

## Dear Educator,

Thank you for booking a Science of Art tour with the Museum of Glass: International Center for Contemporary Art. We look forward to your visit!

We're sending you this curriculum to help enhance the visit for you and your students. These activities have been carefully prepared to go with the exhibit you will visit. We strongly encourage that you spend some time with the packet before your visit. We've found that students understand and learn so much more if they're prepared before they come.

Along with this packet, we have extensive curriculum on our website about glass blowing and working with hot glass as an art form. Please visit [www.museumofglass.org](http://www.museumofglass.org) and click "Education" on our home page. From there, visit the School of Glass and Virtual Hot Shop. There are several lessons including interactive quizzes about many glass-related topics. At the Virtual Hot Shop your students will get a chance to experience glass blowing by creating a *macchia*. Participants walk through the process step-by-step until they get a finished work of art! Along the way they can also choose to read more and view video clips of the process live.

We sincerely hope you enjoy these materials and your visit to the Museum of Glass: International Center for Contemporary Art.

# **The Brain, Movement and Art**

## **Featuring *Karen LaMonte: Absence Adorned***

### ***EALRs and GLEs:***

#### **Science:**

1. The student understands and uses scientific concepts and principles
  - 1.1.6 Determine Relationships among Organisms by Analyzing Structural, Cellular, Biochemical, and Genetic Characteristics
  - 1.2.1 Structure of Physical Earth/Space and Living Systems
  - 1.2.2 Analyze Energy Transfers and Transformations within a System
2. The student knows and applies the skills and processes of science and technology.
  - 2.1.1 Questioning
  - 2.1.2 Planning and Conducting a Safe Investigation
  - 2.1.4 Analyze how Physical, Conceptual, and Mathematical Models are used in Investigations
  - 2.1.5 Communicating
  - 2.2.3 Evaluating Inconsistent Results
  - 2.2.4 Evaluating Methods of Investigation
  - 2.2.5 Analyze Scientific Investigations for Validity and Reliability
3. The student understands the nature and contexts of science and technology.
  - 3.2.2 Analyze How Scientific Enterprise and Technological Advances Influence and are Influenced by Human Activity
  - 3.2.3 Careers and Occupations using Science, Mathematics and Technology

## The Arts:

1. The student understands and applies Arts knowledge and skills in visual arts, dance, theater and music.
  - 1.1 Understand Arts Concepts and Vocabulary  
Including secondary dance benchmarks:
    - Demonstrates sustained and percussive movement (energy)
    - Demonstrates a range of efforts actions, such as glide, float, flick, dab, punch, slash, wring, and press (energy)
    - Identifies and uses syncopation (time)
    - Creates simple dances in solo and small groups
    - Choreographs and improvises within a given style of dance
  - 1.2 Develop Art Skills and Techniques  
Including secondary dance benchmarks:
    - Demonstrates precision in locomotor and non-locomotor movement
    - Maintains correct alignment while moving
  - 1.3 Understand Art Styles from various Artists, Cultures, and Times
  - 1.4 Applies Audience Skills in a Variety of Arts Settings and Performances
2. The student demonstrates thinking skills using artistic processes
  - 2.1 Apply a Creative Process in the Arts  
Including secondary dance benchmarks:
    - Applies previously learned arts concepts, vocabulary, skills, and techniques through a creative process, both with instructor assistance and individually
  - 2.2 Apply a Performance Process in the Arts  
Including secondary dance benchmarks:
    - Applies previously learned arts concepts, vocabulary, skills, and techniques through a performance process, both with instructor assistance and individually
  - 2.3 Apply a Responding Process to an Arts Presentation  
Including secondary dance benchmarks:
    - Applies previously learned arts concepts, vocabulary, skills, and techniques through a responding process, both with instructor assistance and individually

3. The student communicates through the arts.
  - 3.1 Use the Arts to Express and Present Ideas and Feelings
  - 3.2 Uses the Arts to Communicate for a Specific Purpose
  - 3.3 Develops Personal Aesthetic Criteria to Communicate Artistic Choices
4. The student makes connections within and across the arts, to other disciplines, life, cultures, and work.
  - 4.1 Demonstrate and Analyze the Connections among the Arts Disciplines
  - 4.2 Demonstrate and Analyze the Connections between the Arts and other Content Areas
  - 4.3 Understand How the Arts Impact Lifelong Choices
  - 4.4 Understand that the Arts Shape and Reflect Culture and History
  - 4.5 Demonstrate Knowledge of Arts Careers and the Role of Arts Skills in the World of Work

**Reading:**

1. The student understands and uses different skills and strategies to read.
  - 1.1 Use Word Recognition Skills and Strategies for Reading and Comprehension
  - 1.2 Use Vocabulary Skills for Comprehension
  - 1.3 Build Vocabulary
  - 1.4 Apply Word Recognition Skills and Strategies to Read Fluently
2. The student understands the meaning of what is read.
  - 2.1 Demonstrate Reading Comprehension
  - 2.2 Understand and Apply Knowledge of Text Components to Understand Text
  - 2.3 Analyze, Interpret, and Synthesize Information and Ideas to

## Expand Comprehension

3. The student reads different materials for a variety of purposes.

3.1 Read to Learn New Information

3.2 Read to Perform a Task

## **Communication:**

1. The student uses listening and observation skills to gain understanding.

1.1 Focus Attention

1.2 Listen and Observe to Gain and Interpret Information

1.3 Check Understanding by Paraphrasing and Asking Questions

2. The student communicates ideas clearly and effectively.

2.4 Use Effective Language and Style

2.5 Support presentations Using Action, Sound, and/or Images

3. The student uses communication strategies and skills to work effectively with others.

3.1 Interact Effectively and Responsibly with Others using Language

3.2 Work as a Cooperative Group Member

3.3 Seek Agreement and Solutions through Discussion

## **Pre-visit Teacher Resources**

**Karen LaMonte: *Absence Adorned*  
December 10, 2005 to September 4, 2006**

Karen LaMonte (American, born 1967) received her BFA in 1990 from the Rhode Island School of Design. She has been the recipient of numerous awards, including a Fulbright Grant and a Biennial Award from The Louis Comfort Tiffany Foundation. In 2004, she had a solo exhibition of her work at the Czech Museum of Art, and her work is represented in the permanent collections of the National Gallery of Australia, the Fine Arts Museum of San Francisco, M. H. de Young Memorial Museum, The Corning Museum of Glass, and the Chrysler Museum of Art.

### **Early Works**

Karen LaMonte holds a leading place among a new generation of artists using glass in large-scale sculptural work. Her sculpture demonstrates the force of an artistic vision perfectly matched with technical achievement. LaMonte's earlier interest in marionettes and the theater led to her focused examination of the dress as an art historical subject, but it was in 1991 shortly after her move to the Czech Republic that she cast her first dress in glass.

Karen LaMonte first went to Prague on a Fulbright in 1999, to explore the possibility of using monumental cast glass in her work. She currently lives and works in Prague, Czech Republic, with her endlessly patient husband, Steven Polaner.

### **Absence Adorned**

Always reinterpreting and reinventing her subject, LaMonte has, over the years, meticulously refined her exquisite visual vocabulary. Presented here for the first time, her most recent works signal a pivotal shift in approach as her mastery of draping and highly developed casting technique impart added emotion and vitality to her sculptures. Cast from live models of varying ages, the figures within her next generation of dresses evoke a broad spectrum of emotions as they languish solemnly or recline seductively like odalisques. Recalling the Hellenistic tradition of strategically concealing and exposing the body that has inescapably influenced our notions of female beauty and modesty, LaMonte openly admits to mining art and fashion history in search of the most superb and iconic examples of how fabric has been rendered. In this way, her work is intrinsically concerned with the intersection of many traditions, encompassing fashion and theatre as well as art and nature.

As Karen LaMonte deepened her investigation of costume and fabric beyond its role as an emblem of wealth and luxury, Gian Lorenzo Bernini's Baroque masterpiece, *Ecstasy of Saint Theresa* (1645–1652, Santa Maria della Vittoria, Rome), became a significant inspiration. Bernini's bold sculpting of textural folds forms a crescendo that for LaMonte amplifies the erotic intensity of the saint's swooning desire for a divine union with God. With her masterful yet delicate investigation into cloth's evocative capacity to express intensity, LaMonte brings a fresh sense of life to her figures that have moved beyond their still perfection to reveal a more expansive maturity.

### **Cast Glass Antique Mirrors**

While glass is Karen LaMonte's primary medium, she frequently incorporates both photography and printmaking processes in her work, innovatively combining different media to elaborate her conceptual ideas. Like her dresses, her recent series of cast-glass antique mirrors presented here directly address our culture of vanity where the mirror tells us who we are and how we fall short of the stylized perfection of images in the media. She created the portraits by casting the glass and then sandblasting the images, using a photo-resist process made for transferring portraits of the deceased onto gravestones. By juxtaposing human expressions and the painted face of a clown, who as an outlandish performer is human, yet not quite human, the artist brings a lively sense of irony and artifice into her own carefully crafted theater.

### **Sartoriotype**

Karen LaMonte has also developed a special version of the monotype print she calls a "sartoriotype." The articles of clothing themselves were printed directly onto translucent paper that is hypersensitive to texture, so that the physical construction of the garment, in every detail of its texture, seams, and wrinkles, reveals itself on paper with almost radiographic exactness. Here too, the figure we sense beneath the artist's glass gowns appears, evoking a subtle suggestion of ghostly presence as traces of the dress's wearer are alluded to.

### **About the Exhibition**

Extending the metaphor of clothing as a boundary to the context of her exhibition at the Museum of Glass, the artist is creating a theatre curtain in cast glass. The monumental work will be installed at the entrance of the gallery creating a physical threshold between reality and fantasy through which the spectator will pass. Beyond the folding swathes of the glacial curtain, the exhibition will feature eight to ten recent works from her ongoing dress series, *Absent Impressions* (2002 to present), as well as works in other media. While glass is LaMonte's primary medium, she frequently incorporates both photography and printmaking processes in her work, innovatively exploring different media to elaborate her conceptual ideas. The result is a solid and seamless system of different

approaches, as in her recent series of cast glass antique mirrors, which combine portraits she photographed herself with a sandblasting photo-resist process made for transferring portraits of the deceased onto gravestones. LaMonte has also developed a special monotype in which articles of clothing are printed directly onto translucent paper that is hypersensitive to texture. The physical construction of the garment and its texture, seams, and wrinkles reveal themselves on paper with a radiographic quality, while its history remains an allusion, much like the figure beneath the dress of her sculptures.

The Museum of Glass exhibition will be the first solo museum exhibition in the United States of this interesting and complex young artist, whose work reflects a sophisticated American probing into social and gender issues, but is as broad and enigmatic as that of any of her European contemporaries.

In this curriculum, we are going to learn how the brain controls our ability to produce movement. Our exploration of movement will cover a range of “kinds” of movement, from reflexes to posture and from locomotion to repetitive movement to voluntary movement. We will then experience and explore the nuances of each of these kinds of motion across the spectrums of time, space, and energy. We will do this through observation and by experiencing movement in our own bodies. Throughout the entire curriculum, we will explore the connections to glass art – the motions needed to create a piece of glass art and the motions captured frozen in time reflected in glass art, such as that produced by **Karen LaMonte**, whose work will be featured at the Museum of Glass during your visit.

This document is divided into five sections: a pre-visit curriculum for the classroom; a description of the activities planned for the museum visit (in the studio, gallery, and theatre); pre- and post-visit assessment questions; references for additional information; and, an appendix with supporting information.

# Pre-Visit Materials for the Classroom

The brain has special mechanisms for controlling each of four kinds of movement.

- **Reflexes** – are the automatic responses that occur when you pull your hand away from a hot surface, kick when the doctor taps your knee, or hop when you step on a sharp object.
- **Posture** – is determined by the total activity of the gravity-opposing (extensor) muscles; slouching makes these muscles weak!
- **Locomotion** – is the rhythmic coordinated motion required to walk, skip, jog, run, crawl, swim, or bike (or any number of other verbs you can think of, in any number of species!) from place to place.
- **Voluntary movement** – is any purposeful motion of the body, which may be in combination with, but is separate from, the three categories above. An example of this would be throwing a basketball while you are running, or writing while sitting at a desk.

Each kind of control begins at a different level in the organizational hierarchy of the brain.

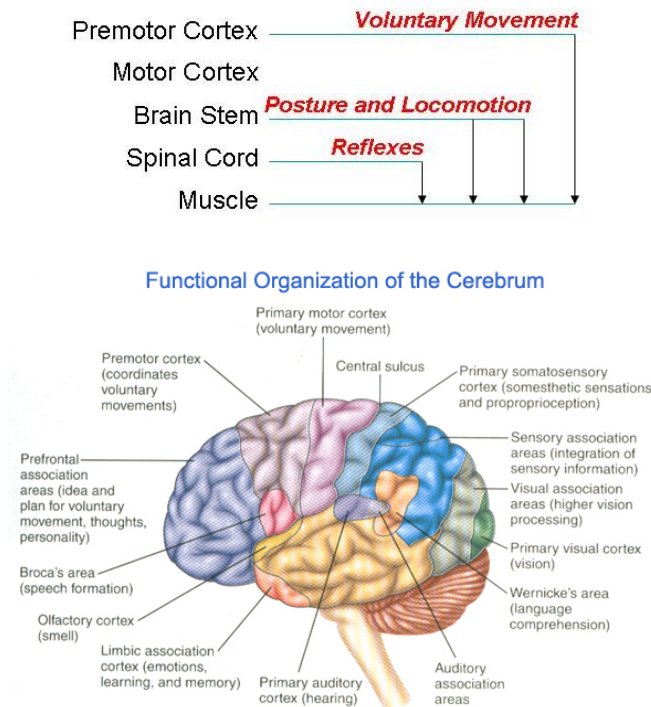


Figure 1: Sections of the Brain

All movement is ultimately executed by our muscles, so let's start by understanding how muscles work. A muscle fiber is a cell that can quickly and powerfully contract its length. The range of tension that the contraction of these cells can produce ranges from 0.1 g in an eye muscle to 50 g in a limb muscle. These cells use calcium to power the molecular machinery behind the contractions, so if you want to be strong, there is a very good reason for getting enough calcium every day through a good diet.

Groups of muscles work in pairs known as flexor/extensors. (You may recall that extensors are the kind of muscle groups that oppose gravity, and are active to obtain a good posture.) The contraction of one group must be accompanied by the relaxation of the other. For example, consider the relationship between your biceps and triceps – they cannot both be flexed at the same time! This coordination, takes place in the spinal cord. The dynamic interaction between the length and tension within these opposing groups, results in a change in joint angle, within the range of motion allowed by that kind of joint.

Type of Joint	Example
Ball and Socket	Shoulder, Hips
Hinge	Knee, Elbow
Gliding	Wrist, Ankles
Immovable (Fixed)	Skull
Sliding	Back
Pivot	Neck

Table 1: The six kinds of joints found in the human body

**Time out!** Take a few minutes to explore the range of motion that you experience with each of these five kinds of joints in your own body. What kinds of movements are made possible with each different type of joint? What range of motion makes each kind of joint unique? You might want to refer to a diagram or model of a skeleton to help you visualize and compare ranges of motion. For extra credit, consider how you might classify fingers and toes, and why?

The spinal cord is where the neurons activating the muscles originate. These neurons are known as segmental nerves because they extend from the spinal cord via the gaps, or segments, in between the vertebrae of the spine. One nerve may activate many muscle fibers (small 3-10; large 200), but each muscle fiber can only be activated by one nerve. To generate a stronger muscle contraction, these nerves can either recruit more muscle fibers and/or they can increase their activation rate.

The spinal cord is also home to some interesting neural circuitry. In particular, reflexes, coordination between flexor/extensor pairs, and central pattern generators exist at this level.

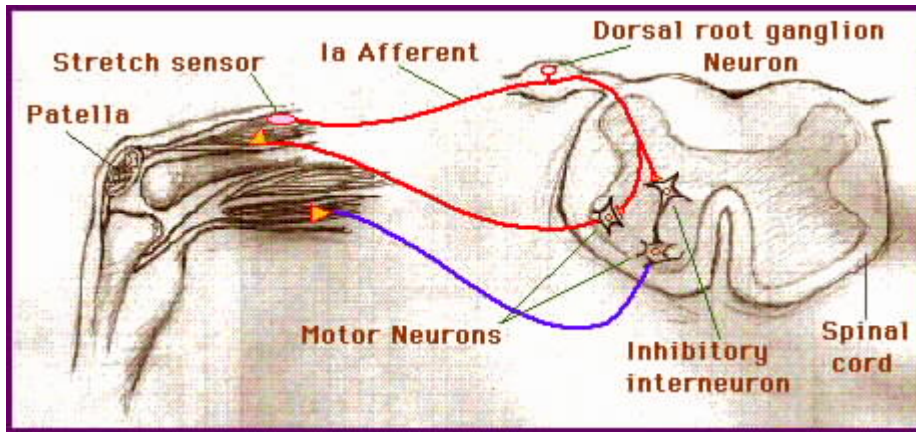


Figure 2: The knee jerk reflex circuit

The knee jerk reflex is a well known example. Tapping the knee cap (*patella*) pulls on the tendon of the *quadriceps femoris*, which is an extensor muscle that extends the lower leg. When the muscle stretches in response to the pull of the tendon, information regarding this change in the muscle length is conveyed by the afferent sensory neurons to the spinal cord. In the spinal cord, these sensory neurons act directly on motor neurons that contract the quadriceps. By the same token, they act indirectly through inhibitory interneurons, to stop motor neurons that contract the flexor *hamstring muscle*. Thus, the degree of activation between flexor/extensor pairs can be directly coordinated by an incoming sensory response.

The sensory neurons also transmit a signal to projection interneurons that transmit information about the local neural activity up the spinal cord to higher regions of the brain concerned with perception. But because it takes less time for the reflex to occur that it does for the signal to travel to your brain and be perceived and processed, you can only become aware of a reflex after the event has happened!

**Here is a weird fact** - Because reflexes are controlled exclusively by the spinal cord, they continue to exist after decapitation or severe spinal cord injury.

*Central pattern generators* are another kind of circuit located in the spinal cord. In response to a signal from the brain stem, this circuit generates a rhythmic cycle, alternating activity between the left and right side of the body, while coordinating the flexor/extensor activity between muscle groups on the same side of the body. The strength of the signal determines the gait (ex. walk, jog, run).

In addition to sending signals down the spinal cord to control locomotion, the brain stem is continuously sending a strong background signal to the extensor muscles to maintain posture. When we talk about reading someone's *body language*, we are acknowledging that associative areas of the brain have an influence on the posture function in the brain stem such that we often reveal to

others how we feel or think, through the way we hold our bodies.

**Stop!** Examine your posture this very instant. Is your back straight? Are you reclining? What attitude does your posture convey (ex. relaxed, attentive, bored)? Did you intend to send this message? Try changing your posture. How does the change make you feel?

The motor cortex is the next higher level of organization in the brain's motor pathways. Neurons in the motor cortex are arranged in an out-of-proportion map of the body, where larger areas of cortex are committed to areas requiring fine control, such as the hands and mouth. Also, because of the ways that the wires cross during development, the right side of the brain controls the muscles on the left side, and vice versa!

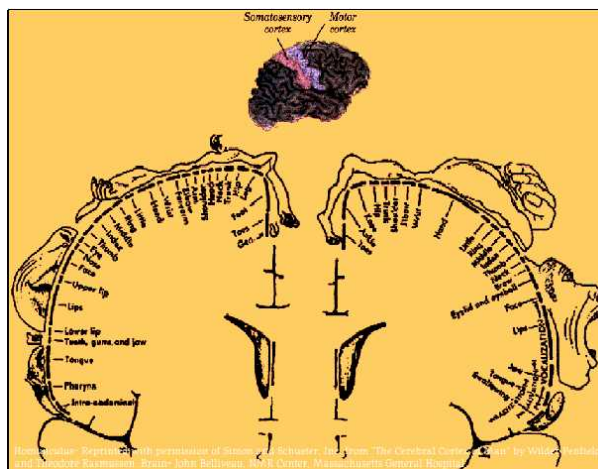


Figure 3: The left and right sides of the brain

Voluntary movement consists of acquiring a target in space, planning the action, and coordinating sequences of patterned muscle group activation. This also happens to be the purpose of the *premotor cortex*. Brain scans show a lot of activity in this area of the brain even when you just think about movement. From other imaging studies, it also appears to be the case that once you learn a sequence of movements very well, the amount of the cortex that needs to be activated to perform the movement gets smaller. The stronger skill you acquire, the less brain you need to use to perform! (This also means that repeated practice, including visualization or “armchair rehearsing” will help in the acquisition of motor skills, and choreography.)

It is still not completely understood how learning causes this change in the *premotor cortex*. However, the current theory is that the *cerebellum* compares actual motion with intended motion and sends a complex error signal back to the cortex to try to minimize the difference.

Sensory information has the ability to impact the signals encoding motion at all

levels, from reflexes in the spinal cord to learning motor patterns in the cortex. The higher the level of organization, the easier it is to filter the sensory information. For example, it would be difficult to block the reflex to draw back if you unexpectedly touched a piece of hot glass. However, we know that firewalkers are able to perform their amazing feats by training themselves to ignore and overcome sensory information.

Similarly, the body learns to naturally shape itself according to the physical task at hand. For example, how would you prepare to lift a feather, vs. a heavy stone? Each action elicits an appropriate adjustment in preparation for the amount of corresponding effort required to complete the task. This becomes important to remember when trying to execute difficult movement sequences, lest we “over-recruit” unnecessary muscles for the given task.

In addition to pain receptors, the body uses many other kinds of sensory information:

- **Proprioceptors** – Some of these sensory receptors are located at the endings of muscle fibers where they connect to the tendon, and other kinds are mixed in along the length of the muscle fibers. They provide feedback about the position of the body in space, angles of joints, length and tension of muscles, and velocity of stretch.
- **Mechanoreceptors** – These sensors provide information concerning pressure. Have you ever tried to walk on a leg that has fallen asleep? Without this feedback concerning pressure, the brain doesn’t know how much tension the muscle needs to overcome gravity.
- **Vestibular system** (inner ear) – This system provides information concerning the position and motion of the head
- **Visual and auditory cues** – In addition to the obvious benefits of sight and sound, the brain uses the differences between the signals from the left and right sides of the body to create a 3D map of space and to locate oneself and external objects within this space.

**Stop!** Try this short progression of exercises to stimulate your proprioceptors:

- Stand on two legs with your eyes open and look at something directly in front of you
- Now stand on one leg and look at something overhead
- Now shift your weight to the other leg while looking forward
- Now close your eyes and stand on both feet
- Now lower your body in space by flexing your knees forward over your feet while keeping your eyes closed
- Now reach your arms wide to shoulder height, raise your body in space by extending your knees and rise up onto your toes.
- Now as you lower your arms also lower your heels, returning to both feet again and open your eyes

Did you feel yourself “recruiting” more muscles than were needed to execute the different tasks?

Can you explain the change that occurred in your body after closing/opening your eyes?

In the exercises that follow, spend some thinking about how you experience and produce motion. Now that you understand the science behind how the brain works, you can put names onto the sensations you experience and the pathways of feedback and control that allow your thoughts to exert your will as body movements.

## Pre-Visit Activities

### People Watching Study

For this assignment you will need to conduct an observation of a public space, such as a town square, park, cafeteria, or shopping center. Your goal will be to identify the different types of movement that take place in that setting. For this exercise to be most effective, you must select a site, and stay in one place for *at least* 30 minutes. While watching you will record your observations by describing what you see. Some questions to consider include:

- What kinds of movement do you see?
- What parts of bodies do you see moving?
- What movement qualities (the dynamic or physical “flavor” of movements, revealing the defining characteristics of them in terms of time/space/energy - e.g. quick, jagged, loose, stiff, free, wide, narrow, high, flowing, lumbering, weighted, floating, or smooth) do you see represented in a particular individual? In a group? In an inanimate object?
- What is the speed or tempo of the movement(s) you observe?
- What kinds of pathways are people moving in? Directions? Levels in space?
- What quirky physical characteristics make people’s movements similar, or different?
- What are the variations in the shapes and sizes of bodies?
- What other things do you see moving? Animals? Machines? Trees?
- How is movement framed or organized by the architectural or structural elements of the space you’ve chosen?
- How does your perception of movement change when you focus on an individual object or on the whole scene at once?
- What movements of your own do you notice while observing others?
- Are you able to “sense,” in your own body, any of the movements that you witness?
- Feel free to make sketches a part of your observations.

A movement phrase is a basic unit of choreographic material. It can be thought of as a sentence, or a sequence of connected movements consisting of a clear beginning, middle, and ending (e.g. vigorously wave your hand overhead, bend down to touch the ground, turn around quickly to look over your shoulder, stumble over your own foot, swat at something)

- Once you have made your list from people watching, select 5 movements from your notes and “embody” them by creating a short movement phrase or sequence, connecting them together as you would a string of beads.
- Practice performing your phrase in your own body. You should be able to repeat the sequence more than once, and know it well enough to teach it to another person.

After completing the exercise you might discuss your response to the following questions:

- What did you learn from this exercise?
- What difficulties did you experience in completing it?
- How has the exercise altered the way you think about movement?

**Stop!** Let's make a spontaneous movement response phrase. Look around you and find three different objects. Now make shapes with your whole body that relate to one characteristic of each object you see. For example, if you see a broom handle, stand up rail straight; then if you see a small ball, shape your body into as tight and round a position as possible (including your legs and back); finally if you see a banner waving in the breeze, stand on one leg and slowing ripple your arm and free leg, assuming the motion of the banner. Now perform each of these three motions in sequence, right after the other, paying close attention to *how* you move from one idea to the next. Can you repeat the sequence exactly the same, qualitatively, each time? Try to do more than just making a series of static shapes. This is an example of how you can make a short movement phrase in response to the simplest animate or inanimate objects.

**Homework!!!** Make a variation on your movement phrase. Pick two items from the list of "Choreographic Tools," for example, *augmentation* and *repetition*. Change your movement response phrase by making each of your movements huge. Take up as much room as you can with each motion. Then repeat the original movement sequence three times, taking up progressively more space with each repetition. This process should reveal to you how you can begin to develop even simple movement material to your own choreographic design. Referring to the list of choreographic tools, can you imagine manipulating your or material in even more and interesting ways?

- Study the enclosed images from *Karen LaMonte: Absence Adorned*.
- Select an image that you particularly like.
- Investigate the sculpture by viewing it, contemplating it, and recording your thoughts, impressions, and observations in a journal. (See the list of guiding questions below.)
- Remember that you will be creating a movement response to this piece, so think about the way the figure might move.

Bring this journal to the Museum with you to help you in your activities there. You may also want to add to your observations after seeing the piece in person.

**Homework!!!** Look-up and discuss the meaning of the terms *abstraction*, *aesthetics*, and *form* prior to visiting the Museum.

## At the Museum of Glass

### Movement Response Project

This assignment requires you to work analytically and creatively. I hope that you did your homework, because the purpose of the project is for you to explore *abstraction, aesthetics, and form* in art by creating an original movement response\* to one of Karen LaMonte's sculptures exhibited at the Museum of Glass. In addition, the project asks you to consider how visual art and movement relate. (*\*As you have experienced for yourselves, a movement response is simply a sequence of your own movement inventions, shapes, actions, and physical ideas put into motion and inspired by an outside stimulus, in this case the sculpture of Karen LaMonte.*)

- First, you will select one of the sculptures viewed in the Karen LaMonte exhibit at the Museum of Glass (most likely the one you studied in class before the visit).
- Second, you will investigate the sculpture by viewing it, contemplating it, and recording your thoughts, impressions, and observations in a journal. (See the list of guiding questions below.) If you did this in advance, you will be ahead of the game. Students will not have much time for this onsite unless they visit the gallery during the first rotation.
- Third, you will create your own, entirely original movement response to the sculpture you selected. Your work may draw on lines, shapes, movements, volumes, and anything seen in the sculpture. Think broadly, and be creative!

Questions to consider as you view the sculpture and as you develop your movement response:

1. What movement does the form suggest to you? What movement do you see depicted in the sculpture?
2. What movement might have preceded the one you see in the sculpture?
3. What movement might have followed the one you see in the sculpture?
4. What kinds of lines do you see in the sculpture? Can you make those lines using part of your body? Using your whole body?
5. What volumes and/or shapes do you see in the sculpture? Can you make some of these using part(s) of your body? Using your whole body?
6. What kinds of movements do you imagine were used in the making of this sculpture? Can you recreate them in your own body?
7. What tempo does the sculpture suggest to you? Can you perform your movements in this tempo, consistently? Can you change the tempo of your movement so as to contrast what you see in the sculpture?

8. What space do you imagine surrounding the figure depicted in the sculpture?
9. What happens when you change the facing and/or direction of your movements?
10. What happens when you perform your movements in another level of space (i.e. on the ground, or jumping in the air)?
11. What parts of your body are working differently, and *how* are they doing so when you modify and or manipulate your movements in terms of time, space, and energy?

After you have created your movement responses, each student will perform their piece for the class.

If there is time, interview your peers regarding their work, focusing primarily on their respective processes, movement choices, and intentions, rather than on the viewers' responses.

## Post-Visit Activities

This project combines several elements from the People Watching Study and the Movement Response Project.

**Preparation:** review the list of vocabulary terms related to choreography

### The Glassblower's Dance: A Creative Response Project

This assignment requires you to work analytically and creatively. The purpose of the project is for you to practice your observation skills, exercise your imagination, and create an original movement response\* to the movements of the artists working in the Hot Shop at the Museum of Glass. The project asks you to consider how movement is used in the creation of visual art works, and how this process relates to dancing. (*\*Remember that a movement response can be a simple, or complex, sequence of your own movement invention, in which you decide how to use your whole body to carry out various physical ideas in motion.*)

The project consists of three parts.

- First, you will observe and “catalog” the movements of the individuals working in the Hot Shop during your visit. (See the list of guiding questions below)
- Second, you will select five movements from those you observed and you will perform them in your own body, creating a unique movement sequence. This is your “seed” material.
- Third, using one or two of the choreographic devices from the list you reviewed in an earlier homework assignment (where you created a variation on a movement phrase), you will manipulate your material to create an entirely original movement response to the work you observed in the Hot Shop.
- You may draw on lines, shapes, pathways, movements, volumes, and any other movement related information from your observation. Think broadly, and be creative!

Questions to consider as you view the artists working in the Hot Shop and as you develop your movement response:

1. What kinds of movement do you see?
2. What parts of bodies do you see moving?
3. What movement qualities do you see represented in a particular individual? In a group? In an inanimate object?
4. What is the speed or tempo of the movement(s) you observe?
5. What kinds of pathways are people moving in? Directions? Levels in space?

6. Describe the near, middle, and far space that surrounds the figures moving in the Hot Shop?
7. How is movement framed or organized by the architectural or structural elements of the space?
8. What movements of your own do you notice while observing others?
9. Are you able to sense, in your own body, any of the movements that you witness?
10. What kinds of lines do you see in the moving bodies? Can you make those lines in your own body? Can you make them using other parts of your body? Using your whole body?
11. What volumes and/or shapes do you see? Can you make some of these using part(s) of your body? Using your whole body?
12. Can you change the tempo of your movement so as to contrast what you see in the Hot Shop?
13. What happens when you change the facing and/or direction of your movements?
14. What happens when you perform your movements in another level of space (i.e. on the ground, or jumping in the air)?
15. Can you imagine continuing your movements in an ever-evolving sequence?

***Additional activities related to this project for the classroom—***

- Watch one another's movement studies and then interview your peers regarding their work, focusing primarily on their respective processes, movement choices, and intentions, rather than on the viewers' responses.
- Finally, the class as a whole could decide how to arrange the various studies in space in order to perform them all simultaneously, or in some other creatively arranged fashion. This can be an exciting way to reveal the power of many bodies working together toward executing a common choreographic goal.

**Pre- and Post-Visit Assessment Questions**

The following questions could be considered and discussed collectively, or in private reflections both before and after the Museum visit.

- Who is the artist whose work will be featured at the Museum of Glass during your visit?
- What are the four kinds of motion that the brain controls?
- What is the difference between these kinds of motion?
- Why do muscles need calcium?
- What are the different kinds of joints in the human skeleton?
- What are the various ways in which these joints can be moved?
- What causes a change in joint angle?

- Which kinds of circuits control motion in the spinal cord?
- What kind of motions does the brain stem control?
- What is unusual about the representation of the body in the motor cortex?
- What part of the brain plans movement?
- What kind of sensory information is the most important in providing feedback during movement?
- What is one movement from each of the four categories of movement (reflex, posture, locomotion, voluntary) that you do on a daily basis?
- What are the movement patterns that are most common to you during your day-to-day routine?
- What are some of the movement patterns that are most common to someone in another profession?
- Does your daily routine reflect a full use of your body's movement potential?
- Are you using the full range of motion that the body is designed to be able to accomplish?
- Can you imagine changing your daily routine in order to use your body in a different way? If so, what practical steps could you take toward making this happen?
- What is dance?
- What do dancers do?
- How are dancers different from athletes?
- Where do you see dance?

***For more information:***

On of the best places on the web to find more interesting facts and activities about neuroscience: <http://faculty.washington.edu/chudler/neurok.html>

Principles of Neural Science, 3rd Edition (2000) Kandel et al  
ISBN: 0838577016

Review of Neuroscience, 2<sup>nd</sup> Edition (1988) Pansky et al  
ISBN: 0-02-390611-1

The Anatomy Coloring Book, 3<sup>rd</sup> Edition (1977) Wynn Kapit & Lawrence M. Elson,  
Benjamin Cummings Publishers, New York. ISBN: 0805350861

Human Movement Potential: Its Ideokinetic Facilitation (1974) Lulu E. Sweigard,  
Ph.D., University Press of America, Lanham. ISBN: 0060465212

For an in-depth exploration of the fundamental elements of dance as set forth by one of our nation's modern dance legends, take a look at *Dance as an Art Form*, a five-part video series directed and narrated by Murray Louis. Available through Dance Horizons ([www.dancehorizons.com](http://www.dancehorizons.com)), the material may look dated (filmed in 1973), but it represents a rich and engaging volume of resources.

## Choreography Vocabulary and Glossary

Movement is the gross or general pattern of action, and motion the inner itinerary that qualifies it and distinguishes it as dance. All creatures, human and otherwise, move; but anyone who can apply their sentient facilities towards sensing the motion transpiring through their movement, dances.

*-Alwin Nikolais (1910-1993)*

### Choreography Vocabulary

Below are some basic concepts and terminology relating to the choreographic process. This is not a comprehensive list, but does provide some items for consideration in initial stages of composing dances.

#### Choreographic Elements:

*Time* – e.g. duration, tempo, clock time, natural time

*Space* – e.g. pathway, level, kinesphere (near-far space continuum)

*Energy* – e.g. light, strong, bound, free

#### Choreographic Tools:

Below is a list of devices that may be employed when developing and manipulating movement material.

**Augmentation** – increase in size, make bigger and/or slower in time

**Diminution** – decrease in size, make smaller and/or faster in time

**Repetition** – reiteration of a movement or phrase

**Acceleration** – speeding up, or faster

**Deceleration** – slowing down, or slower

**Mirroring** – view movement in a different way by changing the facing or side of the body where the movement is performed

**Isolation** – *take one aspect of a phrase and separate it from the rest, pare down*

**Inversion** – invert the shape: what goes up comes down; what widens out narrows in; what advances forward retreats

**Transposition** – swapping movement from one part of the body to another part

**Transformation** – change the quality of the movement &/or the rhythm

**Retrograde** – backwards; in reverse sequential order

**Accumulation** – a sequential repetition that begins at a specific point in a phrase and gradually adds material to it, going back to the starting point each time (e.g. 1; 1, 2; 1, 2, 3; 1, 2, 3, 4; etc.)

**Insertion** – insert new material in original phrase, highlighting what you have by bringing in high contrast

**Fragmentation** – cut and re-splice original phrase

**Embellishment** – a small movement, which highlights another movement (e.g. a flick of the wrist at the end of an arm gesture)

**Canon** – in a round, to overlap different elements of the same phrase, using two or more dancers, as in “row, row, row your boat...”

**Unison** – synchronized, the same phrase performed by various dancers at the same time; lends force to the phrase

**Development** – manipulation of a movement phrase by developing it from the original, evolving a movement idea

**Stillness** – absence of movement; a powerful device, which can create resonance

### **Choreographic Forms/Structures:**

These are only a few examples of basic forms used to provide structure in a dance. The forms are very similar to those used in music composition. Keep in mind there are myriad ways to organize your choreographic ideas. What other structures can you invent for organizing your own movement ideas?

**ABA** – a basic compositional structure in which a primary theme is introduced, followed by a contrasting section, and concludes with a return to the original theme, often revealing nuance or interest because of this juxtaposition.

**Rondo (ABACADAE...)** – a compositional form in which the main theme is repeated between at least two sections that contrast with it. In music this often forms the last movement of a sonata.

**Theme & Variations** – a compositional form in which a primary theme is developed and altered in numerous ways, often leading to new and unexpected material, sometimes with great complexity.

### **Rudolf von Laban’s “Efforts”:**

These are basic elements of all movements and movement sequences. Identifying them can be useful in the learning of movement as well as in manipulating existing movement phrases or choreography.

1) **Time** – sudden/sustained

When addressing time it involves awareness of *duration* in motion as well as rhythm and pacing

2) **Space** – direct/indirect

When addressing space it involves awareness of *focus*, how one “uses” near, middle, and/or far space, as well as direction, level, and scale

3) **Weight** – strong or heavy/light

When addressing weight it involves awareness of the *sensibility* of a motion, the dancer's relationship to gravity, as well as the energy needed to produce a desired effect

4) **Flow** – bound/free

When addressing flow it involves awareness of *resistance*, *relative ease* of movement, and continuity in motion

## ***Appendix on Anatomical Directions/Positions/Terminology***

(From The Anatomy Coloring Book, Wynn Kapit & Lawrence M. Elson, Harper Collins Publishers, New York, 1977)

<b>Cranial/superior</b>	refers to a structure being closer to the head or higher than another structure in the body
<b>Caudal/inferior</b>	refers to a structure being closer to the feet or lower than another structure in the body
<b>Anterior/ventral</b>	refers to a structure being more in front than another structure in the body
<b>Posterior/dorsal</b>	refers to a structure being more in back than another structure in the body
<b>Medial</b>	refers to a structure being closer to the median plan than another structure in the body
<b>Lateral</b>	refers to a structure being further away from the median plane than another structure in the body
<b>Distal</b>	employed with reference to the limbs only – refers to a structure being further away from the median plane or root of the limb than another structure in the limb (such a structure would ordinarily be inferior to the other)
<b>Proximal</b>	employed with reference to the limbs only – refers to a structure being closer to the median plane or root of the limb than another structure in the limb (such a structure would ordinarily be superior to the other)

## ***Movement Descriptors and Terminology***

**Flexion**

**Extension**

**Rotation (internal/external)**

Joint actions

**Turnout**

a position or movement that has the limb(s) externally rotated at the proximal joint – e.g. where the heels are together and the toes are pointed outward on opposite diagonals

**Parallel**

a position or movement that does not require the use of turnout – e.g. where the feet/legs are parallel to one another

**Vertical plane**

the spatial reference for any movement in the “door” plane; contains the frontal silhouette of the body

**Horizontal plane**

the spatial reference for any movement in the “table” plane; cuts through the hips and is parallel to the floor

**Sagittal plane**

the spatial reference for any movement in the “wheel” plane; the backward-forward plane that cuts the body in two equal halves

**Pause**

any moment where no movement occurs; synonymous with a “rest” in music

**Swing**

a full body movement or the movement of any limb where there is a pendular action (drop and a suspension) responding to the pull of gravity; the follow-through is in a long arc or curve

<b>Movement dynamic</b>	Movement quality, the physical "flavor" of a given movement
<b>Sequential movement</b>	a movement where parts of the body fold or unfold after one another
<b>Skip/hop</b>	a jump from one foot to the same foot
<b>Leap</b>	a jump from one foot to the other foot
<b>Undercurve</b>	a movement that arcs below an axis that is parallel to the floor
<b>Overcurve</b>	a movement that arcs above an axis that is parallel to the floor
<b>Arc-like</b>	describes any movement that traces an arc in space with a distal point on the body
<b>Spoke-like</b>	describes any movement that begins from the core of the body and reaches out toward the periphery
<b>Kinesphere</b>	an individual's personal space "bubble"

**SCIENCE OF ART**  
**UNIT 12, January 2006**

Prepared in conjunction with the special exhibition:  
*Karen LaMonte: Absence Adorned.*

Curriculum prepared in partnership with choreographer Peter Kyle  
and Dr. Rogene Eichler-West of Pacific Northwest Laboratories.

Science of Art is made possible through the generous support of:

Labor Ready  
Macy's  
Pierce County Arts and Cultural Services Division  
The Florence B. Kilworth Foundation  
The Fred Meyer Foundation  
The William W. Kilworth Foundation  
The Greater Tacoma Community Foundation  
The Baker Foundation  
The Dan & Pat Nelson Family Foundation  
Rainier Pacific Foundation  
U.S. Bancorp  
The Gary E. Milgard Family Foundation  
Washington State Arts Commission  
and  
National Endowment for the Arts



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**Transparency One:**

Karen LaMonte (American, born 1967)  
*Dress Impression with Drapery*, 2005  
Cast glass, 55 x 37  $\frac{3}{4}$  x 17  $\frac{1}{4}$  inches  
Courtesy of the artist and Heller Gallery, New York  
Photo by Martin Polák

**Transparency Two:**

Karen LaMonte (American, born 1967)  
*Reclining Dress Impression*, 2005  
Cast glass, 20 x 63  $\frac{1}{2}$  x 15  $\frac{3}{4}$  inches  
Courtesy of the artist and Heller Gallery, New York  
Photo by Gabriel Urbánek

**Transparency Three:**

Karen LaMonte (American, born 1967)  
*Dress Impression with Train*, 2005  
Cast glass, 58  $\frac{1}{4}$  x 22  $\frac{1}{2}$  x 43  $\frac{1}{4}$  inches  
Courtesy of the artist and Heller Gallery, New York  
Photo by Martin Polák

**Figure 1**

Human Physiology, Robert Lynch, Instructor. University of Colorado  
<http://www.colorado.edu/epob/epob1220lynch/image/figure5i.jpg>

**Figure 2**

Instituto de Fisiologia Celular, The Reflex.  
<http://ifcsun1.ifisiol.unam.mx/Brain/reflex.htm>