

## Art-O-Motion II Kinetic Sculpture

It moves with direct air currents!

### (art + science)

Encompassing a wide variety of techniques and styles, Kinetic Art is designed to incorporate motion. Movement may be caused by touch, by wind currents, by water flow, or by mechanical means.

The mobile sculptures of Alexander Calder inspired many artists to create works driven by air currents. One of those artists, George Rickey, used scientific precision and physics to construct heavy steel sculptures that seemed to defy the laws of gravity and float in the air.

This lesson plan describes a method for creating a simple wind-driven sculpture that may be a springboard for inventing more complex designs at higher grade levels. Students design a rotary hub and spinning blades with stacked wooden beads and soft wire. When a direct air current is applied to metallic paper "sails," the sculpture blades gently turn.

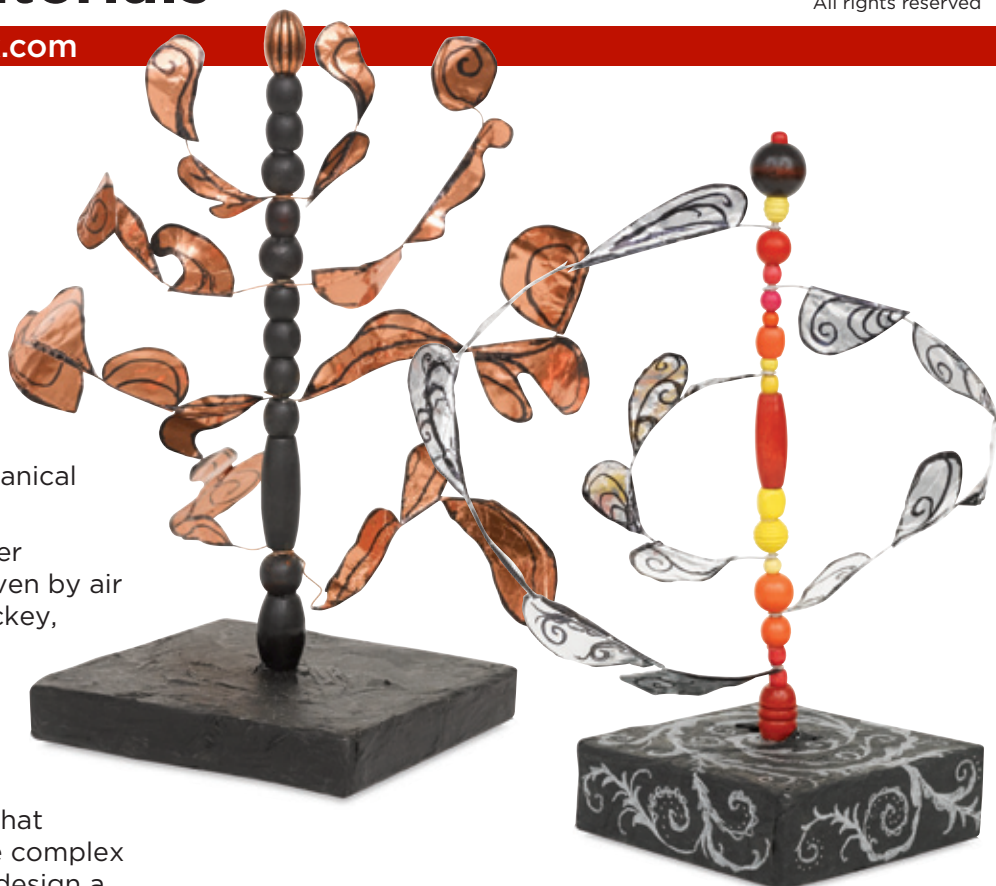
**GRADES 5-12** *Note: instructions and materials are based upon a class size of 25 students. Adjust as needed.*

### Preparation

1. Cut styrofoam blocks in half to share between two students.
2. Cut lengths of wire. Each student will need one 18" piece of 12-gauge aluminum wire for the hub and a 4-ft piece of copper wire for the blades.
3. Cut 2" Dia disks out of chipboard and punch holes in the centers.

### Process

1. Take the aluminum wire and make an L-shaped bend about 3" from one end. Circle the short end of the L around to form a foot. Make another short bend in the wire and insert it into the Styrofoam base so that the long end forms the vertical hub (see Step 1 image).
2. Cut 2" off the top of the vertical wire. Cut that piece into two 1" pieces. Bend both into "U" shapes and insert them into the Styrofoam base to secure the hub (see Step 2 image).
3. Place a chipboard disk over the wire hub and glue it to the Styrofoam base. A metal washer with a 1/8" Dia opening may also be used. This will add stability and begin the sculpture with a flat base. Place a paper straw over the wire.



### Materials

**Aluminum Sculpture Wire**, 12-gauge, 350-ft coil (33401-1014); approximately 18" per student

**Styrofoam Block**, 1" x 6" x 12" (60928-1009); share one between two students

**Assorted Macramé Beads**, bag of 100 (60709-1000); share three bags among class

**Chipboard**, single thick, 22" x 28" (13115-2222); share one sheet among class

**ArtStraws™**, package of 1800 (60903-1004); one per student

**Weldbond® Universal Adhesive**, 4-oz (23819-1004); share four bottles among class

**Hygloss® Metallic Foil Paper**, Assorted Colors, package of 24, 8-1/2" x 10", (11205-1002); share one among class

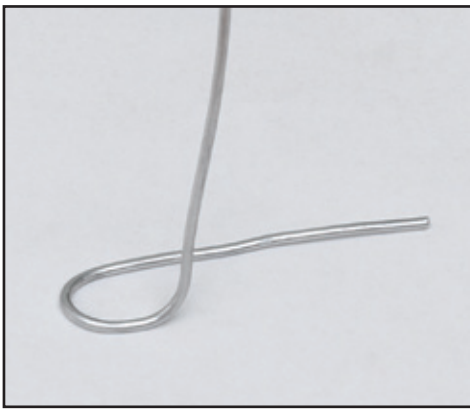
**Sharpie® Fine Point Marker**, Black (21316-2001); one per student

**Westcott® All-Purpose Preferred Line Scissors** (57608-4877); one per student

### OPTIONAL MATERIALS

**Blick® Natural Copper Wire**, 18-gauge, 25-ft spool (33415-1018); 3-ft per student





**Step 1:** Bend one end of wire into a circle to create a foot. Make another bend in the wire and insert it through the foam base.



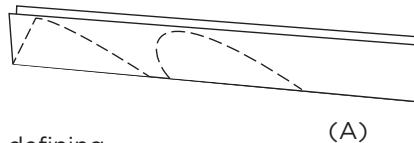
**Step 2:** Secure the base wire with small U-shaped pieces of wire. Place a chipboard disc or metal washer over the wire.



**Step 3:** Glue large macramé bead to the cardboard disk or washer. Alternate beads and wire to make rotary "blades" or "wings."

### Process, continued

4. Place a large, wooden macramé bead over the hub and glue it to the base. Build the sculpture vertically by alternating beads and copper wire arms or blades. To make a blade, form a loop in the center of a 10" piece of copper wire. Small jewelry pliers may be helpful. Place the loop over the vertical hub and bend the wire as needed. (Note: use round beads between the copper wire blades for the best rotation.)
5. Gravity and the weight of the beads may place pressure on the lower blades and keep them from spinning freely. To solve this problem, insert a drop of glue in the center of the beads just above the blades to attach them to the paper straw and hold them in a position that allows the blades to spin freely. This may require removing some of the beads, then reassembling.
6. Create sails for the blades. Cut the foil paper into 4" x 10" pieces and fold them in half vertically. Cut any shape sail from the fold, (see Illustration A). Place glue inside the sails and attach them to the wire blades so that the wires sit in the folds. Allow to dry.
7. Bend and adjust the sails so that they move and have clearance. Embellish by defining the edges and adding designs with a permanent marker.
8. Finish by covering the Styrofoam base with tissue paper. Cut tissue paper into strips and brush on glue (glue may be thinned with water). Build up at least three layers of tissue paper.



**Step 4:** Attach foil paper "sails" to catch the wind and provide motion. Cover the base of the sculpture with tissue paper.

### National Standards for Visual Arts Education

**Content Standard #2** — Using knowledge of structures and functions

- 5-8** Students employ organizational structures and analyze what makes them effective or not effective in the communication of ideas.
- 9-12** Students create artworks that use organizational principles and functions to solve specific visual arts problems.

**Content Standard #5** — Reflecting upon and assessing the characteristics and merits of their work and the work of others

- 5-8** Students analyze contemporary and historic meanings in specific artworks through cultural and aesthetic inquiry.
- 9-12** Students identify intentions of those creating artworks, explore the implications of various purposes, and justify their analyses of purposes in particular works.