in the presentation. Students will be asked to consider similarities and differences among art objects and cultures.

### Closure

Students will reinforce what they have learned during the lesson by visiting the Cleveland Museum of Art, where they can continue the visual and cultural explorations begun through *Materials and Techniques of the Artist*. Curriculum connections suggested in this packet offer useful follow-up activities that enable students to demonstrate and build upon what they have learned from the Art To Go visit.

### Vocabulary

**Blowpipe**

A hollow metal pipe with a mouthpiece on one end and an enlarged tip for gathering glass, used by a glass artist to blow air into molten glass.

**Brass**

An alloy essentially consisting of copper and zinc in variable proportions.

**Breyer**

A roller made of rubber or other soft spongy material used to apply ink to the printing block or plate.

**Brocade**

A type of weave that uses a supplementary thread to make a design on fabric.

**Burnish**

To make a surface shiny or smooth by rubbing with a tool.

**Cloisonné**

An enameling technique in which enamel is applied to raised cells of flattened soldered wire on a metal background.

**Faience**

An often-misused term meaning any glazed earthenware or low temperature-fired clay.

**Luster**

An iridescent metallic film in a glaze formed from certain metallic salts in a reduction, or oxygen-starved, atmosphere.

**Marvering table**

A metal-topped table used to shape glass or roll chemicals into it while the glass is still on the end of the blowpipe.

**Matte**

A surface that is smooth but not shiny.

**Oxides**

Minerals such as cobalt, copper, manganese, chrome, and iron combine with oxygen to make substances that color clay, glazes, enamels, and glass.

**Pontil rod**

A long rod used to hold the glass piece after it is cut off the blowpipe, while one end still needs heating and shaping.

**Pumice**

A lightweight volcanic glass used in a powdered form for smoothing and polishing.

**Reduction atmosphere**

The atmosphere inside a kiln from which combustion has removed most of the oxygen.

**Registration**

The correct location of multiple colors in printing.

**Sericulture**

The production of raw silk by raising silkworms.

## Webbing

Suggestions for making art the center of student learning.

### Visual Arts

Create an object or series of objects using some of the techniques and materials demonstrated in the presentation. Try to make a "woodblock" print by carving a potato

and printing with paint on paper. Add several different layers of colors and designs to your print. Experiment with other materials such as sponges or feathers to make designs.

### Social Studies

Locate two geographical areas on a globe that were discussed during the presentation. Compare the size and topography of these two places. Investi-

gate how natural resources for each area affect the way people live and make art. Determine and explain relationships between resources, economic activities, and population distribution.

## Materials and Techniques of the Artist

### Math

Look at a textile under a magnifying glass. Count the number of threads per square inch. Convert that measurement to threads per centimeter. Dis-

cuss the ratio of zinc to copper found in a bronze alloy. Weigh baking soda in grams. How many grams of water does it take to dissolve the baking soda?

### Science

Understand changes in the physical properties of materials associated with different technologies. Use a simple classification system to distinguish between

different types of materials found in the art objects of a museum. What are the objects made of? Are they made of more than one material?

### Language Arts

Learn new words that describe materials and techniques found in art. Find art objects in a museum that are made of

those materials and techniques. Choose one object in a museum and describe what you see both orally and in writing.

# Materials and Techniques of the Artist

THE CLEVELAND  
MUSEUM OF ART  
Department of Education  
and Public Programs  
11150 East Boulevard  
Cleveland, Ohio  
44106-1797

ART TO GO SERVICES  
216-421-7340 x 160  
TDD 216-421-0018  
FAX 216-421-9277  
info@cma-oh.org

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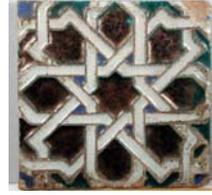
## Materials and Techniques of the Artist



Bracelet  
Dan, Ivory Coast  
Brass  
1982.1070



Potlatch Spoon  
America, Tlingit (?)  
Horn  
1921.1574



Tile  
Spain, Grenada  
Ceramic Lustreware  
1923.852



Girl's Bodice  
Spain  
Silk and metallic, damask  
1923.874a,b



Shawabti  
Egypt  
Faience  
1941.322



Final proof of a series of  
woodblock prints by the  
artist Hiroshige  
Japan  
Color woodblock print  
1918.780



Seeded Glass Vessel  
Italy, Murano  
Glass with gold powder  
TR15772/91



Cloisonné Bottles  
China  
Enamel on bronze  
1954.841



Printing Baren  
Japan  
Wood and bamboo  
1918.768