

Chapter 6

Semiotic Content of Visuals and Communication

ABSTRACT

The semiotic content of visual design makes a foundation for non-verbal communication applied to practice, especially for visualizing knowledge. The ways signs convey meaning define the notion of semiotics. After inspection of the notions of sign systems, codes, icons, and symbols further text examines how to tie a sign or symbol to that for which it stands, combine images, and think figuratively or metaphorically. Further text introduces basic information about communication through metaphors, analogies, and about the scientific study of biosemiotics, which examines communication in living organisms aimed at conveying meaning, communicating knowledge about natural processes, and designing the biological data visualization tools.

INTRODUCTION

Concepts about semiotics pertain to a great deal of facts and events described in this book, such as art, computing solutions, social interactions, interaction with technology, machines, and practically everything else, so they will return as themes for discussion in the chapters that follow. Themes

examined in this chapter such as natural language, communication with signs, symbols, icons, codes, spoken and written communication tools and conventions allow describing communication through computer graphics and art, literature, and computational solutions, and so they will be useful in working on knowledge inspired projects.

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We can see rich semiotic content in descriptions of processes and events occurring in natural or technology-induced settings. Maybe it's good to remember that "meaning" is always the result of social conventions, even when we think that something is natural or characteristic, and we use signs for those meanings. Therefore, culture and art can be seen as a series of sign systems. Semioticians analyze such sign systems in various cultures; linguists study language as a system of signs, and some semioticians examine film as a system of signs. A sign tells about a fact, an idea, or information. It takes a form of a conventional shape or form. Albert Camus (1913-1960), a French-Algerian philosopher and author wrote (Camus, 1951/1992, *The Rebel*, part 4), "Just as all thought signifies something, so there is no art that has no signification."

Applying semiotics to practice, for example of the industrial design, entails making the choices between objectivism – a knowledge system that represents the world objectively and constructivism, which postulates that knowledge is actively built up. The studies on semiotic were based on objectivism, with the concepts of physically existing sign, its meaning, a symbol showing what it stands for, and an artifact telling what it expresses. Objectivism is widely seen as a belief in an observer-independent or culture-independent reality, with structures, codes, and laws ready to be described. Objects reside outside the observing person, so the theory may describe an objective reality. However, objectivist semiotics of the design products, which refer to something that exists independently, may easily disrespect the cognitive autonomy of other individuals and of other cultures. The objectivist and constructivist approaches may lead to different social practices.

Radical constructivism was developed by Chilean biologist Humberto Maturana (1970), Heinz von Foerster (2002), Ernst von Glasersfeld (1989, 1991), Klaus Krippendorff (1990), and several other authors. Maturana – the founder of constructivist epistemology (dealing with meanings and structures underlying constructivism) and

biological constructivism, together with Francisco Varela introduced the concept of autopoiesis, which means self-creation and provides a basic dialectic between structure and function (Maturana & Varela, 1987/1992). Heinz von Foerster, one of originators of cybernetics and initiator the second-order cybernetics, contributed to the constructivist theory.

Ernst von Glasersfeld proposed two principles of radical constructivism: (1) Knowledge is not passively received but actively built up by the cognizing subject; (2) The function of cognition is adaptive and serves the organization of the experiential world, not the discovery of ontological reality (Glasersfeld 1989, p. 162). Glasersfeld calls his version radical constructivism because he claims that constructivism has to be applied to all levels of description. "Those who ... do not explicitly give up the notion that our conceptual constructions can or should in some way represent an independent, 'objective' reality, are still caught up in the traditional theory of knowledge" (Glasersfeld, 1991, 2007).

Klaus Krippendorff (2011a,b) proposed a radically social constructivism, which disagrees with the cognitivism put forward by von Glasersfeld, Heinz von Foerster, and Humberto Maturana. Krippendorff studies the meaning of designed objects, making critical choices between objectivism (a belief in an observer- or culture-independent reality) and constructivism (arising out of social practices based on understanding of one's own experiences and the understanding of participating individuals). The author considers participation in conversation and cooperative constructions of reality more important than observation and a representational theory of language because he finds conversation being the starting point of his conceptualizations of being human. Constructivism takes reality as residing neither outside of an observer, nor inside human mind, but emerging in practice or in social practice as a circular process of perception and action of conceiving and making things. The sand on a beach becomes meaningful for the thought: through sensory participation it a

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