

# Chapter 12

## Visual Tweet: Nature Inspired Visual Statements

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### ABSTRACT

*“Visual Tweet: nature inspired visual statements” explores connections between science, computing, and art in a similar way as it is done in the previous chapter, “Looking at sciences through the water.” This chapter examines concepts and processes that relate to some fields in physics, biology, computing, and other sciences, and at the same time pertain to the planet’s life and humanity’s everyday experience. This chapter solves the projects visually, through art and/or graphics. Exploration of science-based concepts and nature-related processes support the understanding of the project themes, triggers imagination, and thus inspires enhancements to the ability to communicate with visual language and create artistic work. Comprehension of what is observed, the power of abstract thought, and an answer to evolving issues will result in personal visual projects – drawings, graphics, illustrations, animations, video clips, or web projects. This chapter comprises two projects about science-related themes: (1) Symmetry and pattern in animal world: geometry and art, and (2) Crystals and crystal caves. Each project invites the reader to create visual presentation of this theme.*

### PROJECT 1: SYMMETRY AND PATTERN IN ANIMAL WORLD: GEOMETRY AND ART

#### Introduction to Project “Symmetry and Pattern in Animal World”

When we plan to create biologically inspired art, the theme of symmetry can certainly be considered inspirational for many of us. It may be so because symmetrical forms and shapes possess an aesthetic

beauty and an order reflected by their geometry. Also, it is so because there are so many kinds of symmetry existing not only in geometry but also in natural world and human works. For example, water, when in liquid state, has bilateral symmetry, with the symmetric stretch of the two O-H bonds and some molecular vibrations (Kettle, 2007); when frozen, water becomes symmetrical in various ways (however, not always) usually developing the hexagonal crystals. Ice, snowflakes, feather ice on the twigs, hail, sleet, icicles, glaciers, and polar caps, all have their own order of symmetry

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and develop various arrangements of symmetry axes. We discuss some topics related to symmetry in a project 2 about crystals and snowflakes.

Mathematicians, anthropologists, artists, architects and designers who conduct computer analysis of the facades, friezes, and some architectural details, as well as researchers in many fields of natural sciences, biology, geology, or chemistry see a purpose in symmetry investigations. Many artists have created masterpieces this way; we will examine some of their works later. By finding mathematical order in natural forms and recreating it in our own artwork we can appreciate these forms and also understand the importance of adaptations that animals develop as an answer to the conditions of life.

“Symmetry and pattern in animal world” integrates several art concepts, such as symmetry, pattern, tessellation (natural or human-made filling a surface with figures with no overlaps or gaps), and general composition of the artwork, with issues related to:

- Geometry (symmetry, tessellation),
- Biology (animal shapes and forms, their symmetry and patterns, adaptation),

- Art and art history (patterns in artistic or decorative design, animals in art, and general composition of the artwork), and
- Computer graphic skills.

The objective of this project is to look over living forms in nature and in art, and examine how the nature-related concepts of symmetry (bilateral, radial, or helical), asymmetry, and patterns pertain to the general design of animal bodies, the animals’ look, and behavior. We will examine symmetry (or lack of symmetry) in animal surface patterns, for example in fish scales or bird feather. Working on symmetry for artistic projects promotes application of our spatial visualization skills. Then, after some study about the use of symmetry and pattern in the art works, some readers may want to combine this knowledge with art and computer graphic skills and create an artistic representation of the animal world using symmetry and patterns. One may also want to apply tessellation in order to design a background for the artwork. Figure 1 (a and b) shows impressions about animal symmetry and pattern.

Figure 1a. Anna Melkumian, “Symmetry.” (© 2010, A. Melkumian. Used with permission.); b) Betony Coons, “Symmetry.” (© 2010, B. Coons. Used with permission.)



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