

If Only I Could Dance This: Semiotics and Instructional Design

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Abstract

This article looks at the question, “How can I as an instructional designer operationalize the concept that people use signs to construct meaning mediated by personal experience and culture?” As a beginner in the field of semiotics I have chosen to use the work of Charles Peirce, Elliot Eisner, Donald Cunningham and Gary Shank to inform my theoretical base.

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Defining Semiotics: A Work in Process

Think of a symbol that you might use to represent yourself. Now imagine your friends using a symbol to represent you. How might these symbols be similar? How might they differ? How closely do these symbols fit to the “real” you?

You just learned your first key to understanding semiotics. Semiotics is the study of how humans use signs. The symbols you and others used to represent you are signs. You might be R, Ralph or even the symbol . I'll explain this further in the section “.”

Now take this information a step further and think of a metaphor that might be used to complete the sentence, A Canadian is . . . How would this answer vary if you are not a Canadian, if you had never been to Canada? Our experience of the world and in the world shapes the signs we create.

1 {coe.usouthal.edu/semmed/brehist.html} of Indiana University defines semiotics as “the doctrine that our knowledge of the things in the world is mediated by signs, that we build up structures of signs through experience and these structures define what we take as reality.”

Now if your definition of Canadian was based on the “Due South” television commercials, you’ve brought in a third key to understanding semiotics. Culture plays a very important part in how signs are used.

2){cudenver.edu/~mryder/itc/eco/eco.html} says semiotics is “coextensive with the whole range of cultural phenomena, however pretentious that approach may seem.”

The fourth element is meaning. What do the signs that we create mean and how do we create that meaning? Semiotics is the study of semiosis and 3 {copper.ucs.indiana.edu/~cunningh/g-d.html} of Northern Illinois University defines semiosis as the process of rendering our world as meaningful and significant.

Elliot Eisner⁴ in *Cognition and Curriculum Reconsidered* (1994) describes the way humans use “forms of representation” in the following diagram¹

Eisner (p.46) in brief says that sensory conditions and internal conditions lead to experiences of our environment that create concepts we want to communicate to others. Depending on a variety of factors, we choose forms of representation that are both individually and culturally determined to facilitate that communication. In turn, that painting, book, idea become part of the environment and the cycle begins again.

So my interest in semiotics comes from the question, how can I as an instructional designer operationalize the concept that people use signs to construct meaning mediated by personal experience and culture?

Human Beings Are . . . : A Historical Fantasy

Cave paintings, musical instruments carved in bone and the ritual burial of the dead all demonstrate how early in the development of humankind the need to use signs developed (30,000 B.C.E.) At the same time, we assume that these signs were used to communicate meaning to someone or something else, the spiritual realm for example. So the making of representations is interpersonal and intrapersonal for most of human history.

These representations become systems or codes that create visions of how the world works. Art, drama, music and dance play an important role in cultural identity because they brought both traditional codes and new ways of knowing about the world to large numbers of people. Individuals and cultures then make value judgements based on these codes. Placing a value on our world view seems to be a common human need. How many cultures consider themselves to be God's chosen people?

As social needs became more complex and the need for simpler systems of communication became obvious, people all over the world developed number systems to represent counting and alphabets to represent words.

Communication through signs (such as the image above) brought people together when the signs were clearly understood by large numbers of people and separated them into secret societies and hierarchies when meanings were less clear. Secret handshakes and religious rituals are examples of sign systems that separate people into specialized groups.

Schools developed in most cultures as a method of communicating a sign system to a specialized group. Early alphabets, for example, were taught only to scribes who sold their services to other groups. Religious schools seem to have existed very early and may have predated cities judging by how widespread the use of certain symbols were on stone age artifacts. Initially based on oral transmission of secret knowledge, writing was quickly adapted because its symbolic nature could be understood by only the chosen few, and because scrolls outlived the orator.

After the invention of the printing press in the late 15th century, western European countries developed a school system highly dependant on the use of books. Suddenly ideas could be transmitted over large areas of land, inexpensively and easily. A man on horseback could carry a book in his pocket. Controversial ideas such as the doctrines of Martin Luther could be passed from hand to hand without going through the gatekeepers of church or state. On the other hand "literacy," or the ability to obtain information from books, became valued above other forms of representation in European schools. Pre-literate cultures were looked down upon by representatives of church and state who used educating the illiterate as one of the rationales for colonialism. The more "savage" the original people, the stronger the need to "educate" them.

Compare this to the education of the Samurai, the warriors of Japanese history. A Samurai was expected to be well versed in warfare, both through reading the works of strategists and through the use of weapons. On the other hand, writing poetry, drawing, tea preparation, meditation and flower arranging were also considered essential skills for a warrior. This is difficult for people in European cultures to fathom unless we understand that all of those skills were signs for the ephemeral nature of life, beautiful and then gone. A Samurai was like the cherry blossom; a beautiful object to behold both on the tree and floating to the ground in death; a life to be relished in the moment and released in jubilation.

Human beings use signs to communicate representations of world views. This is so intrinsic to our nature that even newborn babies can distinguish between the shape of a cross and a circle (Slater, Morrison and Rose, 1982)⁵. Signs can be anything that humans can pick up through their senses. The smell of barbecued chicken, the taste of honey, the feel of sharp knives, the sight of a stop sign, the sound of the wind are all signs. Each of them in turn can represent themselves (object) or our experiences with them (sign) or abstractions such as love (interpretant.)

Eisner (1994) expresses a concern (which I share) that education in Western culture has put so much emphasis on book literacy that other forms of representation are not sufficiently valued in education, even though they may be highly valued within the society as a whole. Art, drama, music, sports are considered extras whereas reading, writing and arithmetic are considered to be essentials. The shortsightedness of this is seen when you study the invention of the modeling of Benzene, the Theory of Relativity and the invention of the light bulb. All of these were the direct result of visual images which then were converted into written language as a secondary process, in some cases many years after the initial event. Eisner (1994 p.36) quotes Einstein as saying

“The words or the language, as they are spoken or written, do not seem to play any role in my mechanism of thought. The psychical entities which seem to serve as elements in thought are certain signs and more or less clear images which can be voluntarily reproduced or combined....The above-mentioned elements are, in my case, of visual and some of muscular type.”

A Sign by Any Other Name: A closer look at Semiotic Theory

In this section, we'll look at some of the ways semiotic theorists use words. Umberto Eco, one of the better-known theorists compared reality to a **rhizome**, a system of roots and bulbs that is convoluted and twisted into an emerging and disappearing pattern that is ever changing. Some human beings take a slice of the rhizome in order to understand its nature, others attempt to untwist a section, but no individual has the ability to understand the whole. So for people involved in semiotics the idea of multiple constructed interpretations of reality is quite standard fare.

To analyze how individuals construct versions of reality, semiotics start with the sign. Charles Peirce, who along with Ferdinand de Saussure is considered to be one of the grandfathers of semiotic theory, developed the idea of a sign process that is triadic, with all elements necessary. The three elements are signs, objects and interpretants. ⁶

copper.ucs.indiana.edu/~cunningh/steps.html uses the following diagram to explain the relationship.

An **interpretant** is the effect that the **object** has on us mediated through its **sign**. Effects can be thoughts, feelings and/or actions; so a person might see

an object that has the name/sign “dog” which might then be interpreted as a warm, fuzzy friend or as a four legged, domesticated carnivore or as any of a number of other possibilities. Signs, objects and interpretant “emerge from the context in which they occur.”(Cunningham, 1992)

Pierce classified a sign as an **icon**, an **index** or a **symbol**. An icon resembles the object to which it refers. So if I had drawn a picture of a dog instead of using the word “dog,” I would have been using an icon. Metaphors are also icons. An index has a direct relationship to an object, so smoke can be an index of fire, a point on a thermometer can be an index of temperature and a dog’s lead can be an index for dog. Symbols on the other hand may have no direct relationship to the object but refer to the object through traditions, rules or conventions. So the word D O G is used to refer to the object in the previous example. Words and numbers are the most common symbols we use.

When we have a systematic network of signs that are defined in terms of each other, then we have a **code** (Shank, WWW). Codes and structures with which we already have experience seem natural and sensible to us
(7. copper.ucs.indiana.edu/~cunningh/g-d.html) New information is placed into the code through the process of **induction** so the first time we see a poodle, it fits quite well into our code for dogs. At the same time we predict through **deduction** that this poodle probably likes dog food. Then the next day we run into an animal that doesn’t fit into any of our codes. At this point Pierce would have said that we need to use **abduction** or the process of making meaning to either fit the animal into an existing code by changing the structure of that code or by creating a new code.

This is Kali, the Hindu Goddess of Death and Rebirth. She represents one of the best examples of cultural differences that I have ever found. Looking at her through Western trained eyes, she is a frightening figure; she wears severed heads around her neck, carries a sword in one of her many hands and is stomping on the body of a naked man and woman who seem to be both dead and engaged in a sexual act. Fire flows along the bottom of the painting. If you knew that she is the only religious symbol in India to whom blood sacrifices are still made and that in the 19th century a cult known as the Thugees sacrificed travelers to her, most people would feel disgusted when they look at her.

By contrast Hindu’s call her mother and view her as the source of rebirth. She may predate the Aryan invasion of 5,000 years ago and may therefore be the oldest, still worshiped religious symbol. If you, then studied the symbolism through a Hindu interpretant, you would discover that blood is a symbol of life, not death. The Creator God, Shiva, her husband, exists in the world of the mind, detached from the earthly world and can only have conjugal relations with his wives by returning to the world of the senses through Kali’s dancing on him to “wake him up.” Kali is the door to life, not to death. The “real” world cannot be lived through the mind but through the senses, so to remind us of this she chops off heads. At the same time she holds in other hands the flower blossom of truth and the scissors that cut the attachments to the old life. Fire burns away the impure and by consuming the discarded body allows for the creation of the new. Snakes represent the Shakti, the female creative life force.

You may find yourself flashing back and forth between the two meanings of the Goddess Kali as you continue to look at this picture. In time, if this process is important to you, you will use abduction, and a new interpretation of the symbolism will become part of your repertoire of meanings. If this process isn’t important and you were raised in a Western culture, you will continue to look at Kali with a sense of repulsion. Semiotics does not place a value on one

choice or the other. The awareness of and respect for different meanings is important, not which one you choose as your meaning. Cultural values are part of semiosis, the making of meaning.

“To be **reflexive** is to pause and consider the belief structure that creates your world and the belief structures of those around you”(Cunningham, WWW).

8 (WWW){copper.ucs.indiana.edu/~cunningh/6modes.html} have written about six modes of abductive inference. All quotations are from this article.

2. Omens/Hunch
3. Symptom
4. Metaphor/Analogy
5. Clue
6. Diagnosis/Scenario
7. Explanation

Omens/Hunches deal with the “possibility of a possible resemblance.” A teacher lying in bed one night gets a feeling about a new lesson without being able to analyze where the idea came from.

A **Symptoms** is a “possible resemblance.” The teacher is trying to decide whether a student’s lack of attention might be due to boredom or a physiological problem. She is basing her inference on prior experiences with other students.

Metaphor/Analogy is a “manipulation of resemblances” used to come up with new rules, new understandings. A teacher uses the idea that students are like a salad to develop a new theory about how his students learn.

A **Clue** is “possible evidence.” A teacher is trying to determine if the poor marks her students received on the last exam are a result of the new lesson she used. She then has to search for evidence that would support this.

A **Diagnosis/Scenario** is the “formation of a possible rule based on available evidence.” A teacher realizes that respecting individual differences has enhanced the performance of all his students.

An **Explanation** is a “possible formal rule.” A teacher decides that discussing different points of view in class will improve students’ problem solving behaviour. This is the result of the teacher trying new ways of talking about problems in class.

The Journey Begins: Where Might We Go in Instructional Design

I’ve got a thick skull boss, I don’t grasp these things easily . Ah, if only you could dance all that you’ve just said, then I’d understand.
-Zorba the Greek by Nikos Kazantzakis

In my opinion, the most important piece of semiotics for instructional designers is the idea that experience and culture act as frameworks on which knowledge is constructed. These frameworks act as supports for new knowledge and at the same time act as constraints to developing other world views. Traditional western approaches to education built on previous experiences (systematic design theories) within accepted cultural norms. Constructivist approaches try to move the students into a more experimental mode that pushes at the edges of the framework.

Over the years, I’ve taught several courses on problem solving skills (to adults and teenagers) and I’ve never lacked for material that inspired students to

creatively come up with possible solutions; nor have I lacked when it came to material about planning. But defining the problem always seems elusive. My students consistently assume that the problem is obvious.

Critical questioning felt like the direction to go with this but I didn't have a method of getting at the underlying assumptions that students made about the problems. The semiotic approach to reflexivity and abduction intrigues me as possible ways of working with this issue.

Cunningham(1992) says reflexivity is "an attitude to actively seek out opportunities, to look at things in new ways, to make the familiar strange and the strange familiar, to consider and evaluate perspectives other than your own, to admit that the world that seems to make so much sense is not so certain after all."

To facilitate this process, I think it is important to consider a type of conversation which Gary Shank⁹ describes as a multilogue. Prior to this Roman Jakobson (1957) had identified three types of conversations: the **monologue**, where there is one sender and one or more receivers who listen passively (lectures); the **dialogue**, which has two people taking turns and the **discussion**, which has an initial sender who maintains control over the direction of the conversation and a group of receivers who take turns as senders. The **multilogue** is like a discussion in that one person starts the process but has no control after that initial start. Shank describes this in terms of on-line discussions where several people can reply at once, and new threads can take people in multiple directions simultaneously.

Lets take a side trip into how I might design a lesson on problem solving in a traditional classroom

Lesson Stage	Semiotic Element	Activity	Sample questions or comments
Stimulus	Reflexivity	Magician to demonstrate that what you believe to be true isn't necessarily what is happening.	Can you think of other situations where we make assumptions about what we see and here?
Objective Enquiry	Reflexivity	Question Period	How often do you need to solve problems in your life? How important are problem solving skills on the job? What happens if you solve the wrong problem?

Defining the Problem	1. Sign Theory 2. Abductive Inference	Discussion	1. If the situation is the object, what are the signs we use to interpret this as a problem? Might other people interpret the signs differently? Are their cultural assumptions influencing the interpretation of the situation? 2. What clues did you use to define the problem? What metaphor might you use to describe this situation? Is there an opportunity here as well as a problem?
Choosing a Solution	1. Multiloguing 2. Sign Theory 3. Reflexivity	Discussion and multiloguing	1. How many solutions can you find to this problem? 2. Are the solutions in the brainstorming sessions falling into certain patterns/categories? 3. Are there other patterns that we missed? Compare the results of the individual vs the group brainstorming, is there a difference? What values are we using in deciding on the solution?

That's all very well for participatory classes like problem solving but how do I use this in my math class?

I asked my nine-year-old daughter what numbers were and she automatically said that they were symbols people used in order to count. Somewhere in her educational experience, she had come to that understanding. I think that the concept that the timetables are a symbol for counting could be used to teach multiplication. I, also believe in non-text based methods as ways to facilitate the abductive process of learning the timetables.

Lesson Stage	Semiotic Element	Activity	Sample Question or Comments
Stimulus	Reflexivity	Show students a piece of needlework or other item which is grouped in sets	Compares the time it would take to count all the stitches with the time it takes to multiply the horizontal X vertical
Objective Enquiry	Reflexivity	Question Period	Why did people invent multiplication

Lesson Presentation	Sign theory	Monologue	When I write 2 X 2 on the board, I am writing a symbol that is a fast method of counting .
Skill Practise	Induction, deduction, abduction	Discussion and experimentation	How could we use other forms of representation such as music, drama, dance, etc. to learn the timetables.

All by myself: Semiotics in computer-based instruction

All of the examples mentioned in the charts depend heavily on student interactions with other students and their teacher. This is the educational setting with which I am most familiar but I am very interested in learning mediated through a computer. Gary Shank's theory about multiloguing and the Internet seems to fit very well here. If you were going to teach an on-line class, a built in chat room where questions and new ideas could be presented might be a key element in promoting reflexivity. Building questions into the lesson presentation which students could use as essays or presentations might also facilitate this process. Links to other web sites with differing viewpoints might also assist in developing abductive skills.

One way communication tools, such as CD-ROMs, present a particular problem to use with semiotics, because although they claim to be interactive, the user is forced into a code laid out by the designers. Embedding questions, stories and images in the design might produce reflection. In most cases, I believe this type of instruction must be part of an overall classroom plan that includes opportunities for spontaneous interpersonal communication, then semiotics could become an effective teaching tool.

On the other hand, computer technology is encouraging designers to incorporate music, video and still images into a domain that was formally dominated by text. The potential in this area for creating an educational environment accessible to larger numbers of students combined with new forms of representations of the world creates a dynamic that I find very exciting.

A final question

What do mathematics, history, needlepoint and Semiotics have in common? They all involve discovering patterns (codes).

ENDNOTES

¹Cunningham, Donald, A Brief History of Semiotics, Semiotics in Education SIG, World Wide Web article.

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