

# Chapter 11

## Looking at Science through Water

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### ABSTRACT

*This chapter is focused on creating the visual approach to natural processes, concepts, and events, rather than their description for learning. It has been designed as an active, involving, action-based exercise in visual communication. Interactive reading is a visual tool aimed at communication, activation, and expansion of one's visual literacy. It addresses the interests of professionals who would like to further their developments in their domains. The reader is encouraged to read this chapter interactively by developing visual responses to the inspiring issues. This experience will be thus generated cooperatively with the readers who will construct interactively many different, meaningful pictorial interpretations. "How to produce texts by reading them," asks a philosopher, semiotician, and writer Umberto Eco, (1984, 2). The chapter comprises two projects about water-related themes; each project invites the reader to create visual presentation of this theme. Selected themes involve: (1) States of matter exemplified by ice, water, and steam, and (2) Water habitats: lake, river, and swamp.*

### INTRODUCTION

#### The Overall Structure of this Chapter

Projects in this chapter open with an introduction telling about the theme and the objectives that describe the essence of the suggested task. Annotated examples of related art works illustrate and inform the readers about the artistic approaches and styles. Project description and hints for solving

the task guide the reader in the process of working out the project. Then come suggestions for further reading, along with description of the key terms and definitions.

#### Interactive Response

Since communications media are storing and delivering information visually, pictures happen to be ubiquitous. Everything pivots on images, which are available as dynamic, multi dimensional, interactive, or real-time displays. What's

DOI: 10.4018/978-1-4666-0942-6.ch011

even more, they are continually updated and improved every day. For all these reasons we all need to reinforce connections between visual and verbal thinking. The reader is invited to read about a selected theme and then organize the data by creating visual presentation. While reading a small part of the text in this chapter, researching the web, or reading texts written by scientists, you are encouraged to visualize mentally what you are reading, and then use the acquired knowledge as an inspiration for creating a picture.

### **Creating Imagery that Interacts with Text**

Projects about biologically inspired computing for the art creation aim at enhancing visual communication skills of the readers. For this purpose, background information related to the science-inspired topics prepares the reader for particular projects by supporting visual literacy and cognitive imaging. Color boxes with background information and a web space support the inquiry, planning, and creating phases of project production. The reader will find the visual ways of gathering and delivery of information and will be asked to respond in the form of their own projects. A companion website helps to amplify visual learning and instruction with the use of art enhanced by computer graphics and digital media technologies.

Before creating visualization, it is good to organize one's thoughts about a theme and a project. One may want to make a structural sketch or a graph that explains one's goals, their hierarchical order, relative importance, cause-and-effect features, their parent-child-siblings relationship (in terms of computer science), and a sequence of actions. It may be useful to use arrows to represent vectors (with position, orientation, and magnitude). It may be helpful to write a storyline with a storyboard. One may also want to think about the available pictorial tools: one may prefer to apply color coding and/or pattern coding,

using shapes, a change of size, placement, or the amount of shading to signal perspective; maybe include some tables, pie charts, vectors, arrows, pointers, links and nodes, or other graphic ways of picturing, and maybe also add sound, animation, and/or video.

### **Background Information Boxes**

To meet the needs of the readers that are advanced in their own specific fields but probably not in all areas, projects contain the background information boxes. A distinct style of coding the boxes indicates the content of each box. The coded boxes focus on the themes: natural events and processes, art concepts and principles, and computing or technology.

- a. Background Information Type A comprise supporting materials about a natural events, processes, and science concept to be solved and discussed as a theme of a project. That will serve as an inspiration for the visual solution. These boxes provide research into the theme and tell about the methods of investigating and disseminating information visualization that links art, nature, and science.
- b. Background Information Type B present information about art concepts and principles, and traditional versus generative art that refer to the project. They provide background information related to visual literacy, basic facts, elements and principles in visual arts, essential art and art criticism concepts, suggestions about browsing for visuals and web-based supplemental materials, issues related to semiotics (imaging with signs, symbols, icons, and metaphors), as well as the cognitive processes and cognitive learning related to imaging with the use of the media.
- c. Background Information Type C tell about computing or technology-related issues,

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