

Leonardo da Vinci: The Mechanics of Man & Visceral Bodies



Leonardo da Vinci
fol. 18r

*The muscles and tendons of
the lower leg and foot, 1510–1511*
pen and ink, over traces of black chalk
The Royal Collection © 2009
Her Majesty Queen Elizabeth II

TEACHER'S STUDY GUIDE WINTER 2010

Vancouver
Artgallery

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Vancouver Art Gallery

Teacher's Guide for School Programs

The two exhibitions *Leonardo da Vinci: The Mechanics of Man* and *Visceral Bodies* present a rich and diverse array of approaches to the human body. We are provided with a historical perspective through Leonardo's groundbreaking scientific explorations into the mechanics of the body in the form of his beautifully drawn, anatomically accurate and expertly realized drawings. We are brought firmly into the present day through contemporary approaches in the *Visceral Bodies* exhibition that investigate the body not only as dispassionate scientific studies, but also as social, psychological and cultural constructs. The exhibit includes drawings, paintings, installations, sculpture, photography and video.

DEAR TEACHER:

This guide will assist you in preparing for your tour of the two exhibitions *Leonardo da Vinci: The Mechanics of Man* and *Visceral Bodies*. It also provides follow-up activities to facilitate discussion after your Gallery visit. Engaging in the suggested activities before and after your visit will reinforce ideas generated by the tour and build continuity between the Gallery experience and your ongoing work in the classroom. Most activities require few materials and can be adapted easily to the age, grade level and needs of your students. Underlined words in this guide are defined in the Vocabulary section.

The tour of *Leonardo da Vinci: The Mechanics of Man* and *Visceral Bodies* has three main goals:

- to introduce students to the merging of science and art in Leonardo's historical drawings,
- to consider multiple perspectives in contemporary artists' explorations of the body,
- to explore individual artworks in a variety of disciplines and media.

THE EXHIBITIONS:

Leonardo da Vinci: The Mechanics of Man

The exhibition *Leonardo da Vinci: The Mechanics of Man* presents a collection of drawings, referred to as *Anatomical Manuscript A*, which Leonardo made as part of his intensive investigations into the human form. The drawings, made in the winter of 1510—exactly five hundred years ago—focus on the bones and muscles and are accompanied by his exploratory notes. Included in this collection are the earliest known anatomically accurate drawings of the spinal column. It is important to consider the context in which these drawings were made in order to understand how Leonardo was able to render such accurate detail in his work.

The Renaissance was a time of intense exploration in the arts and sciences, which, for the most part, were seen as inseparably interlinked. Leonardo's curiosity was voracious, and he focused his attention on the pursuit of art and science alike. He worked alongside university scientists and was given the extreme privilege, in large part due to his success and renown as an artist, to attend and eventually perform autopsies. By the time of his death in 1519, Leonardo was said to have dissected thirty bodies—most of them executed criminals or people who died in charitable hospitals with no families to claim the remains.

Through direct observation and his extraordinary skill as a draftsman, Leonardo was able to create these exceptional anatomical studies—a triumph of both science and art. His understanding and descriptions of the mechanical workings of the body were so accurate that they can hold their own amongst modern anatomy textbooks.

Anatomical Manuscript A, shown here for the first time as a complete group, consists of thirty-four pen-and-ink drawings on eighteen sheets of paper. The drawings are accompanied by Leonardo's notes, which discuss the mechanics of the body. The notes are made in Leonardo's habitual mirror handwriting. It is evident that he added to his notations as he began to better understand the anatomical complexities. Some of his writings have been translated and appear on the walls, adjacent to the originals.

Leonardo's intention was to publish his work, but he died before he could do so and his research disappeared into near obscurity. Many of his groundbreaking discoveries were lost for hundreds of years. It was not until the early 1900s that the work was rediscovered and finally published.

Leonardo da Vinci: The Mechanics of Man is organized by the Vancouver Art Gallery. The works of art are graciously loaned by Her Majesty Queen Elizabeth II from The Royal Collection.

Visceral Bodies

Accompanying *Leonardo da Vinci: The Mechanics of Man*, the exhibition *Visceral Bodies* provides an alternate look at artists' explorations of the body. This exhibition presents the work of contemporary artists who have, for the most part, strayed far from historical scientific investigations of the body as anatomical fact. They are instead using the body to explore aspects as diverse as cultural perceptions, the fragility of the human condition and futuristic technology. They have worked with a variety of media and materials, ranging from painting to video installations to sculptures made with conventional and found materials.

The exhibition is divided into three sections:

In the first, titled *Visceral Bodies*, artists are working with intuitive or instinctual ideas of the body. Bodies are fragile; they are marked with the passage of time, they suffer, they weaken, they break. Indebted to feminist artists of the 1970s and '80s who used their bodies in their art to confront taboos and challenge boundaries, the artists here continue to question existing power relationships. They use the body to explore political, cultural and gender issues. Artists Shelagh Keeley, Kiki Smith and VALIE EXPORT use a variety of media to create evocative images that invite emotional responses to their work.

In the second section, *The Scientific Body*, artists have used advanced medical technologies to explore the body from within and without. Artists such as Mona Hatoum are using the equipment and methods of science to examine, invade and probe the body, asking some penetrating questions. How do genetic engineering, artificial intelligence, drugs or cross-species organ transplants change and manipulate what it means to be a human being within a body? How does that affect our very understanding of what it means to be human? What are the far-reaching effects of medicine, science and technology?

The third section, *The Fragmented Body*, contains images of bodies that are no longer intact. They are fractured, distorted, transformed and sometimes fantastical. There is a sense of anxiety as these artists question a future where science has opened possibilities to the point that we no longer know or can predict our bodies' limits. It is here that we look up to find Antony Gormley's suspended fragmented sculpture, in a perpetual state of transformation. Here too we find works by Berlinde De Bruyckere and Wangetchi Mutu that give us distorted—but still recognizable—fragments of the body.

Visceral Bodies is organized by the Vancouver Art Gallery and presented with the Vancouver 2010 Cultural Olympiad. Curated by Daina Augaitis, chief curator and associate director.

ARTISTS' BACKGROUND

The following background information highlights some of the artists whose work we may explore in the school tour.

Leonardo da Vinci (1452–1519)

Leonardo was born near the Tuscan town of Vinci, the town in Italy that gave him his name. At the age of fourteen he became apprenticed to an artist known as Verrocchio, who ran one of the most successful art studios in Florence. Leonardo was trained not only in drawing, painting and sculpting, but also in anatomy, drafting, metalworking, chemistry, mechanics and carpentry. Leonardo eventually left his beloved master to live and work in Milan, and later worked in Rome, Bologna and Venice. He died in France, under the care and protection of Francis I.

Leonardo is known primarily as a painter. His first major painting was *Virgin of the Rocks*, which was followed by *The Last Supper*. But it is of course the *Mona Lisa* that made him a household name. His drawing of the *Vitruvian Man*, a study of the proportions of the human body, has become a cultural icon, found on coffee mugs and T-shirts the world over. Although very few of his paintings have survived—fifteen for certain, a few more disputed—the notebooks containing his drawings, writings and scientific diagrams have left a rich legacy of their own. His writings are, curiously, in mirror image. Various theories have been advanced, but it is most likely that being left-handed, he found it easier to write from right to left.

The Renaissance was a time of intense pursuit of art, architecture, science and literature. Leonardo is known as the archetypal Renaissance man, acclaimed not only for his art, but also for his investigations into science and technology—centuries ahead of his time. In his work as an engineer in Venice, he designed protective mobile barricades for the city. His designs for solar power and for a tank, calculator and helicopter—to name but a few—were not feasible in his time, but they laid out solid foundations for future inventions. And some of his smaller inventions, such as an automated bobbin winder, soon came into popular use.

From the 1480s on, Leonardo was primarily occupied with his studies of the human body. Of all the scientific investigations he undertook, his anatomical studies were his most sustained and perhaps his most influential works. Given special permission to dissect human corpses taken from the local hospital, he used his extraordinary skills as a draftsman to produce some of the most detailed and insightful anatomical drawings we have. In them he created a vision of the human body that has defined the way artists as well as scientists view the body today.

Antony Gormley (born 1950)

Born to a German mother and an Irish father, Gormley grew up in London, the youngest of seven children. He was educated in England and completed his studies at the Slade School of Art in London, where he majored in sculpture. The recipient of numerous awards and prizes, he won the prestigious Turner prize in 1994 and the Order of the British Empire in 1997. His work has been exhibited extensively at home and abroad, and many of his large-scale sculptures are on permanent display in public places.

Almost all of Gormley's work is based on the human body—often his own. He has made multiple life-size metal casts of his body that have become the basis for his large-scale works. He has made outdoor works carved directly into rock. He has filled rooms with tiny clay figures—made by different community groups rather than by the artist himself, causing

some controversy. His best-known work is probably *Angel of the North*, constructed out of steel; it stands 65 feet high and has a wingspan of 177 feet.

Drift II is part of a series constructed out of metal bars. The huge mass hangs from the ceiling. Only from particular angles can the viewer discern the shape of a body materializing within the structure.

Mona Hatoum (born 1952)

Born in Beirut, Lebanon, to displaced Palestinian parents, Hatoum was exiled in London in 1975 when war broke out in her home country. She stayed in London, where she studied art, and has lived there ever since. Her work has been widely exhibited and has attracted extensive critical acclaim. She was shortlisted for the Turner Prize in 1995 and has won other prestigious awards.

Although she has worked with ideas of displacement, politics and alienation arising from her background, Hatoum has defied categorization as a political artist. Her early work often took the form of performances; she created installations that used light and sound, and often confronted violence, oppression, racism, power relations, gender politics and other issues. Her work has become more conceptual and minimalist in form over the years: more subtle, complex and multi-layered, and less overtly didactic in tone.

In *Deep Throat*, Hatoum presents the viewer with an exploration of her intestines, made with an endoscopic camera. She talks about her bodily investigations as stemming from cultural perceptions: “I wanted it to be a complete experience that involves your body, your senses, your mind, your emotions, everything. I think this has very much to do with the culture I grew up in where there is more of an integration between body and mind.”

Shelagh Keeley (born 1954)

Keeley was born in Oakville, Ontario, and studied fine arts at York University. She lived in New York for more than twenty years, spent considerable time living and working in Paris and Delhi, India, and currently lives in Toronto. Her work is in major collections across North America and has been exhibited internationally. She is also the author of numerous books.

Keeley’s art is a combination of drawing and sculpture. Her large-scale wall drawing often brings to mind the earthiness and strong lines of early Paleolithic cave drawings. These works take on a skin-like quality—an organ wrapping the architectural space of the gallery. She uses combinations of wax, chalk, Vaseline, oil stick and graphite that become sticky and mixed up, messily entangled with one another. Her work has an inescapably handmade quality that connects the viewer to the physicality of the creation of the work.

Writing on the Body was made in 1988 as a site-specific wall drawing for an exhibition in Tokyo. The imagery in this large-scale work is dominated by the artist’s fragmented representations of the body. The dominant colours are reds, browns and yellows—those of the insides of our working bodies.

PREPARING YOUR STUDENTS: Nudes in Art

Given that the *Leonardo da Vinci* exhibition is focused entirely on drawings of the body, and that the *Visceral Bodies* exhibition is focused on contemporary explorations of the body, you can expect that students will see a number of nude images as they walk through the Vancouver Art Gallery. It may be helpful to talk with them beforehand about images of the nude in art, and encourage them to examine their own responses to the work and to think about why an artist might choose to include a nude body in a work of art.

Hilarious

A good place to begin is in simply informing students that some of the works of art they will see when they visit the Gallery will contain images of nude bodies. People who visit the Gallery have all kinds of different responses to artworks showing nudes. Some of them laugh, others feel embarrassed or uncomfortable. All of these responses are normal. But why? Why is the body so humorous and/or embarrassing? Ask the students whether they fall into hysterical laughter when they are in the shower or bath. Probably not. Part of the shock of seeing a nude figure in a museum is just that: we are accustomed to seeing our nude bodies only in private. To see one in public is a shock.

Meaning and Context

In showing the nude body, artists remind us that the human body can have a variety of meanings, and nudity can be used to explore many things, such as:

- anatomical accuracy, as in the case of Leonardo's work,
- scientific and technological advancements,
- emotional responses such as vulnerability and intimacy,
- cultural, historical and political implications.

What are you wearing?

Another way to approach this topic is to think about clothing instead of nudity. What do clothes tell us about a person? Clothing can send messages about:

- historical time and place,
- age and culture,
- wealth and style,
- profession,
- current stereotypes and expectations.

Some artists and art historians suggest that the nude figure is set free from all of this "distracting" information that is provided by what we wear, and becomes just a human being, from any time, place or background.

PRE-VISIT ACTIVITY: Context: Leonardo and the Renaissance (All levels)

Objective:

Students look at the life, times and impact of Leonardo and his work.

Discussion:

This activity provides a context and background for Leonardo. Students might need to be reminded that the work they will see in the exhibition at the Gallery is only concerned with human anatomy. They will not see the *Mona Lisa*!

Materials:

- ❑ writing materials
- ❑ books on Leonardo da Vinci and the Renaissance
- ❑ the internet. Some helpful sites include:
<http://www.museoscienza.org/english/leonardo/>
<http://www.mos.org/leonardo/bio.html>
www.artcyclopedia.com
www.wikipedia.com

Process:

1. Brainstorm with students and write any information about Leonardo, his work and the Renaissance on the board. Chances are that students have at least heard of the *Mona Lisa*!
2. Divide students into five groups. Assign each group one of the following topics:
 - the Renaissance
 - personal Information: Leonardo's childhood, education, training, etc.
 - Leonardo's engineering projects and inventions
 - Leonardo and anatomy
 - Leonardo's most famous paintings: *Mona Lisa*, *Madonna of the Rocks*, *The Last Supper*
3. Each group will research their topic and present their findings to the class. Younger students can use the Information Sheet (see next page) as a guideline or starting point.
Have all students make sketches or copies of significant works.
4. Have each group present their findings to the class. Supplement presentations with images from books.

Conclusion:

Points for class discussion and/or individual writing assignments:

- What made Leonardo such an important artist?
- Why is he still relevant today?
- Why is he considered the ultimate example of the Renaissance man?
- What would a Renaissance man look like in our world today? a Renaissance woman? What skills would he/she be expected to have?
- What else are students interested in finding out about Leonardo?
- Can students think of any ways Leonardo's influence can be felt in our world today?

Information Sheet

The Renaissance

- 14th-17th century cultural movement meaning “rebirth”
- Started in Italy, spread throughout Europe
- Learning based on classical ideas from ancient Rome and Greece
- Art, philosophy and science were interlinked

Personal information about Leonardo

- born in 1452 in the town of Vinci in Tuscany
- became apprenticed as an artist to Verrocchio at the age of fourteen
- lived and worked in Rome, Venice and Milan
- died in France in 1519

Leonardo and his inventions

- worked as an engineer in Venice
- was an advanced scientist
- some of his inventions put into immediate use
- most of his inventions only feasible many centuries later

Leonardo and anatomy

- he did the drawings for *Anatomical Manuscript A* in the winter of 1510 (these are on exhibition at the Vancouver Art Gallery, the first time they have ever been shown together)
- he drew from corpses and performed more than thirty autopsies
- he showed the workings of the body with complete accuracy
- he wrote in his notebooks in “mirror” handwriting

Famous paintings

- only fifteen paintings definitely by Leonardo have survived
- most famous paintings:
 - *Mona Lisa*
 - *Madonna of the Rocks* (sometimes called *Virgin of the Rocks*)
 - *The Last Supper*

PRE-VISIT ACTIVITY: Life-Lines (Primary and intermediate students)

Objective:

Students make quick gestural drawings while classmates pose.

Discussion:

Traditionally, artists' training has included the study of human form through life drawings—drawings made while live models pose. Sometimes these can be studies of poses held for a long period of time. But sometimes artists work with very quick poses to capture gesture, expression and character with a few brief lines.

Materials:

- ❑ soft pencil crayons—watercolour pencils allow for further extension
- ❑ one large sheet of drawing paper for each student

Process:

1. Discuss the idea (see Discussion, above) of artists working with quick poses. How can this be helpful? Answers might include: planning an artwork, capturing essentials without fuss, practising line drawing....
2. Divide the students into groups of four to six. Each student will need a large sheet of paper and some pencil crayons.
3. Have students take turns holding a thirty-second pose while the other students in their group draw them in the pose. These will be quick gestural drawings, which they will make **without looking** down at their paper. It is important to stress that this activity is about *looking*, not about creating a perfect drawing. Students will end up with some squiggly lines on their page. (A quick demonstration by the teacher on the board is helpful but not necessary).
4. Students choose a different colour of pencil crayon and repeat, with a new model. Students take turns holding a thirty-second pose while the rest of the group draw—on the same sheet of paper. The activity is repeated as many times as there are students in the group. The end result will be a large sheet of paper covered with overlapping squiggly coloured lines.
5. Have students look at their sheets and find recognizable bits: a gesture or a posture, the shape of a head, the texture of some hair, etc. Have them use pencil crayons to make connections. They might link bits together into a cohesive body, or shade in different fragments of body parts, or join squiggles, outline shapes, add lines or texture, suggest movement.
6. If students have used watercolour pencils, they can add water at this stage.
7. Display students' drawings.

Conclusion:

Discussion:

- What were some of the most interesting things that the students learned or discovered?
- Can they recognize any of the original poses in the drawings?
- What different choices have artists working with the same poses made? How are their drawings similar? Different?
- What is the element repeated most often—line, movement, colour, texture...?

PRE/VISIT ACTIVITY: Inside Out (All levels)

Objective:

Students consider their intestines as inspiration for both science and art.

Discussion:

- Leonardo did not separate science and art. His investigations into the body were so thorough and accurate that anatomy professors today can barely fault them. His drawings and paintings hold pride of place in art institutions all over the world.
- Many contemporary artists are choosing to work with the latest medical technology to construct their artworks. They are using science and technology to image and reimagine their bodies, inside and out.
- Mona Hatoum has used high-resolution imaging to display her digestive system in the form of a video.
- Both artists and scientists are using special lenses to photograph cellular structures.

Materials:

- anatomy textbook, internet
- art materials: pencils, markers, pastels, scissors, magazines, glue.

Process:

1. Have students look at this website showing microscopic details of structures ranging from animal cells to carpet fibres:
<http://www.nikonsmallworld.com/gallery/year/2005/8>
2. Show students a textbook image of internal organs of the body. Ask them what they think their intestines look like in microscopic detail.
Older students will probably have some idea of what the intestines actually look like from studying it; younger students will use their imaginations.
Helpful questions could include: What did you have for breakfast today? Would you be able to see that? If you have a stomach ache, how would that look? What colours would you see? Shapes? Textures?
3. Give each student a sheet of paper. Have them fold it horizontally and vertically, then open it up again so that there are four quarters.
4. Ask each student to take a pencil and draw, in the first quarter, a close-up of a section of their intestine, as realistically as they can imagine it.
5. Second quarter: Have them draw the same image in colour, using markers and their imaginations.
6. Third quarter: Have them cut out and collage pieces from magazines, reimagining the same section of intestine.
7. Fourth quarter: Have them "abstract" their intestines, using markers or pastels. They might create an extreme close-up of one bit, or a few shapes rearranged, or repeated lines of a part.
8. Display students' work.

Conclusion:

Discussion:

- What do students notice about the work?
- What jumps out most? Colour? Shape? Line? Repetition?
- Do students think the images resemble the actual intestine? Does it matter? Why or why not?

PRE/POST-VISIT ACTIVITY: Making the Invisible Visible (All levels)

Objective:

Students consider the different systems that make up the insides of their bodies and create an artwork based on both scientific accuracy and artistic interpretation.

Discussion:

Leonardo understood the complex layering of the body not only by dissecting bodies, but also by managing to visualize—or imagine—the complex layers and networks of muscles, tendons, skeletal and vascular systems that connect under our skin. Students might need to be reminded that Leonardo did all this without microscopes or medical technologies such as x-ray, ultrasound and MRI that we take for granted today.

Many contemporary artists have used new technologies to image bodies, layering new forms and meanings into a complex array of artworks.

Materials:

- ❑ images or models of skeletal and vascular systems of feet and hands
- ❑ white card or stiff paper for each student
- ❑ tracing paper or acetate sheets
- ❑ black and coloured Sharpies

Process:

1. Have each student draw the outline of their foot or hand onto a piece of white card. Have them examine images or models of the bone structure, then draw it in. They might choose to make an accurate copy, or a looser artistic interpretation. Have them go over the outline in black Sharpie.
2. Using either tracing paper or acetate, students trace their outline and, on this new sheet, copy (or interpret) their vascular system, using coloured Sharpies.
3. Students retrace the outline onto a new sheet of tracing paper or acetate, then draw a sock, shoe or glove.
4. Students cut out the hand or foot shape on the original card. On the other two sheets, they draw in three tabs on the edges (as in clothes for old-fashioned paper dolls) and cut around the tabbed outline. Layer these over the original, folding the notches over the card to hold the layers together. Alternatively, they may staple the three layers together.
5. Display students' work.

Conclusion:

- What do students notice about the work?
- Which layer do students find most interesting—internal or external? Why?
- Is accuracy important? Why or why not?
- If another layer were to be added, what would it be?

VOCABULARY

abstract: a style of art that can be thought of in two ways:

- a) the artist begins with a recognizable subject and alters, distorts, manipulates or simplifies elements of it;
- b) the artist creates purely abstract forms that are unrecognizable and have no direct reference to external reality (also called non-representational art).

conceptual art: art in which the ideas behind the creation of the work are more significant than the end product. During the 1960s and '70s, conceptual artists rejected the idea of the unique, precious art object and focused on intellectual explorations into artistic practice.

contemporary: created in the last thirty years. Most contemporary artists are living artists.

installation: art that is created from a wide range of materials and installed in a specific environment. An installation may be temporary or permanent. The term came into wide use in the 1970s, and many installation works were conceptual.

minimalist art: a type of abstract art that emphasizes extreme simplification of colour and form and often includes geometric shapes.

performance art: works in any of a variety of media that are performed before a live audience. The performance itself, rather than a specific object, constitutes the artwork. Documentation is often an important part of the performance.

site-specific: created for a particular site or venue; usually the work is destroyed by the process of dismantling it.

RESOURCES

Print:

- Brucker, Gene Adam. *Florence, The Golden Age, 1138–1737*. Berkeley: University of California Press, 1998.
- Hatoum, Mona. *Mona Hatoum (Contemporary Artists)*. London: Phaidon Press, 1997.
- Herbert, Janis. *Leonardo da Vinci for Kids: His Life and Ideas, 21 Activities (For Kids Series)*. Chicago Review Press, 2003.
- Hutchinson, John. *Antony Gormley*. London: Phaidon Press, 2000.
- Kemp, Martin. *Leonardo*. Oxford University Press, 2004.
- Plumb, J.H. *The Italian Renaissance*. Boston: Mariner Books, 2001.
- Smith, Annie. *Getting Into Art History*. Toronto: Barn Press, 1993.

Online:

www.artcyclopedia.com

Online art encyclopedia, listing international artists, and museums and galleries with collections of their work.

www.wikipedia.com

Online dictionary and encyclopedia, created collaboratively by laypeople.

www.cybermuseum.ca

Canadian Art Education and research site featuring artists' images and educational materials.

<http://www.museoscienza.org/english/leonardo/>

<http://www.mos.org/leonardo/bio.html>

Additional information can be found by Googling individual artists.