

# Sculpture: Materials & Process

## Teaching Resource

Developed by Molly Kysar

**Nasher Sculpture Center**

2001 Flora Street Dallas, TX 75201 Tel 214.242.5100 Fax 214.242.5155 [NasherSculptureCenter.org](http://NasherSculptureCenter.org)

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# Introduction

This resource is designed to introduce students in 4<sup>th</sup>-12<sup>th</sup> grades to the materials and processes used in modern and traditional sculpture, specifically bronze, plaster, and steel. The featured sculptures, drawn from the collection of the Nasher Sculpture Center, range from 1881 to 2001 and represent only some of the many materials and processes used by artists whose works of art are in the collection.

Images from this packet are also available in a PowerPoint presentation for use in the classroom, available at [nashersculpturecenter.org](http://nashersculpturecenter.org).

## DISCUSS WITH YOUR STUDENTS

Artists can use almost any material to create a work of art. When an artist is deciding which material to use, he or she may consider how that particular material will help express his or her ideas.

**Where have students seen bronze before?**

*Olympic medals, statues...*

**Plaster?**

*Casts for broken bones, texture or decoration on walls...*

**Steel?**

*Skyscrapers, cars...*

**What might be the advantages and disadvantages of each of these materials?**

# Works of Art

## BRONZE



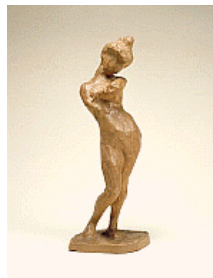
Auguste Rodin, *Eve*, 1881  
(cast before 1932)



George Segal, *Rush Hour*, 1983  
(cast 1985-86)

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## PLASTER



Henri Matisse, *Madeleine I*, 1901  
(cast 1903)



Pablo Picasso, *Head of a Woman (Fernande)*, 1909

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## STEEL



Antony Gormley, *Quantum Cloud XX (tornado)*, 2000



Mark di Suvero, *Eviva Amore*, 2001

# Bronze

## MATERIAL & PROCESS

### BRONZE CASTING SUMMARY

This multi-step process produces a bronze version of a sculpture in another material.

- A sculpture is made from clay or wax.
- A mold of the sculpture is made and molten bronze is poured inside the mold.
- The cooled sculpture is removed from the mold, cleaned, and finished.

**Bronze** is an alloy of copper and tin that may also contain small amounts of other elements such as lead or zinc. (An **alloy** is a mixture of two or more metals made by melting the metals together.) Bronze is stronger, harder, and more durable than brass or iron, so people have been making tools, jewelry, and other objects from bronze for millennia. Archeologists have found bronze artifacts that date to as early as 3,600 BCE.

Bronze has been commonly used for making sculptures. It can be heated to a very high temperature so that it melts and becomes a liquid. In this molten state, bronze is poured into a mold and picks up fine details. A **cast** is the positive sculpture that is made from the negative mold. The resulting bronze sculpture is very durable and can even be displayed outside. There are several different processes for creating a bronze sculpture, including lost-wax casting and sand casting (not covered here). Because these processes are very complex, many artists work with professional bronze casters (also called founders) to create the final sculpture.

Bronze sculptures are made in a **foundry**, which is a factory that produces metal castings. The foundry has specialized equipment for working with metals, including furnaces for melting the metal, equipment for pouring the molten bronze into molds, and tools for grinding or sanding the final sculpture to create the desired surface finish.

## Bronze Casting Process

Please note that bronze casting, especially for large-scale sculptures, is a complicated and involved process. This description has been simplified to provide an entry point for students.

1. **Initial sculpture**: The artist starts by creating a sculpture or model out of a material like wax or clay.
2. **Mold**: Plaster or rubber is used to make a **mold** of this original sculpture so that the impression of the sculpture is left inside. Sometimes the mold is made in two halves. Other times a mold may have several pieces.
3. **Pouring bronze**: Molten bronze is poured inside the mold. Once the liquid bronze cools and hardens, it is removed from the mold. The resulting object is the same shape as the mold. Bronze shrinks about 2% when it cools, so the bronze cast will be slightly smaller than the model. Depending on the type of mold that was used, the mold may be destroyed in the bronze-casting process, or it might be re-usable to make additional sculptures from the same mold.

Think about pouring liquid gelatin into a mold and cooling it in a refrigerator so that it becomes a solid, or pouring water into a tray and freezing it to make ice.

4. **Welding**: For large sculptures, the bronze pieces are often cast in smaller parts, and the pieces are welded together. (**Welding** is a process for joining pieces of metal. It involves heating the metal until it is soft enough to join with another piece of metal that then cools to make a solid joint.)
5. **Finishing**: The surface of the sculpture is cleaned and finished. The artist may decide to leave the texture from the surface of the mold, or he/she may decide to **abrade** the surface of the bronze until it is polished to a smooth finish.
6. **Patina**: Finally, the artist may choose to apply a **patina**. A patina is a color that forms on the surface of bronze due to chemical reactions between the metal and other elements. Sometimes artists will apply chemicals to the surface of a work of art in order to create a particular patina. Exposure to air and water in the environment, or acids on our skin from handling also affect the color of the patina.

Think about the difference between an old penny and a new penny. Due to handling by multiple people and exposure to the air, the penny develops a patina that is darker than a penny that is new and has not been handled as much.

## Special Considerations

- When creating a final bronze sculpture, an artist often works with a professional metal founder, who has the expertise to create a bronze cast, as well as a **foundry** with the specialized casting equipment. Sometimes an artist may collaborate with the founder. Other times, the artist may turn the original model over to the founder and have little or no participation in the bronze-casting process.
- The process of making a mold often destroys the initial wax or clay sculpture. Sometimes the first sculpture made from the mold is plaster. This allows the artist to have a reproduction of the sculpture that is more durable than the original, and there is no rush to create the final bronze sculpture, which is an expensive and time-consuming process. A “cast date” that is later than the date when the initial sculpture was made may be included with the information about the work of art on a label.
- Because a bronze sculpture is a cast made from a mold, multiple versions of the same sculpture can be made. An artist may limit the number of bronze casts that are produced. Although the sculptures are very similar, inevitably there will be minor variations in the details, surface finish, and patina of each cast, and some artists intentionally make each cast look different.

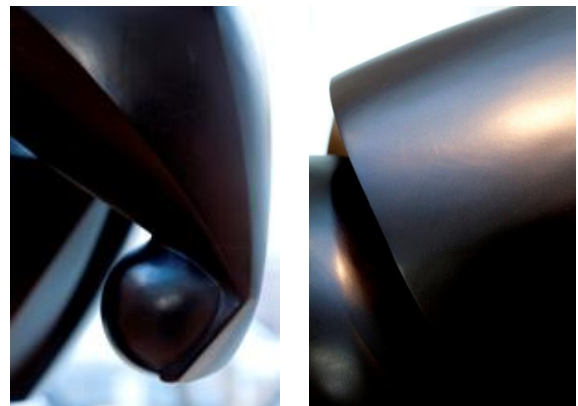
## SURFACES OF BRONZE SCULPTURES

Sculptures made from bronze have a wide variety of surface textures and colors, depending on how the artist chooses to finish the artwork and whether or not he or she applies a patina (or allows one to develop over time). These photographs are details of surfaces of bronze sculptures in the Nasher Sculpture Center collection.



Raymond Duchamp-Villon, *Large Horse (Le Cheval majeur)*, 1914 (enlargement 1966), Bronze, Raymond and Patsy Nasher Collection, Nasher Sculpture Center, Dallas.

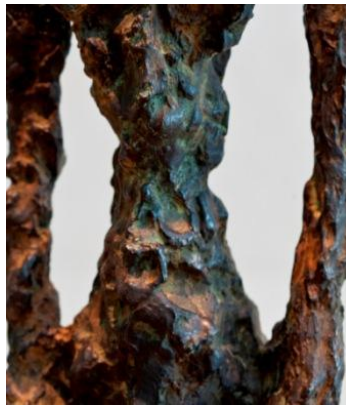
The surface of this sculpture has been refined and polished to appear smooth and glossy. Some smaller versions of the sculpture retain the texture of the original clay.





Alberto Giacometti, *Venice Woman III (Femme de Venise III)*, 1956, Bronze, Raymond and Patsy Nasher Collection, Nasher Sculpture Center, Dallas.

Marks on the surface of Giacometti's sculptures are records of the artist's finger marks in the initial clay. The bronze casting process can preserve the details of heavily textured clay surfaces.



Henry Moore, *Working Model for Three Piece No. 3: Vertebrae*, 1968, Bronze, Raymond and Patsy Nasher Collection, Nasher Sculpture Center, Dallas.

These photos show areas of the cast that were incomplete and then filled with a bronze of a slightly different alloy that patinated differently over time.



## ARTWORK FOCUS: *EVE*

Auguste Rodin, *Eve*, 1881 (cast before 1932)

Bronze, 68 x 17 1/4 x 25 1/2 in. (172.7 x 43.8 x 64.8 cm.)

Raymond and Patsy Nasher Collection, Nasher Sculpture Center, Dallas

### Discuss

Have students spend a few minutes looking at the image of Auguste Rodin's *Eve*. Draw their attention to the subject (a woman) and the surface of the sculpture.

What emotions might this woman be feeling? Why?

How would students describe the surface of the sculpture?

Based on what the students can see, what material do they think it is made from?

Why?



The texture in *Eve's* hair likely reflects Rodin's work in clay and alterations to the plaster model.

## About *Eve*

In 1880, Rodin received a commission to create a monumental door for a new decorative arts museum in Paris. The subject that inspired him was Dante Alighieri's book, *The Divine Comedy*, and the monumental masterpiece Rodin created was called [\*The Gates of Hell\*](#). Eve was one of the first figures that Rodin modeled for this project. In this work of art, he shows her at the moment when she is experiencing shame and anguish from being cast out of Eden. Rodin drew inspiration for his figure from Michelangelo's Eve in the Sistine Chapel frescoes.

**How does Rodin convey what Eve is feeling?**

## Process

Bronze was commonly used to make sculptures in the 19<sup>th</sup> century. Creating a sculpture in bronze was a lengthy and complex process, and Rodin employed plaster casters, carvers, and bronze casters to collaborate with him to make the final sculptures. Rodin started by making drawings of live models from several different angles. Next, he made clay models and plaster casts. He often had several plaster casts made of this original clay model so he could explore many different ideas or cut up the casts for further experimentation while retaining the original model and starting point.

*Eve* was cast using the lost-wax casting method. In this process, a flexible gelatin mold is made around the initial clay or plaster sculpture. Once the initial sculpture is removed, several layers of melted wax are applied to the inside of the gelatin mold. This creates a hollow wax "positive" of the original sculpture, which can be altered by the artist. The inside of the wax shell is filled with material to stabilize it and a hard outer mold is created around it with vents and channels called "sprues" to allow the bronze to flow into the mold and cool. The mold is then heated, melting the wax out. Molten bronze is then poured into the mold, creating a hollow bronze sculpture that can then be finished by the artist or the foundry. See the PowerPoint presentation for more information on lost wax casting.

## For More Information about Auguste Rodin

### WEBSITES

[Rodin Museum in Philadelphia](#)

[Musée Rodin in Paris](#)

### BOOK

*Rodin*, Royal Academy of Arts, London, 2006

Photo: David Heald; Detail Photos: Kevin Todora

## ARTWORK FOCUS: *RUSH HOUR*

George Segal, *Rush Hour*, 1983 (cast 1985-86)

Bronze, 73 x 74 x 67 in. (185.4 x 188 x 170.2 cm.)

Raymond and Patsy Nasher Collection, Nasher Sculpture Center, Dallas

### Discuss

Ask students to spend some time looking at the image of this sculpture.

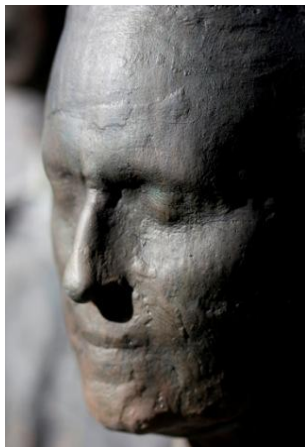
What are the figures doing?

What do they seem to be feeling or thinking? How can you tell?

Have students look closely at the detail photographs of this sculpture.

What words would they use to describe the surface?

What material(s) do they think the artist used to create this work of art? How do they know?



The texture of the gauze strips and plaster are visible on the figures.

## About *Rush Hour*

Artist George Segal was known for his sculptures of ordinary people going about their daily routines. In this sculpture, Segal shows six city-dwellers in the midst of their commute. Tell students the title of this artwork (Younger students may need to be told what “rush hour” means.).

How does the title affect their ideas of what this sculpture is about?

## About the Casting Process

Segal used a process called **life casting** in which he wrapped clothed models in water-activated, plaster-permeated bandages then covered the bandages with more plaster. Segal said:

“I worked the plaster with my fingers, controlling its running and dripping. I produced a literal-looking figure, with practically an abstract-expressionist surface.”

Review the accompanying slideshow to see the steps in the process of casting with plaster strips.

The artist used the plaster casts of his models to create the final bronze sculpture. (See Bronze Casting section for more information about this process.)

Have students look at the detail photographs of *Rush Hour* again. Where can they see evidence of Segal’s process of using plaster bandages? How do these areas look different than other parts of the sculpture? Draw students’ attention to the details that were picked up by the plaster casts made of the models, including the folds of the clothes, the details of the shoes, and the wrinkles on the faces.

## Casting from Life

Creating sculptures by making casts of real people was not always an accepted way to make a work of art. Segal said:

“I ended up making plaster casts of living people. Now Rodin was almost drummed out of Parisian art circles – he made such realistic modeling of a male torso, that he was accused of casting that from life. And the act of casting, in Paris, about 50 years before I started working, was considered an act of heresy. It was not permissible to make art that way. Sure I had doubts, I had plenty of doubts. But I persuaded myself that I had to do it.”

Ask students for their ideas about why casting from life was not acceptable in Paris during Rodin’s time. Why do they think it is accepted later in Segal’s works of art?

Segal started by using his close friends as models for his works of art. He said:

“My first models had to be people who understood what I did, and were sympathetic and were convinced that I would not kill them.”

One of his friends described what it was like to have a plaster cast made of him:

“His low tech process of replicating the body was governed as much by intuition as it was by logic. It entailed completely covering the model in strips of (plaster bandages), normally used for setting limbs... Once the wrapping was complete, great globs of plaster were slapped on my chest and back, which George proceeded to shape into ridges and valleys that loosely echoed my clothed body underneath...I grew increasingly warm, a comfortable feeling. An hour or so later George pried it off...When it was time to cast my head I would be able to sit and listen to music, however faintly the sound came through my plaster cocoon. After a liberal application of Nivea cream to my eyelashes and eyebrows, George swathed my head in layers of wet cloth. He told me to take a deep breath and forcefully let it out through my nose to make a breathing hole. As the plaster hardened, my head felt as though it were an egg shell, a rather thick one.”

## Going Deeper

Although George Segal was working about one hundred years after Auguste Rodin, he also used bronze, the same material that Rodin used to make many of his sculptures. When Segal made *Rush Hour*, he was inspired by Rodin's sculpture *The Burghers of Calais* – a work of art commissioned by the French city of Calais to celebrate heroes of the Hundred Years' War.

**What do these two sculptures have in common? How are they different?**

Visit the Metropolitan Museum of Art's [website](#) for more information about Auguste Rodin's *The Burghers of Calais*.

## For More Information about George Segal

[George and Helen Segal Foundation](#)

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Photographer: Lee Clockman ; Detail Photos: Kevin Todora

# Plaster

## MATERIAL & PROCESS

### PLASTER CASTING SUMMARY

This process can be used to create a plaster version of an original sculpture which the artist may further modify.

- Plaster powder is mixed with water to form a liquid paste.
- The liquid plaster is poured into a mold and allowed to dry.
- The solid sculpture is removed from the mold and finished.

Plaster is a shortened name for “plaster of Paris,” which is a fine-grain, odorless powder composed of calcium sulfate hemihydrate. When mixed with water, plaster forms a malleable paste that dries to a hard solid. Plaster has been used since ancient times. Human beings have known how to make plaster from the mineral **gypsum** since about 9000 BCE.

Powdered plaster can be mixed with water so that it becomes a liquid. This liquid can then be poured into a **mold**. When the plaster hardens and is removed from the mold, the resulting object will have taken the shape of the mold.

Think about pouring liquid gelatin into a mold and how it takes the mold’s shape when it becomes a solid or pouring cake batter into a pan and baking it.

Unlike bronze, which shrinks about two percent in volume as it cools, plaster hardens through crystallization and does not lose volume (some plasters even expand when they dry). The solidified plaster sculpture can be further worked through carving.

Historically, plaster has been used as an intermediate step for making a work of art in another medium, such as bronze. A mold can be made from cloth strips soaked in wet plaster, or a plaster cast may be made as a step in casting a clay or wax sculpture in bronze. (See the Bronze Casting section for more information.) Some artists may further the artistic process by manipulating the plaster after it is cast and before it is used for bronze casting. Other artists enjoy the qualities of plaster and consider it a suitable material for the final work of art.

## SURFACES OF PLASTER SCULPTURES

Plaster sculptures can have a wide variety of surface textures and colors, depending on how the artist worked the plaster, whether a coating was applied to the final plaster, and the extent to which the sculpture has been exposed to the elements over time. These photographs are details of surfaces of plaster sculptures in the Nasher Sculpture Center collection.



Medardo Rosso, *The Golden Age (L'Eta d'oro, also called Aetas aurea)*, 1886-87, Wax over plaster, Raymond and Patsy Nasher Collection, Nasher Sculpture Center, Dallas.

In the process of making bronze sculptures, a wax shell is generally cast but eventually melted away. Medardo Rosso accepted this wax shell as his final product and added plaster for reinforcement. These photos are details of the back of this sculpture.



Constantin Brancusi, *The Kiss (Le Baiser)*, 1907-08 (cast before 1914), Plaster, Raymond and Patsy Nasher Collection, Nasher Sculpture Center, Dallas.

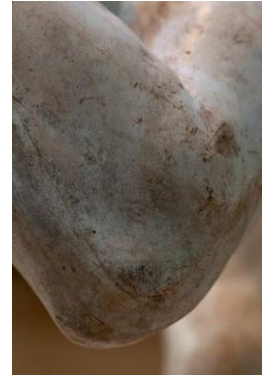
Erosion along the top surfaces and certain driplike stains indicate that at some point this sculpture was placed outdoors.





Auguste Rodin, *The Age of Bronze (L'Age d'airain)*, ca. 1876, Plaster, Raymond and Patsy Nasher Collection, Nasher Sculpture Center, Dallas.

Surface coloration demonstrates changes to the plaster over time and coatings applied to it to protect it during the mold-making process.



Willem de Kooning, *Clamdigger*, 1972, Plaster, Raymond and Patsy Nasher Collection, Nasher Sculpture Center, Dallas.

Willem de Kooning applied an unusual protective coating that included linseed oil and soap to give this sculpture its golden patina.



## ARTWORK FOCUS: *MADELEINE I*

Henri Matisse, *Madeleine I*, 1901 (cast 1903)

Painted plaster, 23 3/4 x 9 1/2 x 7 1/2 in. (60.3 x 24.1 x 19.1 cm.), Raymond and Patsy Nasher Collection, Nasher Sculpture Center, Dallas

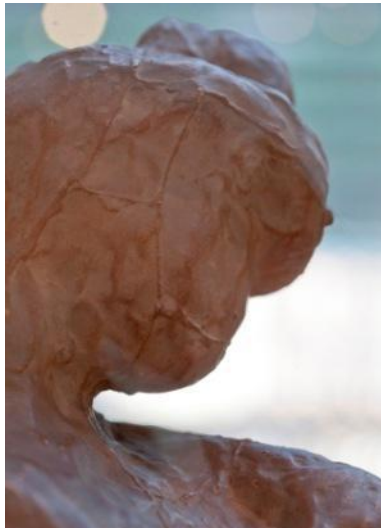
### Discuss

Have students look at this sculpture and tell you what they notice.

How would they describe its appearance?

What material does the surface texture of the sculpture suggest? Why?

How do they think the raised seams on the surface were formed?



Raised seams show where the edges of the piece mold fit together.



## About *Madeleine I*

*Madeleine I* is one of four plaster casts made of an original clay sculpture by Henri Matisse. (Only three of these plasters have survived.) It is an example of Matisse's practice of creating "snapshots" of a work in progress by making a mold of the wet clay.

Matisse stopped his work on *Madeleine I* to make a plaster model so that he could record the state of his sculpture at that particular point before continuing on to make a second version, called *Madeleine II*. Because of this process, *Madeleine I* has been called "a way station on the journey to *Madeleine II*." Although revisions are not unusual in the practice of making sculptures, it was not common for an artist to create a series of progressive versions of an evolving clay model.

Matisse used a **piece-mold**, which is the only type of mold that keeps the original clay sculpture intact. The edges of the piece-mold are visible on the sculpture, which indicates that Matisse, who was inexperienced in this process, made the mold himself rather than paying a professional mold-maker, which he could not afford.

If students have not already noticed, draw their attention to *Madeleine I*'s lack of arms. Matisse addressed the artistic problem of how to avoid letting the figure's arms interfere with the torso by leaving them out of the sculpture. Students may also notice that this sculpture is not white like other plasters. At some point, *Madeleine I* was painted terracotta pink.

## For More Information about Henri Matisse

Kosinski, Dorothy, et al, *Matisse: Painter as Sculptor*, Yale University Press, Metropolitan Museum of Art's [Thematic Essay](#) about Henri Matisse.

Photo Credits: © 2004 Artists Rights Society (ARS), New York/ADAGP, Paris "Reproduction, including downloading of Arp, Brancusi, Braque, Calder, de Kooning, Dubuffet, Ernst, Giacometti, Gonzalez, Laurens, Maillol, Pevsner, Puni, Richier, Matisse, Miro, Picasso, Newman, Archipenko, Smith, Stella, Chamberlain, Serra and/or Shapiro works is prohibited by copyright laws and international conventions without the express written permission of Artists Rights Society (ARS), New York."

Photographer: David Heald; Detail Photos: Kevin Todora

## ARTWORK FOCUS: *HEAD OF A WOMAN (FERNANDE)*

Pablo Picasso, *Head of a Woman (Fernande)*, 1909

Plaster, 18 1/2 x 14 1/8 x 13 3/4 in. (47 x 35.9 x 34.9 cm.)

Raymond and Patsy Nasher Collection, Nasher Sculpture Center, Dallas

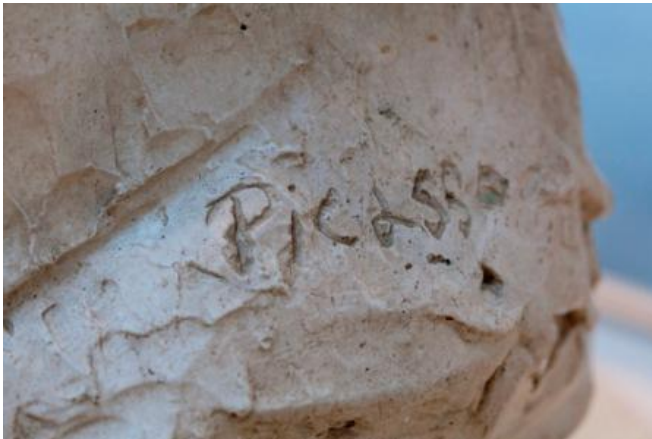
### Discuss

Ask students to look at the plaster cast and describe their ideas about how Picasso may have manipulated the clay to make this sculpture, based on what they see.

**How would they describe the surface texture of the sculpture?**

**How would they describe the forms that make up the sculpture?**

Look at the base of the sculpture to find Picasso's signature, which he incised in the clay before it was cast in plaster.



Picasso "sharpened" parts of the plaster sculpture at the foundry to achieve the flat planes he desired.

## About *Head of a Woman (Fernande)*

In 1909 Picasso made about sixty works of art – paintings, drawings, photographs, and sculptures – related to his companion Fernande Olivier, including this plaster sculpture in the Nasher collection.

This sculpture represents one step in the process of creating a bronze sculpture. It is a hollow plaster cast made from a mold of an original clay sculpture. The original clay sculpture no longer exists, but using clay to create the sculpture allowed Picasso to experiment by pressing and manipulating this malleable material.

Typically, a clay sculpture is destroyed in making a plaster cast. In order to avoid damaging this new plaster, a secondary “working” plaster is often cast. There are two existing plasters of *Head of a Woman (Fernande)*, and it is not clear if the version in the Nasher collection is the first plaster or the second “working” plaster. (Two editions of bronzes were made of this sculpture, so it is possible that both plaster casts are “working plasters.”)

Years after this plaster was made, Picasso described how he had “sharpened” the plaster at the foundry. Areas in the front of the neck have been cut harshly with a blade in order to flatten the forms into planes with sharp edges. In the year between modeling the clay and inspecting the plaster, Picasso developed his style toward greater abstraction. He wanted to improve the plaster by incorporating these angular planes. Picasso’s radical sharpening was limited to the neck except for a few small ridges, such as over the proper-right eye, that may have been discreetly accentuated with the tip of the knife. Although Picasso wanted to make his sculpture more angular and abstract, he chose to keep the hand-modeled quality of the face and hair.

Refer to the slide show and ask students to compare the plaster sculpture in the Nasher collection to the bronze cast in the [National Gallery of Art](#).

## For More Information about Pablo Picasso

*The Cubist Portraits of Fernande Olivier* by Jeffrey Weiss, Valerie J. Fletcher, and Kathryn A. Tuma, National Gallery of Art, Washington; Princeton University Press, Princeton and Oxford, 2003

Metropolitan Museum of Art’s [Thematic Essay](#) about Pablo Picasso

Photo Credits: © 2005 Estate of Pablo Picasso/Artists Rights Society (ARS), New York  
Photographer: Tom Jenkins; Detail Photos: Kevin Todora

# Steel

## MATERIAL & PROCESS

### STEEL SUMMARY

Steel is a strong and resilient material that can be used for making large sculptures.

- Slabs or ingots of steel are worked into sheets, bars, and other forms.
- Pieces of steel are joined by welding.
- The surface of steel can be polished or left untreated to form a patina.

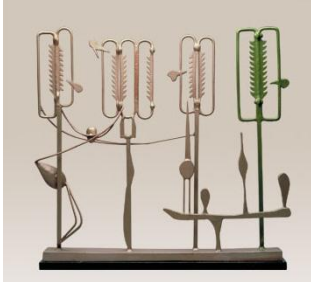
Steel is a high-strength iron **alloy**. (An alloy is a mixture of two or more metals made by melting the metals together.) Steel has been used for construction of ships, bridges, buildings, and skyscrapers and was being produced in quantities of 25 million tons a year by the end of the 19<sup>th</sup> century. Artists may choose to use steel for its strength, resilience, and formability as well as for the color and texture of its surface.

Liquid steel can be cast into slabs or **ingots** (blocks or bars that require a second procedure of shaping) that are then worked into sheets, wire, or structural materials such as I-beams. Pieces of steel may be joined together through the process of **welding**, which involves heating the metal to form a pool of molten material which cools to become a strong joint. Because steel is so strong, it is an excellent material for creating very large sculptures, which may require the artist to work with other people to create them. Some artists, like Richard Serra, work with pieces of steel so enormous that only a shipyard is equipped to manufacture them. Several people and proper equipment are necessary to move the heavy pieces, which can weigh several tons.

Artists use several types of steel. Two particular types used in sculptures at the Nasher Sculpture Center are **stainless steel** and **weathering steel**. Stainless steel is more resistant to rusting and corroding than other types of steel, and it can be polished to a high shine. Weathering steel is a high-strength, low-carbon steel which was first sold in 1933 by U.S. Steel under the name of Cor-Ten. When exposed to a cycle of wet and dry outdoor conditions, weathering steels form a thin protective **patina**. The film is initially a dull red, but as crystals grow the color can change. Richard Serra's sculpture, [\*My Curves Are Not Mad\*](#), is an example of a work of art made from Cor-Ten steel. Detail photographs of this sculpture are included in the next section.

## SURFACES OF STEEL SCULPTURES

Sculptures made of steel can have a wide variety of surface textures and colors, depending on the type of steel the artist used, how the artist worked the steel, and the amount of exposure to the elements over time. These photographs are details of surfaces of steel sculptures in the Nasher Sculpture Center collection.



David Smith, *The Forest*, 1950, Painted steel on wood base, Raymond and Patsy Nasher Collection, Nasher Sculpture Center, Dallas.

David Smith incorporated steel handsaws into this artwork and painted the surface to complete the composition. Brushstrokes are visible in some portions of the sculpture.



Richard Serra, *My Curves Are Not Mad*, 1987, Cor-Ten Steel, Raymond and Patsy Nasher Collection, Nasher Sculpture Center, Dallas.

The weathering of the Cor-Ten steel gives this sculpture its warm, reddish-brown tone and soft texture.



## ARTWORK FOCUS: *QUANTUM CLOUD XX (TORNADO)*

Antony Gormley, *Quantum Cloud XX (tornado)*, 2000

Stainless steel, 91 3/4 x 58 5/8 x 47 1/4 in. (233 x 148.8 x 120 cm.), Raymond and Patsy Nasher Collection, Nasher Sculpture Center, Dallas

### Discuss

Ask students to look closely at the image of this sculpture.

**What do they think is happening based on what they see?**

**What material does this figure seem to be made of?**

### About *Quantum Cloud XX (tornado)*

The artist, Antony Gormley, is interested in the relationship between the body and the environment. In the center of this sculpture is the shape of a human figure that is based on the body of the artist. This sculpture is also influenced by Gormley's interest in particle physics and his experiences with vipassana meditation.

Gormley has said of his Quantum Cloud figures"

"Is the energy-field creating the body or the body creating the energy-field? Is this a body that is deconstructing or is it a gas cloud that is cooling into a star?"

Ask students to consider the artist's statement.

**Do they think the figure is exploding or condensing? Why?**

**How would each possibility affect the meaning of this work of art?**



Gormley used only one material to create this work of art – stainless steel T-bars, which are welded together. The process of welding the steel produces blackened areas at the joints.

**What thoughts do students have about how the artist achieved the effect of the figure exploding or condensing?** *(The steel pieces are denser in the middle and more diffuse at the edges.)*

*Quantum Cloud XX (tornado)* is one of a series of 33 welded steel sculptures that Gormley has created. The largest in this series is 30 meters (almost 100 feet) tall and was installed next to the Millenium Dome in London in 2000.

## For More Information about Antony Gormley

[Antony Gormley's Website](#)

Hutchinson, John, et al, *Antony Gormley*, New York, NY: Phaidon Press Limited, 2000.

Photo Credits: © Antony Gormley; Photographer: Tom Jenkins

## ARTWORK FOCUS: *EVIVA AMORE*

Mark di Suvero, *Eviva Amore*, 2001

Steel, Overall: 424 x 564 x 360 in., 22500 lb. (1077 x 1432.6 x 914.4cm, 10205.9kg), Raymond and Patsy Nasher Collection, Nasher Sculpture Center, Dallas

### Discuss

Have students spend time looking at the image of *Eviva Amore*.

Based on what they can see, what materials do they think Di Suvero used to make this work of art?

Tell them that this sculpture is enormous, spanning 47 feet and weighing 22,000 lbs.

Does this change their ideas about the material that the artist used?

The title, *Eviva Amore*, means “Long Live Love.”

What thoughts do students have about how the form of the sculpture may relate to the title?



Mark di Suvero welded and bolted together the pieces of steel, creating a carefully balanced sculpture that combines an industrial quality with elegant grace.

## About *Eviva Amore*

Artist Mark di Suvero used steel I-beams, which are often used in construction, to make this sculpture. These beams are made of structural steel and have an I-shaped cross-section.

This sculpture was created in 2001, when Di Suvero was convalescing from an operation. During this time, he created a series of drawings for sculptures, saying:

“I drew ideas and feelings and pure emotion in telling the ink-wash drawn line’s outflow a kind of natural joy of invention...While convalescing...these drawings were the map of my thinking-feeling in ink.”

Show students Di Suvero’s related drawings included in the accompanying slideshow. What qualities do the drawings share with the sculpture? How are the drawings unique? What ideas do students have about why the artist called these his “map of thinking-feeling in ink”?

Because this sculpture is so enormous and heavy, it took a lot of planning and teamwork to install it in the Garden at the Nasher.

Two other large-scale steel sculptures by Di Suvero are located in the Dallas Arts District. *Ave* is on the Ross Avenue Plaza at the Dallas Museum of Art, and *Proverb* is located outside the Meyerson Symphony Center.

**In what ways are these sculptures similar to *Eviva Amore*? How are they different?**

## For More Information about Mark di Suvero

[Mark di Suvero’s Website](#)

Photo Credits: © Mark di Suvero, Courtesy of the artist and Spacetime C.C.

Photographer: Tom Jenkins; Detail Photos: Kevin Todora

## GLOSSARY

**abrade** – to wear off or down by scraping or rubbing

**alloy** – a mixture of two or more metals made by melting the metals together

**bronze** – an alloy of copper and tin that may also contain small amounts of other elements such as lead or zinc

**cast** – a sculpture made from a mold

**foundry** – a factory that produces metal castings

**gypsum** – a very soft mineral composed of calcium sulfate dehydrate

**ingot** – bars or blocks of metal that require a second procedure of shaping

**life casting** – the process of wrapping models in plaster-permeated bandages

**mold** – a structure that will capture the exact likeness and detail for reproduction of the original

**patina** – a coating or color that forms on the surface of bronze due to handling, oxidation, and exposure to the environment. Chemicals can also be applied to the bronze to speed up the patination process.

**piece-mold** – a mold that comes apart in two or more pieces to allow for removal of a model.

**welding** – a process of joining pieces of metal that involves heating the metal to form a pool of molten material which cools to become a strong joint

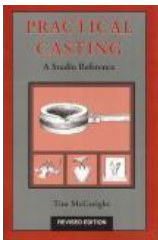
## RESOURCES

### Books

All titles are available through the [Dallas Public Library](#).



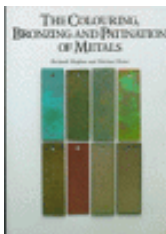
*The Art of Sculpture: Stone, wood, plaster, and bronze: from small statuettes to cathedrals*, Scholastic Voyages of Discovery Visual Arts series, New York, NY: Scholastic, c 1995.



McCreight, Tim, *Practical Casting: A Studio Reference*, Cape Elizabeth, Maine: Brynmorgen Press, 1994



Thomas, Guy, *Bronze Casting: A Manual of Techniques*, Marlborough: Crowood, 1995



Hughes, Richard and Michael Rowe, *the Colouring, Bronzing and Patination of Metals*, New York, NY: Watson-Guptill Publications, Whitney Library of Design, 1991

### Websites

[CAMEO: Conservation & Art Material Encyclopedia Online](#)

A searchable information center developed by the [Museum of Fine Arts, Boston](#).

[AIC: The American Institute for Conservation of Historic and Artistic Works](#)