3-D Design

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UNIT I: ***Between 2-D and 3-D***

Objective: To introduce the differences between the two-dimensional picture plane and three- dimensional volume, space, and structure.

Discussion: Many of the problems that art students have with three-dimensional design courses can be traced to their having never grasped the basic differences in conceptual orientation between 2-D and 3-D experience. A student who is comfortable with the 2-D picture plane and who may even have excelled at producing effective paintings, drawings, prints, or photographs may recoil at the prospect of manipulating sculptural materials or entertaining the idea of "actual" three-dimensional space. The idea of UNIT I is to provide a bridge between the relatively familiar territory of the flat picture plane to the "new" territory of the third dimension.

Vocabulary: two-dimensional, three-dimensional, picture plane, form, positive / negative, void / volume, solid, space

Reading: *Shaping Space,* Chapter 1

Artists/Cultural References: Pablo Picasso, Isamu Noguchi, Max Bill, Naum Gabo, Antoine Pevsner, Ellsworth Kelly, Jackie Bennett (ASU MFA, Ceramics), William King, Jonathan Borofsky, Eero Saarinen, Larry Bell, Douglas Steakley, Magdalena Abakanowicz, Balinese folded palm fronds (Collins archives), Japanese origami.

Possible Assignments:

1) Transformed plane: make a 3-D object using a single sheet of paper. (3 hours in class) Variation: use a single sheet of paper and a blown egg to create a container, pedestal, or alter for the egg.

2) From 2-D to 3-D: generate a relief sculpture from a two-dimensional drawing. (9 hours)

3) From Frame to Form: Working from a photograph or slide, create a relief sculpture with that compresses space into a relatively shallow relief in cardboard. (Thanks to Lew Alquist)

See also assignments in *Shaping Space, pp. 244 – 258:* 1.1, 1.2

UNIT II: *Low Relief / High Relief* (this may be combined with UNIT I)

Objective: To introduce relief sculpture and to continue discussion on the differences between 2D and 3D space.

Discussion: Relief sculpture can be thought of as physically pushing or pulling the two-dimensional picture plane into the third dimension of actual space. In this so called "2 _ D" world, many of the strategies familiar from Drawing and 2D Design still apply. In addition, one can clearly target the differences between the flat 2D picture plane and actual 3D form. One essential difference that should be discussed is how form is "rendered" in virtual space (2D) as opposed to actually being created in the space of sculptural form (3D). In 2D processes, the three-dimensional appearance of form is controlled largely by rendering differences in value (relative lightness and darkness). In relief sculpture and full-round sculpture, on the other hand, depth and the modeling of form hinges upon the artist's ability to control how actual light (and its inverse, shadow) plays across the surface of the relief or sculpture.

Vocabulary: bas (pronounced "bah" as in French) relief (low relief), haut (pronounced "oh") relief (high relief), texture, additive, subtractive, volume reversal, negative, positive, vacu-forming (if using vacu-forming to produce relief sculptures), found objects (if used).

Reading: *Shaping Space,* Chapter 8 (light) and 14 (casting)**.**

Artists/Cultural References: *from the book:* relief carvings—gravestone, lion screen, Andrea del Verrocchio (pp. 12-13); Robert Mallary, Louise Nevelson (p. 15), Tirthankara Statue (pp. 14-15); Henri Matisse (p. 22); Frederick Hart (p. 50); Isamu Noguchi (pp. 57-58); *Trajan's Column* (pp. 84 and 169); Chinese ceremonial vessel, Frank Gallo (p. 231); Albert S. Vrana (pp. 232-33). Other sources: Malaysian wood carving, Indian stone relief carving (Mahabalipuram), Balinese temple carving, Pre-Columbian temple carving (Teotihuacan, Mexico), Michelangelo, David Pimentel (former ASU metals professor), Jeanne Otis-Fronske (ASU ceramics professor).

Possible Assignments:

1) Quick relief: Using aluminum foil (heavy duty), cardboard, staples, make a bas relief by pressing foil over found objects or parts of human subjects. Staple sections to cardboard backing. Spray paint result if desired (try spraying from just one side to accentuate relief). (3 hours)

2) Cardboard strata: Using cardboard glued together in layers, create a wall sculpture with both low and high relief. Consider translating a photograph or drawing or other 2D information. (12 hours)

3) Plaster casts: Using plaster bandages, combine casting from a human subject or found objects to create a relief. Combine individually cast elements onto backing board to create cohesive composition. (9 hours)

4) Relief by substitution: Press a clay slab into a low wooden frame, or surround an irregularly shaped slab with a low wall of clay. Working both additively and subtractively, create a "negative" mold (volume reversal) with which to make a "positive" plaster wall relief. Pour plaster into mold. Reinforce with sisal or light mesh if thin. Imbed a hook into back of relief while plaster is still wet. Variation: Crumple wax paper or aluminum foil or plastic bags to create a textured mold. (9 hours)

5) Relief Jewelry: Create a large scale (12 inches across or larger) piece of "jewelry" (a brooch or pin, for example) that explores the idea of low and high relief

6) Vacu-forming: Use vacu-forming to create a relief sculpture from "found objects." (Thanks for Jim White) (6 hours)

See also assignments in *Shaping Space*, pp. 244-258 (1.3, 8.1, 14.1, 14.2)

UNIT III: ***Points, Lines, Planes, Volumes***

Objective: Introduction of three-dimensional space conceived as a vocabulary of points, lines, and planes defining actual and implied elements.

Discussion: A dynamic conception of space would see "points" as having the potential for generating lines. Paul Klee explained the creation of expressive line as a matter of "taking a point for a walk...," By extension, a plane can be seen as a moving line, and a three-dimensional volume can be understood as a moving plane (or line). This conceptualization of space is at least as old as Leonardo who discussed it in his notebooks. It fmds a poweIful set of exponents in the Bauhaus and, more recently, provides a clear basis for understanding the virtual 3-D space produced on the cathode ray tube (CRT) of a computer. Regardless of particular historical or technical biases, this conception of spatial description is a conceptually rich method of introducing the dynamic character of both static and kinetic 3-D forms. Consider how a point light source (e.g., a car head-light) will appear as a line in a time-exposure photograph. Or how a dancer's arm describes a plane in space. Or the space described in time by a Calder mobile set in motion. Much of the thinking behind this method of spatial description will be familiar to students from 2-D classes: the "implied line," the "planar" character of sets of parallel lines, etc.

Vocabulary: point, line, plane, volume, dynamic, implied, non-objective, full-round

Reading: *Shaping Space,* Chapters 4, 5, and 6.

Artists/Cultural References: *from the book:* Hiroshi Teshigahara (p. 29), Kenneth Snelson (p. 38), Eero Saarinen (p. 114), Naum Gabo (p. 71), *Tournament armors for Henry VIII* (p. 83), Shiro Kuramata (p. 82), Victor Horta (p. 88), John Lautner (p. 88), Antoine Pevsner (p. 91), Max Bill (p. 68), George Rickey (p. 96), Jesus Rafael Soto (p. 113), Alexander Calder (pp. 113 and 172), Pilobolus Dance Theater (p. 113), John Michaels Paque (p. 118), Michael Heizer (p. 120), Norma Minkowitz (p. 133), Aiko Miyawaki (p. 149); *other references:* Bill Moss (tent designer),

Possible Assignments:

1) Using malleable wire of two different gauges, produce a "non-objective" sculpture. A further refmement may require the students to think of their sculpture as a "conversation" between two "moving points" (lines) in which the two lines engage one another, but never touch.

2) Using a malleable metal wire (soft iron, aluminum, copper), produce a "full round" sculpture that accurately mimics a "found object." Variation: Create a piece of wearable clothing or armor from line that responds to a section of the human body. (Thanks to Ceceile Arcari) (6 -12 hours)

3) Use both planar and linear materials to produce a "non-objective" sculpture with no "inside" or "outside." (9 hours)

4) Using found objects that are either planar or linear, produce a "non-objective" sculpture that has no front or back and is free-standing. (12 hours)

5) Using planar materials (cardboard, foamcore, masonite) render an organic volume. (12 hours)

6) Make and sleep in a tent, pavilion, or structure of your own design. Stress formal relationships of line, plane, and volume. (15 hours)

7) Create a pavilion for the opposite sex. Use at least one "implied plane" and one "implied line."

8) Create a mobile (try to improve on Calder...) that describes implied spatial volumes by the movement of its constituent elements.

See also assignments in *Shaping Space*, pp. 244-258: 4.1,4.5,5.2,5.3,6.1,6.2,6.3, and 12.4. Also assignment #25 in Core slides by Jim White.

UNIT IV: ***Mass and Form***

Objective: To introduce both traditional and non-traditional approaches to the concept of mass as applied to three-dimensional form.

Discussion: Traditionally, sculpture (as well as other three-dimensional art forms such as architecture) has been conceived of as an approach to volumetric solids that possess easily apprehended qualities of mass and density. We often associate in our mind's eye the classic form of a figure carved in stone and mounted on a pedestal when thinking of sculpture (the "rock on a box" school). Other traditional materials that are often treated as solid volumes include clay, wax, plaster, etc. In an age when synthetic materials often serve as "simulations" of such traditional materials (e.g., fiberglass rocks, hollow reinforced concrete columns, vacu-formed angels and comic book heroes), the value of traditional materials is either called into question or completely ignored in the effort to efficiently build three-dimensional forms. Something is lost and something is gained in this condition. What is lost is the sensitivity to "felt" relations to material density, mass, and structure. What is gained is a range of possibilities that far exceed most sculptors' imaginations. The idea of the UNIT is to impart a sensitivity to mass, density, and form to the student. It is important to look beyond surfaces to internal properties of materials—be they traditional or non-traditional.

Vocabulary: mass, density, weight, gravity, form, simulation, surface, tactile, traditional/non-traditional, subtractive, synthetic.

Reading: *Shaping Space*, Chapters 7, 13, and 14 (review)

Artists/Cultural References:

From your book: Constantin Brancusi, Aristide Maillol, *Venus of Willendorf* (p. 22), Gianlorenzo Bernini, *Coatlique*, Claes Oldenburg, *Great Mosque*, Henry Moore, Elyn Zimmerman, Jean Arp, Frederic Remington (p. 67), Jacques Lipchitz, Arnaldo Pomodoro, Michelangelo (p. 81), Erwin Hauer, *The Great Pyramids at Giza* (p. 87), Eduardo Chillida (p. 44), Beverly Pepper (p. 69)

Other sources: Ernst Barlach, Henry Moore (*Fallen Warrior*), Auguste Rodin, Michael Heizer (displaced/replaced mass), Jeff Koons (stainless steel rabbit), Scott Burton (chairs), Richard Serra (*Slow Information*), Eva Hesse, Joel Shapiro (tiny cast iron table), Donald Judd.

Possible Assignments:

1) Cast two 6 inch cubes in plaster. Using subtractive methods, do the following: a) make one block as "light" as possible—both physically and qualitatively, b) make the second block as heavy-looking and as inert as possible.

2) Make a heavy object—a rock, a block of plaster, an anvil, etc.—appear to deny the laws of gravity; conversely, make a physically light object appear impossibly heavy.

3) Create a sculpture in clay, plaster, or wood that gives different sensations of mass and weight from different angles of view. For example, a rectilinear block of wood with a hole bored through it will appear heavy from one vantage point, relatively light from another.

4) Find an actual stone or other natural "found object." Produce a replica of the stone in a synthetic material such as Styrofoam. Use surface treatment that mimics as closely as possible the original stone. Using your found and fabricated objects, make a sculpture that combines these actual and simulated materials.

See also assignments in *Shaping Space,* pp. 244-258: 1.4, 2.3, 7.1, 12.1, 13.1, 13.2, 13.3.

UNIT V: ***Scale and Context***

Objective: To introduce the concepts of scale and proportion as applied to three-dimensional form. To explore issues of abstraction as related to material, scale, and context To introduce methods for moving easily between scales.

Discussion: The "meaning" of a work of art is intimately tied to its materiality, its scale, and its context Subtle adjustments to any or all of these components can radically affect the character of a work of art. The idea of "abstraction" can take many forms. For example, a Claes Oldenberg "blow-up" may be a relatively faithful rendering of an everyday object-- consider his gigantic steel trowel. However, Oldenberg's manipulation of scale and context--two simple changes--"abstracts" the object form our everyday notions of "trowels" and causes us to see this object with fresh eyes. Oldenberg is also known for his use of patterns to assist in rendering mundane objects in large scale or in surprising materials (like soft vinyl). By translating the surface area of a 3-D form into a 2-D pattern, it becomes easy to translate complex volumes into various scales. Like sewing a dress from a pattern, one moves easily from "flat" information to fully three-dimensional sculpture.

Vocabulary: scale, size, proportion, context, pattern, grid system, abstraction, "found object," spectacle, camouflage.

Reading:

Shaping Space, **Chapters** 1 (review) **and 2.**

Artists/Cultural References: *From your book:* Meret Oppenheim, Christo, Claes Oldenberg, Eero Saarinen, Robert Smithson, Nancy Holt, Walter De Maria, Jady Pinto, Linda Howard, Lawrence Ajanaku, Betsy Otting; *Other artists:* Otto Piene, Hans Haacke, Andy Warhol, George Trakas, Joseph Beuys (large felt suit), .

Possible Assignments:

1) Create a "pattern" from a familiar object with distinct "planar" surfaces. Using this pattern as a guide, do the following: a) produce a flat "map" of the object, b) produce a "duplicate" of the original in an unusual material, c) using a "grid system" make a miniature version of your object "to scale," d) make a scaled-up version or "blow-up" of the original object, e) insert the enlarged object in a new "context." (18 hours) variation: use other methods for moving between scales such as calipers or a three-dimensional gridded measuring frame.

2) Make an inflatable sculpture. Make a paper mock-up of the proejcted sculpture using flat shapes stapled or glued together. Disassemble the paper prototype and use the ahpes to determine the material need of your large-scale inflatable. (Remember how a dress goes together?) Cut enlarged versions of shapes form polyethelene sheet or similar material (see problem #6 in Core slides). Inflate the sculpture by using a high volume fan. Consider the sculpture's relationship to the site. (15 hours)

3) Design and fabricate a suit of "personal armor." Make two versions--each at a different scale and using different materials. One will be wearable; the other will be either significantly smaller or larger than yourself. (see Visual Workouts, p. 134) (18 hours)

See also assignments in *Shaping Space, pp. 244 - 258:* 1.5, 2.2, 5.4.

UNIT VI: ***Modular Units and Repetition***

Objective: Introduction of the concepts of "repetition," "modularity," and "part to whole" relationships. Application of modular principles to the construction of three-dimensional form.

Discussion: Much of what we encounter in contemporary culture is manufactured. Further, many of the products we use, the spaces we inhabit, and even the food we eat is formed to fit together into larger patterns or to correspond to various structures or machines. While buildings are constructed from identical pre-cast concrete units; coffee cups stack together to make potentially endless columns of Stryofoam; the frozen waffles you buy are formed to fit the internal dimensions of your toaster. Some of this design is useful and beneficial. Other aspects are insidiously invasive and inhumane. Despite our pretense of believing that we invented modularity, Mother Nature beat us to it. Consider for example the structure of molecules with their constituent atomic parts; or the cellular structure of a plant. The idea of this Unit is simply this: how to make a series of identical or nearly identical parts that link together to create a useful, interesting, or beautiful whole. One of the exercises requires that the students develop an efficient method for replicating multiples of an original "prototype." Individual units would have the capability of attaching to like units in an infinite, three-dimensional (all three axes) structure.

Vocabulary: module, modularity, part-to-whole, repetition, rhythm, free-form, non-objective, connectors, connections, prototype, pattern-maker, jig, template, vacu-forming, production.

Reading: *Shaping Space,* Chapters 2 and 3

Artists/Cultural References: *from your book:* Charles Simonds (p. 8), Walter De Maria, *Lighting Field* (p. 11), Louise Nevelson, Wharton Esherick, *Chartres Cathedral*, Kenneth Snelson, *Great Mosque*, Skidmore, Owings and Merrill, *Haj Terminal*, Krone Company, Alma Sledhoff-Buscher, *Bauhaus Blocks* (p. 53), Jean Muller, *Brotonne Bridge*, Massimo and Lella Vignelli, *Cups and Saucers* (p. 55), *Site Projects*, Frank Lloyd Wright (p. 63 and plate 7), Ursula Von Rydingsvard (p. 130), Moshe Safdie, *Habitat* (p. 64), Sol Lewitt, *Easter Island* (p. 67), Frederic Remington (p. 67), *Egg package* (p. 81), Erwin Hauer (p. 86), Carl Andre, George Rickey (p. 96), Tony Smith (p. 100), Pilobolus Dance Theater (pp. 112-13), Joan Michaels Paque, Antoni Gaudi, CMP Interiors, Linda Howard (plate 14), Dan Flavin (p. 148), Alan Wood, Marcel Duchamp, Jackie Winsor (p. 213), *Interior of carved Chaitya cave*, India, Albert S. Vrana (pp. 232-33), piece molds (p. 234), Eva Hesse, Donald Judd (p. 63), Andy Goldsworthy, Le Corbusier (p. 85), Fast food packaging, Gyorgy Kepes.

Possible Assignments:

1) Produce a "non-objective" structure or sculpture that is composed of at least 12 identical "modular units" (12 hours)

2) Design a new form of food and the machine required to prepare it. Present the "raw" material, the machine, and several examples of the "prepared" food in a sculptural, but palatable form (15 hours).

3) Use multiples of a common manufactured object to produce a non-objective relief or sculpture. (6 hours)

4) Use natural "modular elements" (e.g., leaves, eggshells, bamboo, etc) and combine them using only natural materials (or only "high tech" materials…) (9 hours)

5) Design a children's game or toy comprised of at least 12 identical units. Consider the age of the child and the various potential interactions between objects and children. Design the box or container for the game. (15 hours)

See also assignments in *Shaping Space, pp. 244 - 258:* 3.1, 3.3, 3.5, 9.5, 10.4, 12.6, 14.1, 14.3

UNIT VII: ***Structures***

Objective: To introduce structural design principles as applied to three-dimensional problem solving. To explore the possibilities inherent in working within strict material and process limitations. To draw connections between design professions such as architectural engineering and industrial design and the three-dimensional art and design.

Discussion: A good building, bridge, or ocean liner is both beautiful and functional. A case can be made for the idea that if the product functions efficiently, it will be visually pleasing naturally. Louis Sullivan, the turn of the century architect and mentor of Frank Lloyd Wright, is credited with having coined the phrase "form follows function." While this dictum has been used to excess in the 20th century (often to justify feckless design), it does point up the intimate connection between the aesthetic aspects of a given object (form) and its primary purposes (function). In the pursuit of the ideal relationship between form and function, a certain complication often arises. It seems that there are always constraints that need to be observed by artists and designers. These limitations can be financial, spatial, technical, etc.. Within the design professions such as architecture and industrial design, the ability to operate creatively within serious boundaries is a given. However, fine artists are also always presented with constraints (often of their own making--often imaginary...) How can we operate as creatively as possible within narrow boundaries? How can we turn a perceived liability into an asset?

Vocabulary: structure, structural integrity, structural system, compression, tension, tensile strength, tension cable, expansion, contraction, loading, distributed load, cantilever, catenary curve, moment, form follows function, honey-comb, rib, stnit, skin, parameter, limitation,

Reading: *Shaping Space,* Chapter 3.

Artists/Cultural References: Sol LeWitt, Moshe Safdie, Buckminster Fuller, Kenneth Snelson, Eva Hesse, Donald Judd, Tony Smith, Carl Andre, Albert Vrana, Frank Lloyd Wright (Barnsdall House), Andy Goldsworthy, Le Corbusier, Alms Sledhoff- Buscher, Krone Company, Massimo and LelIa Vignelli, Skidmore, Owings, and Merrill, fast food packaging

Possible Assignments:

1) Using no more than 16 square feet of cardboard, design and build the tallest structure you can. (9 hours)

2) Using no more than 16 square feet of cardboard, design and build a pedestal that will support your body weight no less than 18 inches off the ground. (9 hours)

3) Build a functional ramada (shade structure) from found materials gathered from within a limited geographic area. (12 hours)

4) As a member of a 5 person design team, design and build a foot bridge that bridges a minimum of 10 feet, costs less than $25.00, and will sustain the entire weight of your team. (18 hours)

See also *Visual Workouts,* p. 86 ("Limited Materials")

UNIT VIII: ***Phenomena, Change, and Motion***

Objective: To make explicit the connection artists and designers working in three-dimensional art feel with physical events and actual processes—both natural and human-made…

Discussion: Besides such patently sculptural forces as mass and gravity, other more illusory concepts and phenomena are also of interest to artists working in 3D: natural elements and forces such as water, wind, and fire; cycles of growth and decay; the physics of light and electricity; various kinetic and mechanical systems, to name a few. Our understanding of objects and phenomena are conditioned also by their relationship to the concepts of time, change, and motion. Understanding such processes as entropy (the tendency of a system to move from order to disorder), for example, may alter our perception of a given object or space. Consider the Grand Canyon: it is as impressive for revealing the slow layering of geologic time as it is for containing an awesome space of nearly unimaginable scale. (Imagine the Canyon reproduced at full scale in fiberglass. While its spatial characteristics would be preserved, its ability to convey information about geological time and change would be lost…). Many conventions and methods exist for conveying a sense of time, change, and motion. Some of these rely on actual processes (an hour glass, for example, exploits gravity and the medium of sand); others convey time symbolically or graphically (consider the work of the Italian Futurists, for example). The task of this UNIT is to render otherwise illusive phenomena and the abstract notions of time, change, and motion as palable subjects for three-dimensional art.

Vocabulary: phenomenon, event, actual vs. simulated, natural, human-made, process, time, real-time, duration.

Reading: *Shaping Space,* Chapter 8 (review "reflected light" and "light as a medium").

Artists/Cultural References: *phenomena:* Kenneth Snelson, Geoge Ricky, Robert Smithson, *Stonehenge* and other ancient solstician markers and observatories, Nancy Holt, Lino Sabattini, Henry Moore, Linda Howard (p. 146), Rockne Krebs, Dan Flavin, Mark DiSuvero, whirligigs and other wind-powered structures, solar generating stations, James Fitzgerald, James L. Seawright, Beth Galston, Charles Eames (plate 1), Isamu Noguchi, Guy Dill, Gordon Matta-Clark, Christo, Jackie Winsor, Lew Alquist, Doug Hollis, Laurie Lunduqist, Michael Heizer, Robert Morris. *Change and Motion:* Robert Smithson, Auguste Rodin, Umberto Boccioni, *Trajan's Column*, Jean Tinguely, Gianlornzo Bernini (David), the Futurists, Marcel Duchamp, Edwaerd Muybridge, Egyptian art, Sergei Eisenstein (film), sun dials, James Turrell, Japanese alcove that reflects the changing seasons (tokonoma).

Possible Assignments:

1) Create a sculpture that gives the sensation of time, change, or motion in a single, static object (viz., Bernini's *David* or Brancusi's *Bird in Space*). (12 hours)

2) Make a sculpture that uses wind or moving water as a motive force, e.g., a "whirlygig." (15 hours)

3) Make a sculpture that explores the idea of illusion through reflectivity or optical distortion (15 hours)

4) Make a sculpture that focuses the energy of the sun or tracks its movements. Variation: Use actual light—candle, incandescent, fluorescent, laser, etc, as the subject of a sculptural installation. (15 hours)

5) Make a non-objective sculptural object that illustrates the idea of tension or compression through actual processes.

6) Create a series or sequence of objects that conveys the idea of time, change, or movement. (12 hours)

7) Make a kinetic sculpture or "process" sculpture that marks a specific amount of time. (15 hours)

8) Make a "time capsule" and bury it.

9) Make a sculpture or architectural model that exhibits qualities of "timelessness."

See also *Visual Workouts,* p. 114 ("Tension") and *Shaping Space*, assignments 2.3, 4.4, 8.2, 9.2, 9.3, 9.4, 10.1, 10.2, 10.3, 10.4.

Unit IX: ***Final Project***

Objectives: To encourage the student to work with multiple principles and elements introduced by the Course. To integrate disparate conceptual orientations into coherent spatial constructions and/or presentations. To explore the impact of physical or social context on a
work of art.

Possible Assignments:

1) Construct a site-specific sculpture that illustrates the concept of "balance"--conceptually, physically, and visually. (Thanks to Joe Sendek).

2) Do a "mail art" sculpture that takes into consideration the exterior form, the interior content, the practical requirements of shipping through the mail, and the visual aspects of the final presentation. (Thanks to Mimi Vitetta)

3) Create an "island" on a 4' x 4' base that celebrates a particular historical personage or advocates a particular belief system. Exhibit the work in such a way as to heighten the impact of your sculpture. (Thanks to Justin Kennedy and Gene Cooper)

4) As part of a design team, construct a work of "public art" for an actual site. Use actual public art "RFP's" (request for proposal) whenever possible. (Dan Collins and Jim White)

5) Make a sculpture that floats. Take into account reflections, movement, context, associations of water. Organize an event on a body of water. (Thanks to Laurie Lundquist) Variation: As a member of a collaborative team, design and build a full-scale cardboard boat and enter it into the annual "Great Cardboard Regatta" on Tempe Town Lake (Spring semester).

6) As part of a design team, organize a kite-flying event for junior high school kids. Work out plans for successful kites, contact local schools, consider the time of year and context for the year.

7) As part of a class project, transform a condemned building into a work of art. (Thanks to Lew Alquist)

8) Create a series of inflatable sculptures or other monumentally scaled sculptural objects that respond to a particular social event or natural phenomenon (e.g., lunar eclipse).

ART 115 (3-D Design)

Suggested Material/Tool list

--notebook filled with biology paper
--matt knife with extra blades
--#11 x-acto knife with extra blades
--small bottle of white glue
--small plastic bucket
--metal tape measure (optional)
--assorted pencils and pens
--assorted paints, brushes (as needed for specific projects)
--eye protection
--ear protection (wax plugs)
--dust/particle mask,
--gummed packing tape (paper or plastic)
--hot melt glue sticks
--Corrugated cardboard good condition (no grease, wet stuff, 24" in any direction, minimum. Check bike stores.
Start gathering material now for projects later in the semester
--masking tape
--roll of soft iron wire {thin enough to bend easily)
--1/8" drill bit (for pilot holes)
--#2 phillips-type screw driver bit for power drill
--1/2 bag of clay {Shop of Art;. Split 25 pounds with a friend
--a box for all your stuff .

notes: Other supplies will be assigned as needed for particular projects.
We have a limited number of tools in the 3-D room (Tower A-121). We are short on small hand-tools and safety items. To avoid frustration, put together a small box of tools and safety items-- the items above and anything else you might need--and you'll have a handy collection for both 3-D and other projects.