

FRANK GEHRY

The *Frank Gehry* exhibition covers the acclaimed architect's work from his early career in the 1960s through his adoption of new technology in the 80s and 90s up to his most recent, contemporary projects. At every stage, Frank Gehry's accomplishments demonstrate the power of art to change a landscape, even revitalize a city, and his process exemplifies perseverance, flexibility, and collaboration. The accompanying curriculum materials are intended to help explore Gehry's work and creative process and illuminate the intersection of art, technology, math, science, and social studies represented by this work. The lesson plans will introduce students to both architectural concepts and a dialogue about the urban environment, and the essays will offer teachers an opportunity to show students how the abstract concepts they learn in the classroom can be applied in the world around them.

Los Angeles–based architect Frank Gehry is known for his unique forms in architectural projects which span the globe. From his early residential work to his most recent and ongoing projects, Gehry has stretched the boundaries of materials and form to create architecture with a greater sense of humanity and movement. His structures can thus be viewed as sculptural artworks that serve practical purposes, combining the disciplines of art, city planning, and computer technology. Gehry utilizes traditional methods like drawing and model-making, as well as cutting-edge technology like CATIA (Computer Aided Three-Dimensional Interactive Application), which was first adopted by the Gehry office and has since become standard industry practice.

Born in Toronto in 1929, Gehry moved to Los Angeles in 1947 and went on to earn a degree in architecture from USC. After spending several years studying urban planning at Harvard and working in Paris, he opened his own small architecture firm in Santa Monica in 1962. Initially his firm worked primarily on domestic architecture projects, and Gehry made his mark using inexpensive materials ubiquitous in L.A., such as plywood, corrugated metal and chain-link fencing, in innovative ways. His first such project to receive widespread attention was the groundbreaking renovation of his own home in Santa Monica in 1977–78, which brought urban materials like chain-link fencing to a suburban residential site. Since then, the architect's

practice has expanded to over 140 employees with projects around the world in North America, Europe, Asia, and the Middle East.

Gehry's success has been catalyzed by his firm's 1991 adoption of CATIA, a computer program originally developed by a French aviation company to design fighter jets and adapted for architectural uses. The program is now an integral part of Gehry's design process. CATIA allows him to scan handmade models with a laser stylus and feed digitized information into a software program that can draw, make calculations, engineer, and construct a building. The same technology that has been used for automobile, aerospace, and ship design as well as animation allows Gehry to compose curved walls on any scale, as demonstrated in buildings like the Guggenheim Museum Bilbao and the Walt Disney Concert Hall. CATIA also allows Gehry to maintain control over all aspects of a project, rather than relinquishing it to contractors who might not fully understand his unconventional designs.

Rather than stifling his creativity, Gehry's embrace of computer technology has been instrumental in realizing the spontaneous, gestural, human quality of his designs. CATIA also allows the architect to explore multiple ideas before settling on a particular solution.

"When the artists and sculptors I know work, there's a sort of free-play idea. You try things; you experiment...Scientists work that way too...It's kind of throwing things out and then following ideas, rather than predicting where you're going to go."

Despite the firm's reliance on digital technology, Gehry still begins each project with a quick sketch and a handmade model. He refers to his drawings as "thinking aloud," and he places great value on the speed and freshness of a freehand drawing and the gestural, handmade quality of the physical model.

As Gehry himself has said, there is a difference between buildings and architecture. More than just the physical buildings, architecture is art; it's an act of personal expression and collaboration that also serves a practical

purpose. Still, there are many constraints inherent to architecture. In addition to creating lasting monuments that are durable, beautiful, and functional, the architect must make his clients happy. When creating a design, Gehry must also take the site and context into consideration. Besides spatial limitations, often there are tight time schedules, budgets, and the additional considerations of climate and local culture. Some projects, like the Lewis Residence, are never realized, and many, like the Walt Disney Concert Hall, go through radical processes of evolution.

WORKS CITED

Cohen, Jean-Louis, and Beatriz Colomina et al. *Frank Gehry Architect*. Guggenheim Museum Publications, 2003.

Friedman, Mildred. *Frank Gehry: The Houses*. Rizzoli, 2009.

Van Bruggen, Coosje. *Frank O. Gehry: Guggenheim Museum Bilbao*. Guggenheim Museum Publications, 1997.

White, Garrett. *Symphony: Frank Gehry's Walt Disney Concert Hall*. Five Ties Publishing, 2009.

CREDITS

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Evenings for Educators is made possible by the Rose Hills Foundation, the Thomas and Dorothy Leavey Foundation, the Kenneth T. and Eileen L. Norris Foundation, and the Joseph Drown Foundation.

Education programs at the Los Angeles County Museum of Art are supported in part by the William Randolph Hearst Endowment Fund for Arts Education and the Margaret A. Cargill Arts Education Endowment.

GEHRY RESIDENCE, 1977–78, 1991–92

Though it was built more than ten years after he opened his architecture firm, the Gehry Residence was the architect's first work to attract widespread attention. As his home, it was also his first project for which he did not have a client to please, which gave him the freedom to explore ideas about different materials and to take big risks. At this point in his career, Frank Gehry couldn't afford to build his dream house, so the project began with a modest two-story bungalow in Santa Monica that had been found and purchased by his wife at an affordable price. Though he decided to leave the house itself intact, Gehry also wanted to do something with it, something that would put his mark on it before moving in. In his words:

"I became fascinated with creating a shell around it [that would] define the house by only showing parts of the old house in an edited fashion.... I began to engage the house in a dialogue by cutting away from it, exposing some parts and covering up others."

Gehry wrapped the house in layers of unfinished, frugal materials, including corrugated metal and chain-link, which reflected his relatively limited means at the time. This also allowed him to tap into a fascination with everyday materials that had begun when he was a child spending time in his grandparents' hardware store. Both corrugated metal and chain-link were considered ugly industrial fixtures in the L.A. landscape, and, inspired by contemporary sculpture, Gehry embraced the challenge of proving that art could be made out of anything, even chain-link.

To open the interior space, he poked glass structures through the exterior of the original house, as seen in the accompanying drawing. As a result, a large glass cube appeared lodged between the old and new fabric of the house, flooding the kitchen with light and framing views of the sky and trees above. Such intruding fragments evoked the disorienting angles of Cubism, and Gehry has said:

"We were told there were ghosts in the house... I decided they were ghosts of Cubism. The windows...I wanted to make them look like they were crawling out of this thing. At night, because this glass is tipped, it mirrors the light in...So when you're sitting at this table you see all these cars going by, you see the moon in the wrong place...the moon is over there but it reflects here...and you think it's up there and you don't know where the hell you are..."

When talking about the house's design, Gehry also references the sense of movement in Dada artist Marcel Duchamp's *Nude Descending a Staircase* and the unfinished quality of Abstract Expressionist artist Jackson Pollock's paintings, which Gehry says look as though the paint was just applied. The resulting modest and casual appearance makes the house appear "thrown together," an effect that required a great deal of work and planning to realize.

Architectural historians and critics described the project as a house trapped within a foreign body, or dressed up. To some it seemed transitional, perpetually incomplete, with the means of construction and process exposed for all to see. The interior spaces were opened up and the plaster was stripped away from the walls to expose the wooden frame beneath, which gave the interior a jarring sense of process and movement, what Gehry calls a "sketch quality." The spaces between the exterior of the old house and the interior of the new structures enclosing it created spaces between the two that were both outside (of the original house) and inside (of the new one), and looking into the windows of the old house from those spaces resulted in a surreal effect. Skylights and glass floors allowed light from above to filter down into the lower level of the house, filling it with light.

The house became Gehry's laboratory and his showroom, drawing both praise and derision. Neighbors were shocked and angry; one tried to sue him, another attempted to have him arrested. There were protests and poor reviews from the press. One critic even took to walking his dog in Gehry's yard, encouraging it to defecate there in protest.

Though controversial, the house attracted important clients, which gave Gehry the freedom to work on grander projects than the modest homes he had designed up to that point. A second renovation of his Santa Monica home, in 1991–92, was undertaken to accommodate the changing needs of the Gehry family and included the addition of a lap pool, the conversion of the garage into a guesthouse, and increased landscaping for privacy. Some of the exposed wood framing was removed or covered over, and many lamented a loss of edge. However, for Gehry and his family, the house became more open and comfortable, and the increased finish, nicer materials, and greater coherence reflected Gehry's new identity as a starchitect on the rise.

DISCUSSION PROMPTS

- If you could design changes to your current home, how would you change it? What would you add and why?
- If you could design your own home, what features would you want? What would it look like?
- Compare the Gehry Residence to the architect's later work, the Walt Disney Concert Hall. What do they have in common? How do they differ? Some areas to consider include materials, purpose, location, client, style, and general appearance.
- Can you think of any other examples of artworks that utilize unattractive, common objects? In your opinion, how successful are they in transforming these objects into something meaningful and/or beautiful?



Frank Gehry
Gehry Residence Axonometric Projection, Santa Monica, California, 1977-78
Graphite and crayon on tracing paper
36 x 48 in. (91.5 x 122 cm)
Collection Frank Gehry, Los Angeles
© 2015 Gehry Partners, LLP, image courtesy Gehry Partners, LLP

LEWIS RESIDENCE, 1985–95

The Lewis Residence was one of Frank Gehry's most elaborate projects that was never constructed. He compared the process of designing the home to an unrestricted fellowship which allowed him to explore materials, forms, and new technologies in a way that profoundly influenced his later work. The Lewis Residence project began when the client, Peter B. Lewis, a wealthy insurance executive, avid art collector, and museum patron, attended a lecture given by Gehry in 1985. In his lecture, Gehry spoke about the construction of his own home and how he had built it around an existing house. Lewis had recently purchased nine acres of woodland in a Cleveland suburb on which there was a house he wanted to modify and expand. Intrigued by Gehry's lecture, he called the architect the following day and hired him to design a \$5 million renovation.

As part of the design process, Gehry met with Lewis every three or four months to present new ideas, and the project quickly expanded beyond the scope of a home renovation. The existing house was torn down, and the design for a new, much more expansive building project began. In accordance with Lewis's requests, the new home would include a commercial-grade kitchen, a dining room, a living room, two master bedrooms, a study, a conservatory, an art gallery, an indoor lap pool, two guesthouses, staff quarters, a large pavilion overlooking a nearby golf course, and a five-car garage. To realize this plan, Gehry called on artist and architect friends to collaborate. Architect Philip Johnson, known for postmodern architecture (for example, the Glass House, an early example of the use of industrial materials such as glass and steel in home design), designed a guesthouse for the project; Maggie Keswick Jencks, an expert on Chinese gardens, created landscape elements; and artist Richard Serra designed an entry gate, which later evolved into his Snake sculpture for the Guggenheim Museum Bilbao. In addition to these design elements, both Serra and Larry Bell submitted proposals for various sculptures that would be installed throughout the property.

With these elements in place and Lewis's encouragement and financial backing, Gehry pursued increasingly more avant-garde and experimental possibilities. Boxy

structures were replaced with organic forms inspired by fish, horse heads, and birds (some of which ended up in Gehry's later projects). To unite these elements, he incorporated draped forms inspired by sculptures of hooded monks that he had recently seen in France at the fourteenth-century tomb of Philip the Bold (see Resources page for a link to images of these sculptures).

For his architectural model, Gehry followed the lead of seventeenth-century Baroque Italian sculptor and architect Gian Lorenzo Bernini, who was said to have dipped fabric in plaster and then arranged it to form a stable model for his sculptures. Gehry used velvet painted with melted beeswax to create flowing shapes that were then scanned and printed using a 3-D printer. Gradually, the original house evolved into a 35,000-square-foot village constructed of plaster, stone, metal, and glass, all unified by this draped form. Two large reflecting pools, bronze figures, a tower, and a light and water sculpture provided the finishing touches. Models suggest a final design reminiscent of Gehry's groundbreaking Guggenheim Museum Bilbao and Walt Disney Concert Hall, both of which were completed after the Lewis project ground to a halt.

In 1992 the Gehry office began its adoption of a new computer program, which finally made possible the dramatic forms Gehry had envisioned. At that time, the Gehry office was working on its fourth design for the Lewis Residence. By late 1993 they were on their seventh. This rapid succession of proposals was finally halted after a decade of planning when the ballooning budget nearly eclipsed that of the Guggenheim Museum Bilbao. In the end, rather than building the complex, Lewis requested that Gehry make him a final model of the design for display purposes.

Although the project was never realized, the process of designing the Lewis Residence allowed Gehry the time and support critical to the integration of new technology. The results would prove instrumental to the completion of some of his most iconic future projects.

DISCUSSION PROMPTS

- Gehry worked on the Lewis Residence for years, but it was never built. Have you ever put a lot of work into a project that never came to fruition? How did you feel about it afterward? Do you think it's possible to feel that although something did not work out, it was still worthwhile? How can you take steps to feel good about efforts that don't work out as planned?
- For this project, Gehry was inspired by animals, fourteenth-century sculptures, and Baroque modeling techniques. Collaborate with fellow artists in your class to draw a two-dimensional model for a building that brings together ideas based on various sources of inspiration—from different subject areas, like math, science, history, or art—to create a cohesive design.



Frank Gehry

Lewis Residence Model, Lyndhurst, Ohio, 1985–95

Paper, wood, Plexiglas, and foam core

20 × 115 × 60 in. (51 × 292 × 152.5 cm)

Gehry Partners, LLP, Los Angeles

© 2015 Gehry Partners, LLP, image courtesy Gehry Partners, LLP

GUGGENHEIM MUSEM BILBAO, 1990–97

The Guggenheim Museum Bilbao, a Spanish museum housing modern and contemporary art, was a breakthrough for Frank Gehry when it opened in 1997, bringing him increased fame and public commissions from around the world. In 1990, when plans for the museum began, Bilbao—a proud seven-hundred-year-old port city in northern Spain—was struggling with widespread unemployment resulting from the decline of shipbuilding and heavy industry. The museum was conceived as part of an economic-redevelopment plan for the area, and Gehry was charged with creating an expansive museum that simultaneously harmonized with the surrounding nineteenth-century architecture and created an iconic new face for the city.

He began by choosing a waterfront site that would both honor the city's shipbuilding and port city past and connect Bilbao with the river that had sustained it for so many centuries. A public plaza on the south side of the museum extends out into the old city of Bilbao, connecting the complex with its urban surroundings. On its north side, the building extends over the Nervión river with a riverside promenade. The building's swirling, undulating curves resemble the vast hulls of the ships that used to loom over the city from its ports; while the museum's shimmering surface, resulting from its titanium exterior, echoes the river's reflective surface.

Gehry knew early on that he wanted a metal exterior that would respond to the changing light conditions of Bilbao. Because it often rains there, he also needed a material that was leak proof and didn't rust, but would glisten in the rain and was not prohibitively expensive. He had never used titanium before; it's typically used in much smaller applications that exploit its strength (like airplane parts and golf clubs), and it was usually too expensive for such large-scale use. However, a sudden drop in prices allowed the architect to obtain a large quantity of the material. The titanium used for the museum exterior is not much thicker than several sheets of paper stacked together, and yet these thin metal sheets are actually more stable than stone, which erodes in pollution. They are also relatively flexible, which was critical for the molding of the sheets into the sweeping curves called for by Gehry's design. The thinness of the metal allows it to flutter and quiver in strong winds, reinforcing the

sail-like effect of the museum's exterior, while the steel structure of the building underneath, together with layers of insulation, keeps the gallery space inside peaceful and calm.

The Guggenheim Museum Bilbao was the first Gehry building to fully utilize the computer program CATIA (Computer Aided Three-Dimensional Interactive Application), without which the sweeping organic forms would not have been possible. The program simplified the museum's construction by providing digital data that could be used in the manufacturing process—including the measurement and placement of each metal bar in its internal structure—which helped control costs and keep construction within its strict time frame. CATIA also enabled Gehry to scan his handmade models so that the gestural qualities of his drawings could be captured in built form for the first time, preserving their energy and vitality on a monumental scale. The effect is remarkable. From across the river, the museum looks like a fantastic ship, sails full, sweeping into the center of a somber nineteenth-century town.

In order to avoid overwhelming the smaller, older surrounding buildings without relinquishing either size or grandeur, the museum is set slightly below "city level." Unlike other museums, where visitors must climb to lofty sites high above their surroundings, at the Guggenheim Museum Bilbao visitors descend a flight of stairs to reach the main entrance. As visitors approach, the stairs gradually narrow until visitors reach the limestone and glass entrance and step into the expansive, light-filled atrium, towering 160 feet tall and filled with vertical, curved, and twisting forms. The space has been compared to a luminous cathedral, and it forms the centerpiece of the museum's interior.

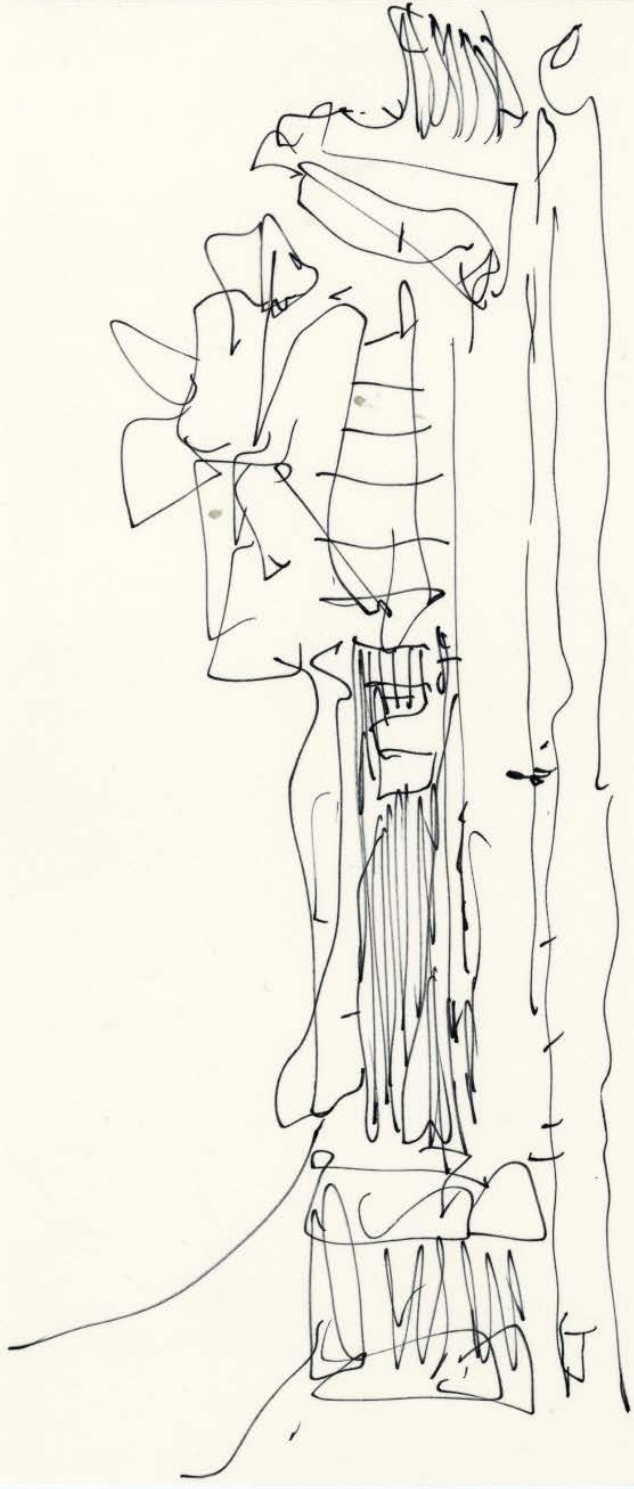
Twenty galleries of varying sizes and configurations are arranged in three levels around the atrium. A network of walkways, stairs, and glass elevators connect the galleries, offering numerous views of the vast and complex interior space and controlling the flow of people through the museum. Ten of these galleries follow a conventional rectangular gallery plan and are intended for the display of more traditional art. The remaining galleries deviate from conventional gallery

spaces. Intended as a challenge for contemporary artists (who might create art to fill the space), these galleries complement the unconventional forms and often monumental scale of the contemporary sculpture for which the museum is known. For instance, the vast “boat gallery,” a tribute to Bilbao’s long tradition of shipbuilding and trade, showcases a permanent installation, *The Matter of Time*, created in harmony with the space by sculptor (and Gehry associate) Richard Serra.

Once completed, the museum’s effect was almost immediate. During the first three years of operation, the Guggenheim Museum Bilbao was visited by almost four million people, many of them tourists. Within a year of its completion, the money spent by museum visitors on hotels, restaurants, shops, and transportation generated enough revenue in taxes to more than offset the cost of the building. This complete turnaround created a worldwide demand for what has come to be known as the “Bilbao Effect” and led to an increased awareness of the potential power of architecture to change the fate of a city. The museum not only raised Gehry’s profile, it also catalyzed a city’s cultural and economic rebirth.

DISCUSSION PROMPTS

- Can you think of other iconic buildings that are strongly identified with their locations (like the Guggenheim Museum and Bilbao or the Eiffel Tower and Paris)? How do those structures fit in their respective settings?
- If you could travel to see any building in the world, which would you most like to see and why?
- Think of a place (a room or a building) that you consider important. How does its architecture signal that this space is important or worth noticing?
- How would you design a distinctly L.A. building that echoes its surrounding landscape and contains some allusion to the history or cultural identity of the city? Quickly sketch your design, incorporating some of the surrounding landscape.



F. GEHRY

M. GUGGENHEIM . BILBAO

Frank Gehry
Guggenheim Museum Bilbao, design sketch of the riverfront elevation, Bilbao, Spain, c. 1991
Ink on paper
9 x 12 in. (22.9 x 30.5 cm)
Collection Frank Gehry, Los Angeles
© 2015 Gehry Partners, LLP, image courtesy Gehry Partners, LLP

WALT DISNEY CONCERT HALL, 1988–2003

Today Gehry's Walt Disney Concert Hall is an architectural icon of downtown L.A., but it came close to never being built. The entire process, from initial design to completion, spanned fifteen years and during that time the project underwent numerous transformations and challenges, ranging from earthquakes to technological difficulties. The hall was first proposed by Walt Disney's widow, Lillian, in 1987, and the next year Frank Gehry was selected from an international pool of architects in a design competition. As the winning architect, he was charged with creating a concert hall that would harmonize with its surroundings, be a focal point in downtown L.A., reflect the warmth and friendliness of Southern California, and have excellent acoustics.

The project faced challenges from the beginning. Once Gehry had won the commission, he had to scrap his initial plan for a small village-like group of limestone buildings and start from scratch, working with the Japanese acoustics company, Nagata Acoustics. A year after receiving the commission, Gehry's office expanded from a staff of thirty to seventy-five in order to handle an increase in business, and then in 1992, the firm began using new computer programs as part of its practice. Construction experienced a setback in 1994 when the destruction caused by the magnitude 6.7 Northridge earthquake highlighted the need for a more stable and more expensive steel-brace frame. The resulting budget problems, together with competing demands from the County, the Music Center, the Philharmonic, and the Disney family, finally brought the project to a standstill. Construction was shut down, and it was unclear whether it would ever be revived until 1997, when Gehry's Guggenheim Museum Bilbao opened to great acclaim. L.A. took notice, and funds were raised to resume construction.

With the Concert Hall, Gehry's personal goal as an architect and music lover was to design a building that expressed the joy of music both in its aesthetics and its acoustics. The sweeping curves and arcs of the structure's exterior evoke a sense of movement and flow reminiscent of music. Though Gehry initially resisted constructing the exterior of steel because of its industrial associations, the potential for glare during the day, and its overly dark appearance at night, budget constraints

limited his options for materials and led him to seek an innovative solution.

This was achieved when Nippon Steel, a Japanese firm, developed a method for wire-brushing each panel of steel in multiple directions to achieve a luster that eliminated the glare but stayed luminous at night. These wire-brushed panels were then laser-cut and shaped in L.A. before installation on the building's exterior. The resulting effect is a building that both stands out from its surroundings and reflects them, thereby creating an impression that is simultaneously singular and harmonious.

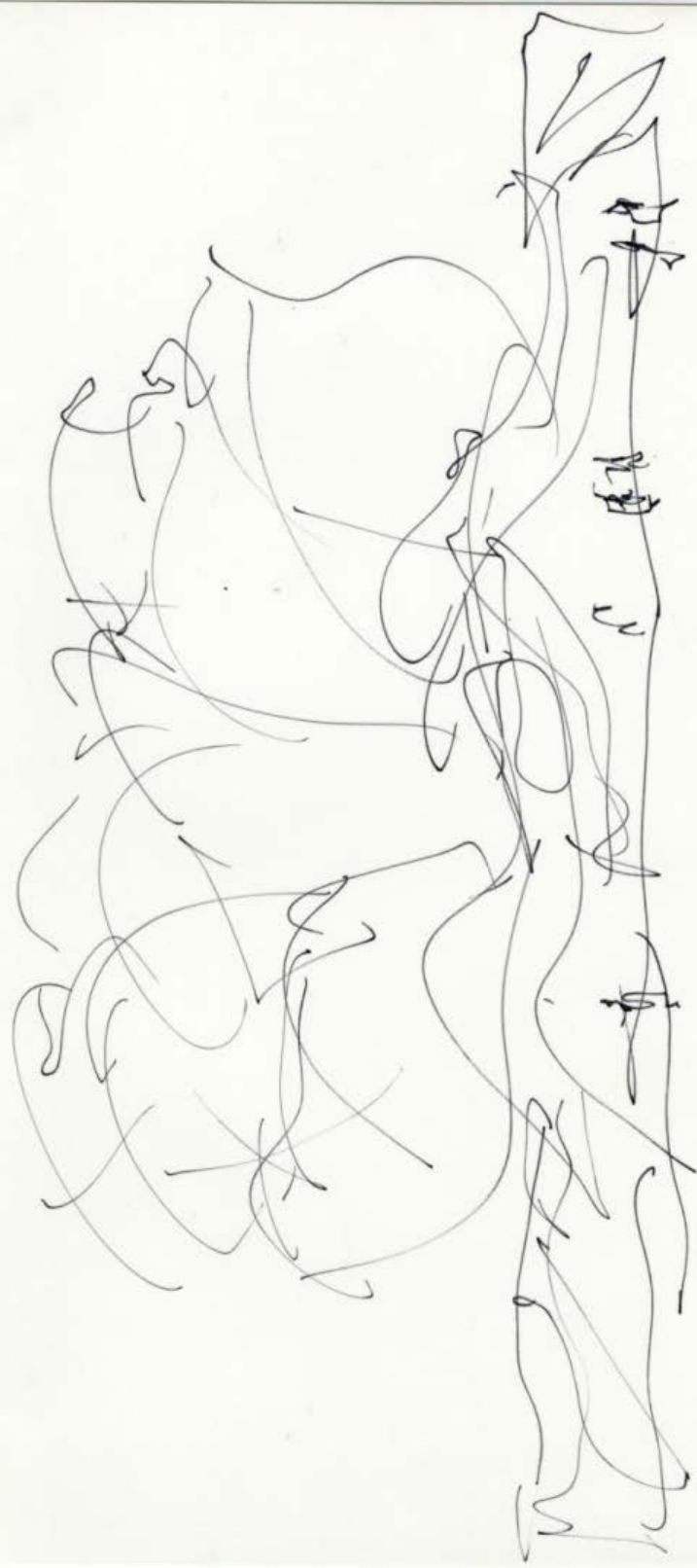
In an effort to make the Concert Hall's otherwise striking exterior more inviting, Gehry created a transparent, glass-enclosed ground floor with a light-filled lobby opening up to the sidewalk. Inside, steel columns encased in warm wood create the illusion of a stylized glade of trees, while immediately outside the space, terraces and gardens disrupt the concrete city landscape. This combination of transparency, innovation, and greenery contributes to the structure's overall impression as a gleaming and inviting centerpiece of the city.

Whereas the exterior and the lobby of the Concert Hall are expansive, Gehry wanted the concert space to have a feeling of intimacy and focus. Acoustics were the priority, but the hall also had to harmonize with the signature-Gehry exterior and evoke the same feelings of movement and musicality. After touring top-tier concert halls and consulting with countless musicians, Gehry worked with acoustical consultant Yasuhisa Toyota to shape the hall's sound through its spatial design and the materials used (see Resources page for a link to more information on the acoustics). While the acoustics demanded that the hall be a box shape, Gehry found a way to incorporate the billowing curves of the building's exterior into its walls and ceiling. The bowed strips of the ceiling evoke billowing sails and are precisely spaced and contoured to optimize acoustics and create a drapery-like illusion, which also references traditional theater ornamentation.

Using scaled-down models and new technology, Gehry and his team determined how much direct and reflected sound would reach each seat in the hall. These details worked together to ensure that every audience member, at every performance, has access to the best sound quality and sight lines. This has made music accessible to Concert Hall attendees of all ticket levels, and the Concert Hall itself a beacon of the joys of music for all of Los Angeles.

DISCUSSION PROMPTS

- How would you describe your ideal environment for listening to music or viewing art? What is it about that environment that is conducive to the appreciation of art?
- For the exterior of the Walt Disney Concert Hall, Gehry managed to make a hard metal, steel, appear soft and organic. Look at different architectural materials, like steel, wood, and stone. How would you describe them? How do they make you feel? How could you change the form of a material (geometric, organic, etc.) in order to change a viewer's impression of that material?



Disney Hall May '91

Frank Gehry
Walt Disney Concert Hall Project Drawing, Los Angeles, California, 1991
Ink on paper
9 x 12 in. (22.9 x 30.5 cm)
Collection Frank Gehry, Los Angeles
© 2015 Gehry Partners, LLP, image courtesy Gehry Partners, LLP

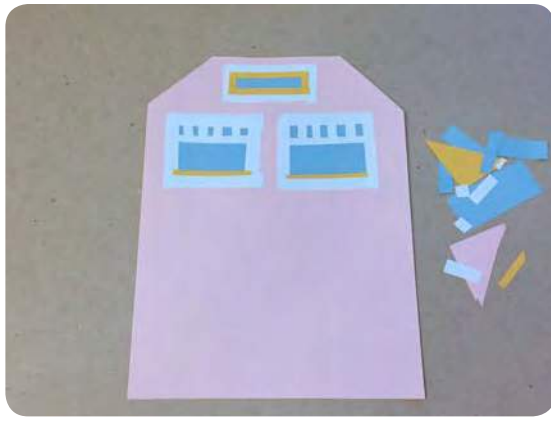


Frank Gehry
Walt Disney Concert Hall—Project Model; Los Angeles, California, 1989–2003
Paper, stone, and metal
22 x 69 x 60 in. (55.9 x 175.3 x 152.4 cm)
Gehry Partners, LLP, Los Angeles
© 2015 Gehry Partners, LLP, image courtesy Gehry Partners, LLP

CLASSROOM ACTIVITY: MATERIALS TRANSFORMED

ESSENTIAL QUESTION	How can we use everyday materials to create an architectural model that is unexpected and special?
GRADES	K-4
TIME	Two class periods and prior prep to gather materials
ART CONCEPTS	Lines (one-dimensional), shape (two-dimensional,) form (three-dimensional), sculpture, architecture, collage, texture, and overlapping.
MATERIALS	A selection of the following: white paper (8.5" x 11"), natural brown craft/butcher paper, colored paper, silver card stock, tin foil, popsicle sticks, scissors, oil pastels, clear cellophane/ vellum/ transparency sheets, strong packing tape, glue or glue sticks, a glue gun (only if a teacher is assisting), and reused/recycled materials: cardboard boxes from kitchen items (cereal, oatmeal, rice, etc), and empty toilet paper and paper towel rolls.
TALKING ABOUT ART	<p>View photos of the Frank Gehry Residence from different angles. What do you see? Do you see any shapes? Can you name them? Do you see any lines? Are they straight? Curvy? Zigzag? Horizontal (long) or vertical (tall)? What do you think you would do in this building? Do you think someone could live here? Why? Do you think this building is art?</p> <p>Frank Gehry first became famous for his work on his own home. When he bought his house, it looked very plain and average, but he wanted to add to it to make it stand out and reflect his work and ideas. Instead of tearing down the house and building a brand new one, Gehry decided to build around the house. He began to wrap the house with materials that are very common, but not normally associated with houses, like chain-link fencing. In his own words, "I found the material that people hated the most, and used the most."</p>
MAKING ART	<p>Collect various materials that you may want to use that will make your project uniquely yours.</p> <p>Draw a house (or your own home) with windows and doors using oil pastels/crayons/ markers on a white or colored piece of 8.5" x 11" piece of paper.</p> <p>Then glue your drawn image to a recycled (cereal, rice, etc) box and stand it up. After the drawing of a house has been glued onto the recycled box, begin to think of how you would create an extension that wraps around the drawn house and makes the house more unique and reflective of you.</p> <p>To apply the element of collage, begin creating different parts of the home separately before applying it to the construction of the house (i.e. accordion-folding the paper and/ or cardstock, gluing popsicle sticks together to make window frames with cellophane or vellum transparency sheets, and/or using crayons or oil pastels to decorate). Combine different kinds of shapes like rectangles, squares, and triangles. Use rulers to measure the height of your house and the parts you will be adding to it to make sure the different parts will fit together around the house.</p> <p>Arrange the elements you've created around your standing house until you feel your house looks unique. Use tape and glue to make sure your pieces are connected and secure.</p>

EXAMPLE



REFLECTION

Display your sculptures around the classroom or in an outdoor space (i.e. grass, garden, dirt, etc.). Walk around and look at your peers' work from all angles. Discuss what you noticed, what you liked and why. Would you want to live in that house? Why or why not? If you bring your sculptures outside for the discussion, you can have an interactive installation display where you can place the house in an environment that you believe suits it.

CURRICULUM CONNECTION

CCSS.ELA-LITERACY.SPEAKING AND LISTENING.K-4

K-4.1 Participate in collaborative conversations with diverse partners. Language. K-2.6. Use words and phrases acquired through conversation. Language. 3.6. Acquire and use accurately grade-appropriate conversational, general academic, and domain-specific words and phrases, including those that signal spatial and temporal relationships. K.4 Describe familiar people, places, things, and events and, with prompting and support, provide additional detail.

CCSS.MATH.K-4

Geometry K-5.1 Describe objects in the environment using names of shapes, and describe the relative positions of these objects using terms such as above, below, beside, in front of, behind, and next to. Correctly name shapes regardless of their orientations or overall size. Identify shapes as two-dimensional (lying in a plane, "flat") or three-dimensional ("solid"). Analyze, compare, create, and compose shapes. Analyze and compare two- and three-dimensional shapes, in different sizes and orientations, using informal language to describe their similarities, differences, parts (e.g., number of sides and vertices/"corners") and other attributes (e.g., having sides of equal length). Model shapes in the world by building shapes from components (e.g., sticks and clay balls) and drawing shapes. Measurement and Data 2.1 Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes. Geometry 2.1 Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces. Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.

CLASSROOM ACTIVITY: INSPIRATION COMES FROM EVERYWHERE

ESSENTIAL QUESTION	How do artists and architects find inspiration in the world around them?
GRADES	3-8
TIME	One class period
ART CONCEPTS	Inspiration, abstraction, imagination, sketching, line, shape, form, architecture, and design process.
MATERIALS	Images of animals, nature, natural objects, and sculptures. Newsprint for sketching, pencils, rulers, colored pencils, card stock, scissors, and glue.
TALKING ABOUT ART	<p>View and discuss the model for the Lewis Residence. What do you see? What does it make you wonder? Do the forms in the model remind you of anything? What would you like to ask the architect?</p> <p>Architect Frank Gehry's design for the Lewis Residence, the proposed home of art collector Peter B. Lewis, was inspired by a wide range of sources, such as animals, 14th century sculptures, and Baroque modeling techniques. When we use elements of something in our work, we can abstract them; that is, we can use aspects of our sources to guide or inspire our designs rather than reproducing the images exactly as they are. Do the forms in this model remind you of anything?</p>
MAKING ART	<p>Look through the images provided. Which are you drawn to? What is most interesting to you? Choose three images. Find a partner with whom you can collaborate. Together, look at the images that inspire each of you and discuss which ones have elements that you'd like to use in your building design.</p> <p>Together with your partner, design a building (a home, business, school, museum, hospital, etc.) that is in some way inspired by your source material. Sketch your ideas, and then create a final drawing with a written description of the building and its sources (include images). If you have time, you can then make a paper model of your building using the paper-folding techniques in the accompanying diagram.</p>
REFLECTION	<p>Provide each team a chance to present their ideas, sketches, and sources of inspiration to the group. Create an open forum so that the class can ask questions about the inspiration and creation of the work. What do you notice? What do you wonder? If this design were to be built, what materials would you use? Allow time for each team to share their ideas.</p> <p>*If time is an issue, pair up teams to present to each other.</p>
CURRICULUM CONNECTION	<p>CCSS.ELA-LITERACY.SPEAKING AND LISTENING</p> <p>3-8.1 Engage in a range of collaborative discussion, building on others' ideas and expressing their own clearly. 6.4 Present claims and findings, using pertinent descriptions and details. 6-8.6 Acquire and use accurately general academic and domain-specific words and phrases, sufficient for reading, writing, speaking, and listening at the college and career readiness level.</p> <p>CCSS.READING STANDARDS FOR LITERATURE</p> <p>6.2 Determine a theme or central idea of a text (artwork) and how it is conveyed through particular details.</p>

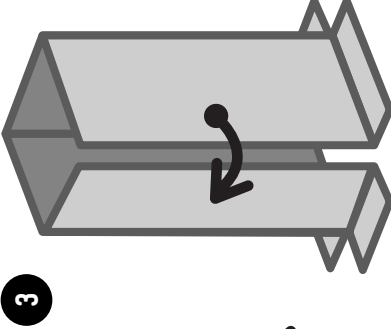
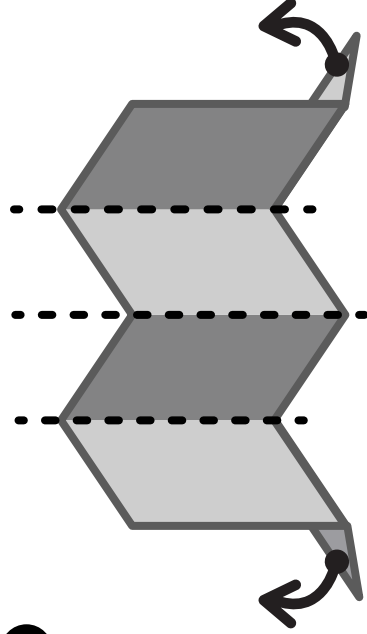
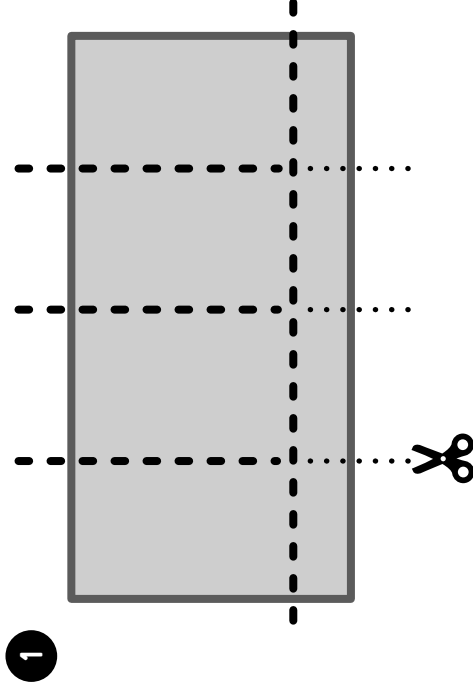
EXAMPLE



Evenings for Educators, Frank Gehry, December 2015.
Prepared by Kerry Buchman with the Los Angeles County Museum of Art Education Department.

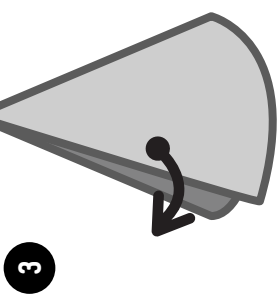
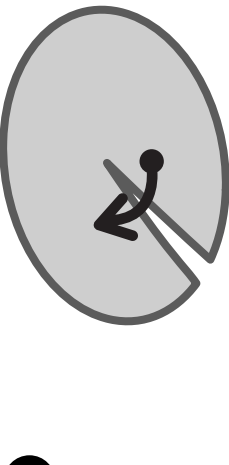
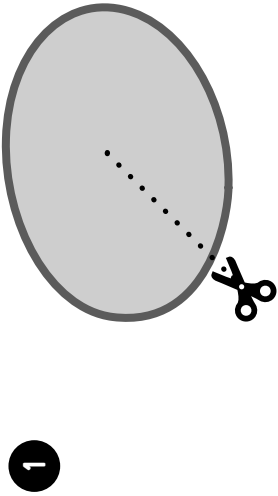
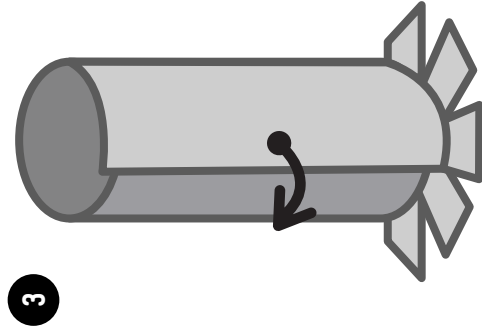
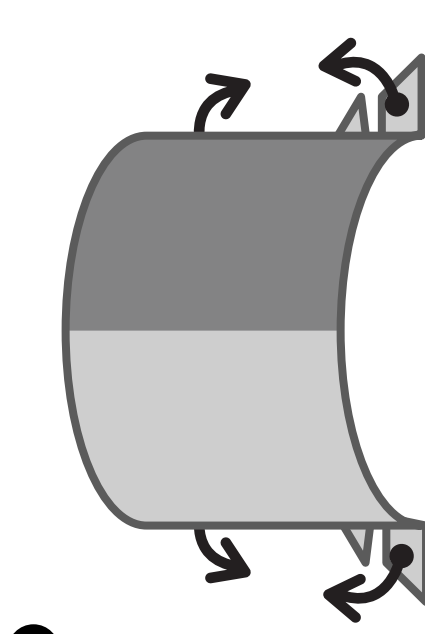
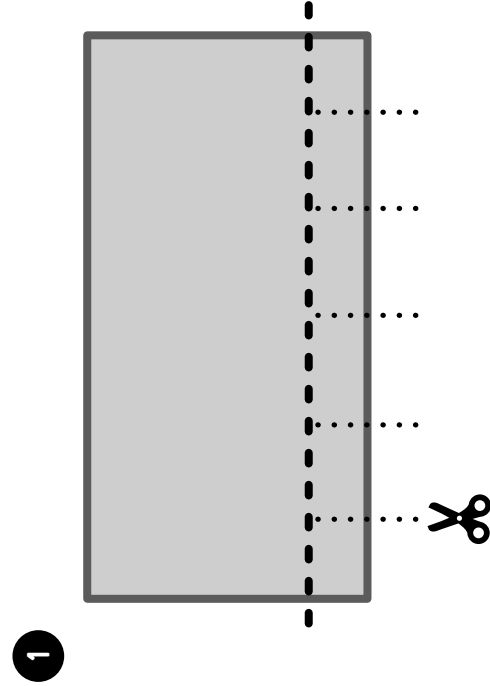
3D PAPER TECHNIQUES

..... CUT - - - - - FOLD



CUBES AND CYLINDERS

Cut small strips at the bottom of a rectangular piece of paper and fold into cubes or cylinders. The strips/tabs can be glued or taped to other surfaces and shapes.



CONES

Cut a circle shape, then cut a single straight line to the center and fold one edge over the other into a cone.

1



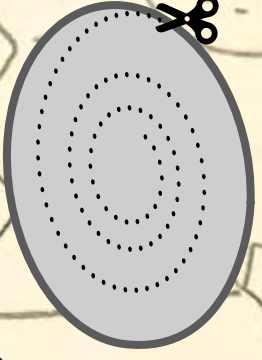
2



ZIG ZAGS

Cut long strips of paper and fold segments in alternating directions to create zig zags.

1



2



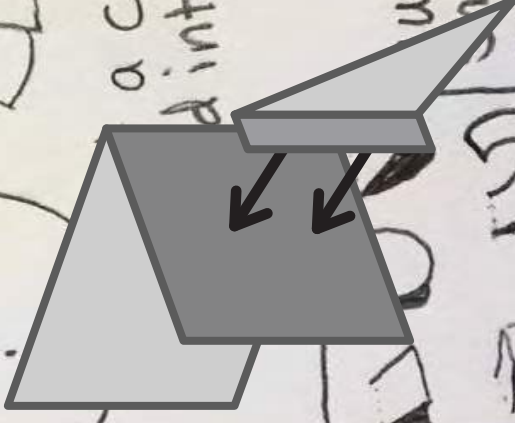
SPIRAL

Cut a circle shape and draw a spiral from the center to the edge of the paper. Cut along the spiral you have drawn.

1



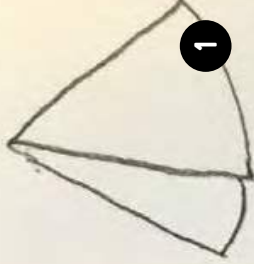
2



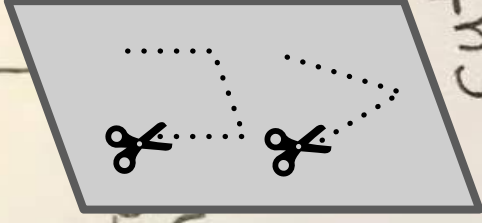
CREATE A SUPPORT

Hold flat shapes erect by creating supports using triangles.

1



2



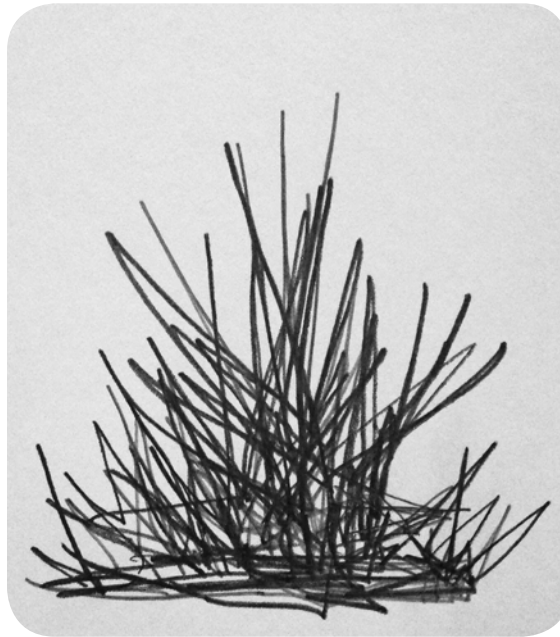
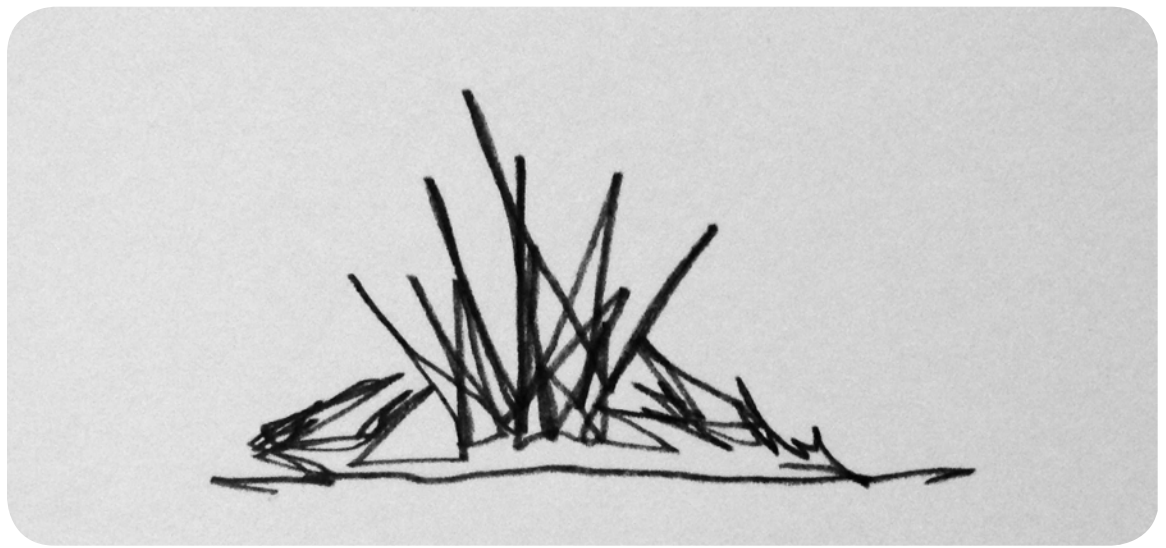
POP-OUTS

Cut shapes into paper and bend them along an edge to create pop-outs.

CLASSROOM ACTIVITY: EXPERIMENTAL ARCHITECTURE

ESSENTIAL CONCEPT	Playfulness and experimentation are important tools for innovation in architecture.
GRADES	6-12
TIME	Two class periods
ART CONCEPTS	Form, void, rhythm, experimentation, two-dimensional, three-dimensional, sketch, sculpture, and engineering.
MATERIALS	Pencils, drawing paper, cardstock, construction paper, clear tape rolls, colored tape, paper towel rolls, and scissors.
TALKING ABOUT ART	<p>Frank Gehry experiments with different materials and forms, creating drawings and models with a sense of playfulness. He compares his process to that of an artist, “When the artists and sculptors I know work, there’s a sort of free play idea. You try things; you experiment...Scientists work that way too... It’s kind of throwing things out and then following ideas, rather than predicting where you’re going to go.”</p> <p>View Images of Gehry’s drawing and model for the Guggenheim Museum Bilbao. How do they express his playfulness? In looking at his initial drawings, his models, and then the final building, what changes and developments do you see?</p> <p>How does Gehry use materials in a playful way?</p> <p>The metal used for the Guggenheim Museum Bilbao’s exterior is not much thicker than several sheets of paper stacked together so they often appear to flutter in the wind, and yet these thin metal sheets are actually more stable than stone.</p>
MAKING ART	<p>PART 1</p> <p>Begin by deciding what type of building you would like to create (a concert hall, a museum, your dream home, a school, a library, a mall, etc.). What is the building’s purpose?</p> <p>Then, with a pencil, draw a rough sketch of your building, letting your hand feel free to create loose-line shapes and forms. As you sketch, experiment with forms, drawing different shapes. Play with how you draw; try closing your eyes and/or moving the paper while you are drawing. Listen to music and let the flow of the rhythms and melodies influence the movements of your sketching. It may take a few sketches to develop your design.</p> <p>Based on your sketches, start to finalize your design. Think of how to enter and exit the building, its light sources, parking, and location. How will you support your design and make it stable?</p> <p>PART 2</p> <p>Choose one piece of color paper. By folding, bending, curling, scoring, and/or cutting the paper with scissors, create the shapes of your building. Use tape to hold your building together, allowing for some flexibility, and also for color accents. Some elements and ideas from your initial design may change as you make this model of your building, which is fine; let new ideas emerge during the model-making process as well.</p> <p>After you have built your model, name your building and write a label.</p>

EXAMPLE



REFLECTION

Arrange a display of all the sketches and sculptural models in rows, as if they make up a city. Ask students to walk around looking at the artworks. Discuss how each person's sketch was transformed into a 3D model. What changes were made in the transition? What shapes can be seen in the building? In what ways did the building's purpose influence the design of the building? What aspects of the building are unexpected or unusual?

CURRICULUM CONNECTION

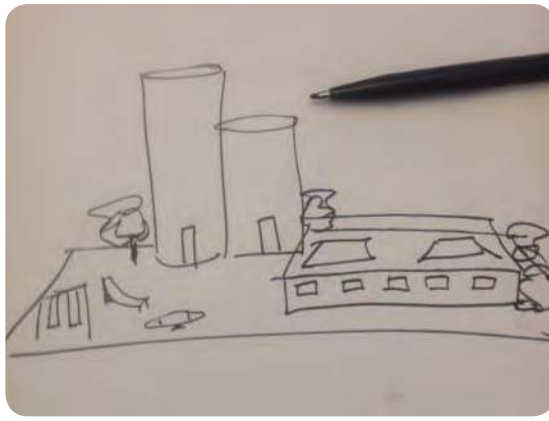
CCSS.ELA-LITERACY.SPEAKING AND LISTENING

6-12.1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners. 6-12.6 Acquire and use accurately general academic and domain-specific words and phrases, sufficient for reading, writing, speaking, and listening at the college and career readiness level.

CLASSROOM ACTIVITY: URBAN DESIGN

ESSENTIAL QUESTION	How can we think of architecture in the context of the needs of our communities like “urbanist” architect Frank Gehry?
GRADES	6-12
TIME	Two class periods
ART CONCEPTS	Two-dimensional, three-dimensional, sketch, model, architect, and texture.
MATERIALS	Black markers, 8 ½” x 11” drawing paper, rectangular cake pads (cardboard), corrugated cardboard and/or plastic panels, wire, contour mesh, miscellaneous papers (aluminum foil, cardstock, etc.), transparencies and/or mylar sheets, scotch tape, painters tape, duct tape, and sharp scissors.
TALKING ABOUT ART	<p>View and discuss the sketch, model, and photograph of Frank Gehry’s Walt Disney Concert Hall in downtown Los Angeles.</p> <p>What do you think an architect does? What do you see?</p> <p>The entire process of building the Walt Disney Concert Hall from initial design to completion took fifteen years and during that time the project underwent numerous transformations and challenges ranging from earthquakes to technological difficulties.</p> <p>Does the sketch for the Walt Disney Concert Hall look like the final design? Does the model look like the sketch? Discuss the changes you notice.</p> <p>Frank Gehry takes the surroundings into consideration when designing urban buildings. The building’s context helps dictate the size of the building, the materials he uses for the exterior, and the way in which the building is oriented. This is what makes him an “urbanist”. What do you think the architect and his team of engineers and builders had to consider when placing a building downtown?</p>
MAKING ART	<p>PART 1</p> <p>Break up into groups of four to work together on the design of a building (in the same way that architects work with engineers, builders, and community leaders) that you feel you need in your neighborhood and community.</p> <p>(5-10 min) Discuss what kind of building your neighborhood needs and why. Consider the surrounding area, the placement of this building, the other buildings around it, the materials you would use, and the need for green space.</p> <p>(5-10 min) Each team member should get a sheet of paper and black pens. Based on the previous group discussion, write what kind of building you’d like to design, why the community needs it, and what it will be made of.</p> <p>Each team member should then flip the paper over and quickly sketch how they envision the building (5 min).</p> <p>Vote as a group which sketch to build from. Decide on the name of the building.</p>

EXAMPLE



REFLECTION

Each group will share their building sketch, why they feel it needs to be built, what it will be made of, and where it will be built in the neighborhood.

PART 2

Review the images of Walt Disney Concert Hall. Look at more images of models from the exhibit. What do you think Gehry used to make the models?

Meet with your group and collect an assortment of papers, cardboard, tape, and markers to begin making a model based on the sketch selected by the group.

Decide what each student is doing in the group. Who is working on the landscaping around the building? Who is making the structure for the main building? Who is choosing the materials and finding ways to manipulate them? Who is in charge of creating a unified and interesting facade?

(40 min) Build a model of your building on a piece of rectangular cardboard. Feel free to experiment with folding, bending, and curling paper for your model.

REFLECTION

Each group will present their model. You must explain why your building is important to your community. You will explain your materials and why you chose to make the building the way that it is.

CURRICULUM CONNECTION

CCSS.ELA-LITERACY.SPEAKING AND LISTENING.9-12

6-12.1 Initiate and participate effectively in a range of collaborative discussions with diverse partners, building on others' ideas and expressing their own. 9-12.4 Present information, findings, and supporting evidence. 6-12.6 Acquire and use accurately general academic and domain-specific words and phrases, sufficient for reading, writing, speaking, and listening at the college and career readiness level.

FRANK GEHRY

ONLINE RESOURCES

THE MOURNERS: TOMB SCULPTURES FROM THE COURT OF BURGUNDY

<http://www.lacma.org/art/exhibition/mourners-tomb-sculptures-court-burgundy>

Images of the tomb sculptures that inspired Gehry's design for the Lewis Residence.

WALT DISNEY CONCERT HALL ACOUSTICS

<http://wdch10.laphil.com/wdch10/wdch/acoustics.html>

This page explains the acoustics of the Walt Disney Concert Hall with interviews and photographs.

GEHRY ON CONES, DOMES, AND MESSINESS

<http://nyti.ms/1zpamtx>

The NYTimes

Frank Gehry discusses the evolution of his design for the Guggenheim Abu Dhabi and how it incorporates culture, climate, purpose, and his own vision of art as a means for dialogue.

FRANK GEHRY: MY DAYS AS A YOUNG REBEL

https://www.ted.com/talks/frank_gehry_as_a_young_rebel

Frank Gehry talks about his early career, buildings, and inspirations at TED1990.

INTRODUCING THE FRANK GEHRY DESIGNED DR CHAU CHAK WING BUILDING

<https://www.youtube.com/watch?v=G5Z-QjSo8Nc>

<https://www.youtube.com/watch?v=lupB3Fe1okw>

The first link demonstrates how Gehry's buildings are designed for specific purposes and audiences, and the second provides a time-lapse video of the construction of the building with a corresponding timeline.

BUILDING BIG

http://www.pbs.org/wgbh/buildingbig/educator/act_index.html

An educators' resource with ideas for building-related activities for students.

BOOKS FOR STUDENTS

ARCHIDOODLE: THE ARCHITECT'S ACTIVITY BOOK

Bowkett, Steve.

This book offers an interactive way to learn about architecture by posing all manner of architectural challenges for the reader.

YOUNG FRANK

Viva, Frank

Intended for 3-7 year olds, this book introduces Young Frank, an aspiring architect, who visits the Museum of Modern Art with his grandfather, who is also an architect. There they see and are inspired by work by architects Frank Gehry, Frank Lloyd Wright, and many others that demonstrate the limitless possibilities of architecture.

IGGY PECK, ARCHITECT

Beaty, Andrea and David Roberts

The story of a boy with a passion for building. Intended for ages 4 to 8.

THE STORY OF BUILDINGS

Dillon, Patrick and Stephen Biesty

This book takes the reader inside famous buildings throughout history and demonstrates just how and why they were built. For children ages 6 to 12.

WHO BUILT THAT? MODERN HOUSES

Cornille, Didier

Intended for children ages 7 to 12, this book takes readers on a tour through ten of the most important houses by the greatest architects of the twentieth and twenty-first centuries.

FRANK O. GEHRY: OUTSIDE IN

Greenberg, Jan and Sandra Jordan

Targeted towards adolescents and high school-age students, this book offers an introduction to the evolution and work of Frank Gehry.

BOOKS FOR TEACHERS

FRANK GEHRY: THE ART OF ARCHITECTURE

Cohen, Jean-Louis and Beatriz Colomina et al.

This 2001 collection of essays by museum curators and architectural historians explore Gehry's unconventional materials and forms as well as his unique spirit and vision.

SYMPHONY: FRANK GEHRY'S WALT DISNEY CONCERT HALL

White, Garrett.

This book documents the history of the Walt Disney Concert Hall from its inception through the architect selection process, construction, and completion. Essays by leading architecture historians put the building into its historical context in the urban landscape of Los Angeles.

FRANK GEHRY: THE HOUSES

Friedman, Mildred

Using photography, interviews, and other research, this book focuses on Frank Gehry's houses.

FRANK O. GEHRY: GUGGENHEIM MUSEUM BILBAO

Van Bruggen, Coosje

This book details the history and design process behind one of Frank Gehry's most iconic buildings.

FRANK GEHRY

Migayrou, Frederic and Aurelien Lemonier

The exhibition catalogue explores how Gehry has overcome technological setbacks and stayed true to his vision of architecture.