Chapter 5:

CLASSIFICATION: RECOGNIZING THE MAP'S NAMING SYSTEM

This chapter emphasizes connections between critical thinking and classification. It maps important techniques for creating classifications:

- Understanding the role of criteria within categories
- Using classification for purposes of clarification
- Using classification for purposes of discovery
- Tactics for constructing classifications
- Crafting a successful classification
- Recognizing that the categories for classification are always selected on the basis of values, beliefs, and needs

In 1798, a British scientist traveled through Australia to look for odd and new animals. Like most European explorers, he expected that the newly "discovered" animals could be labeled with the classification system that had made sense out of European and American animals. The existing system was detailed, and any discovery was expected to fit into its categories. It mapped the world of animals. Of course, no one had mentioned this classification system to the platypus, an extremely odd little creature from the waters of Australia. The naturalist captured one and passed the specimen along to Captain John Hunter, who sent it to an English scientific society. As these scientists examined the animal, they found that their classification system couldn't

make sense of the discovery. They were perplexed: was it a bird; a mammal; a reptile; a hoax? The animal had a combination of features that made it nearly impossible to classify:

fur	beaver-like tail
poisonous fangs on the hind legs	eel-like eyes
the ability to nurse its young	a duck-like bill
oviparous (egg-laying)	webbed feet
electro-location of prey	

The British had discovered an anomalous animal. Some Euro-Americans decided the beast was a hoax because it was easier to do that than to re-configure the classification system for this new kind of animal. Eventually, everyone recognized that the existing classification system had been useful, but that the odd little animal had exposed a blank spot in the map. It was now time to re-draw the classification map so that others could use it to explore the animal kingdom in better ways. These scientists did re-draw the map for classifying animals. They created a category called the "monotremes," a group of only five animals with odd and unique characteristics similar to those of the platypus. Their experience of discovery, classification, and revision tells us as much about classification as it does about the little animal from Australia.

Key Features of Classifications

So what makes a classification a classification? First, classification puts an object into relationship to a category. The user's needs create the category; categories are not natural, and thus neither is classification. If classification is artificial, then why do people do it? People do it to make sense out of the world and solve practical problems. Humans judge classifications according to their usefulness. If the classifications do their job of making sense out of the world, they are accepted as legitimate. Classification is primarily an action:

1. Features of Classification
    a. Classification recognizes *existing* categories
    b. Classification understands the criteria for each category
    c. Classification identifies key features of objects to be classified
    d. Classification identifies their absence or presence
    e. Classification assigns the object to a category
    f. Classification can proceed even further

i. to adjust the criteria to solve new problems
ii. to discover the assumptions, values, and beliefs of the classification system

2. Purposes of Classification
   a. Solves pragmatic organizational problems
   b. Prepares the user to undertake additional inquiry

Classifications have specific features, but how they appear in writing depends on their purpose. For example, if you are sorting objects into categories (classifying them), then you have to begin with a clear naming of the categories. Think of your silverware: knives go in *the knife slot*, spoons in *the spoon slot*, and forks in *the fork slot*. Naming the categories makes it possible to put away the silverware. This is the simplest use of classification. Such uses are common. We put garbage in the garbage can, the laundry in the hamper, and the children in their beds. The items fit pre-made categories. Such categories are handy, everyday ways to organize our work and our thinking. Everything works just fine until we go to put away a spork, or when we discover a platypus, or when we think about a transgendered friend. Classification relies on the use of clearly defined categories. Often, it "slots" things in terms of criteria that both the writer and reader have had to consciously accept. It asserts that something simultaneously "is" something -- a member of a category -- and also that it "is not" something else -- a member of another category.

Classification is not Comparison

What is the difference between comparison and classification? Comparison looks at the similarities and differences of two different things. Then, it makes judgments about the differences. Thus, comparison focuses on the things compared, not on the criteria. In a classification, the criteria are already in place, and then they are applied to an object (platypuses, cars, varieties of strawberries, etc.). Remember, to classify something is to judge whether or not it fits the criteria for a category. It is not a comparison.

Classification Enables Action

We are likely to see classifications as a step toward making a judgment about what is important or what needs to be done. A doctor who swabs the sore throat of a child will probably touch the swab to two petri dishes. One will have a jelly-like substance that only allows the growth of

Where in Your World are Classifications?

Classification is the act of placing something into a category. The category is a practical way to name a key aspect of whatever is being classified. It strengthens modes such as argument by specifying what makes something distinct from other things.

Classification at School
- In a biology class to study taxonomy
- In a chemistry class to decipher the periodic table
- In a history class to understand the forces that change a culture

Classification at Daily Life
- To plan a weekly menu
- To track personal spending
- To plot out a garden

Classification at Work
To perform a demographic analysis
To assign a risk level to an insurance application
To diagnose the stage of a cancer

what are called “gram-positive” bacteria. The other will have a jelly-like substance that allows only the growth of “gram-negative” bacteria. In a few days, she can look at the two dishes to see which one has grown a clump of bacteria. At that moment, the doctor can classify the bacteria causing the sore throat and then prescribe the antibiotic that will cure the child.

A geologist for an oil company will take a sample from a new well and classify it to determine its value. The categories have specific criteria:

Class A: Light, Volatile Oils. These oils are highly fluid, often clear, spread rapidly on solid or water surfaces, have a strong odor, a high evaporation rate, and are usually flammable. They penetrate porous surfaces such as dirt and sand, and may be persistent in such a matrix. They do not tend to adhere to surfaces; flushing with water generally removes them. Class A oils may be highly toxic to humans, fish, and other biota. Most refined products and many of the highest quality light crudes can be included in this class.

Class B: Non-Sticky Oils. These oils have a waxy or oily feel. Class B oils are less toxic and adhere more firmly to surfaces than Class A oils, although they can be removed from surfaces by vigorous flushing. As temperatures rise, their tendency to penetrate porous substrates increases and they can be persistent. Evaporation of volatiles may lead to a Class C or D residue. Medium to heavy paraffin-based oils fall into this class.

Class C: Heavy, Sticky Oils. Class C oils are characteristically viscous, sticky or tarry, and brown or black. Flushing with water will not readily remove this material from surfaces, but the oil does not readily penetrate porous surfaces. The density of Class C oils may be near that of water and they often sink. Weathering or evaporation of volatiles may produce solid or tarry Class D oil. Toxicity is low, but wildlife can be smothered or drowned when contaminated. This class includes residual fuel oils and medium to heavy crudes.

Class D: Nonfluid Oils. Class D oils are relatively non-toxic, do not penetrate porous substrates, and are usually black or dark brown in color. When heated, Class D oils may melt and coat surfaces making cleanup very difficult. Residual oils, heavy crude oils, some high paraffin oils, and some weathered oils fall into this class.

http://www.epa.gov/osweroe1/content/learning/crude.htm

The sample has to be classified because the categories allow other decisions. Once the sample is classified, it will require specific types of refining, will yield different types of chemicals, and will have a different value. The classification is a first step toward the creation of a highly specific product.

Categories have powerful effects in another arenas. For example, The Nielsen rating company has categorized the audiences who view television shows. The categories are based on criteria such as age, gender, race, income, and geography. Advertisers can see how many people from each category watch a particular show. If the advertiser is selling yachts, the decision will be to advertise on shows that appeal to wealthy people, or to people who live near water. A show that appeals to the ten individuals who might purchase a 1,000 foot yacht can be a wise choice for a place to advertise. However, advertising yachts on a show that appeals to teenagers would be almost pointless. Knowing how the show can be classified leads to specific choices about where to spend advertising dollars.

Three Roles for Classification in Critical Thinking

Writers have three basic ways to use classification. Each is useful, but they are used to perform three different kinds of thinking.

Classification for fitting an object into an existing category

Classification can emphasize the criteria that determine how to categorize the object. For example, a pathologist has two major skills: a knowledge of tissues and an ability to assess whether a specimen fits the criteria for normal. The pathologist makes an informed judgment about the tissue sample: normal or abnormal. The doctor classifies the tissue as one or the other. The tissue sample might then be classified into further categories that name the kind of abnormality.

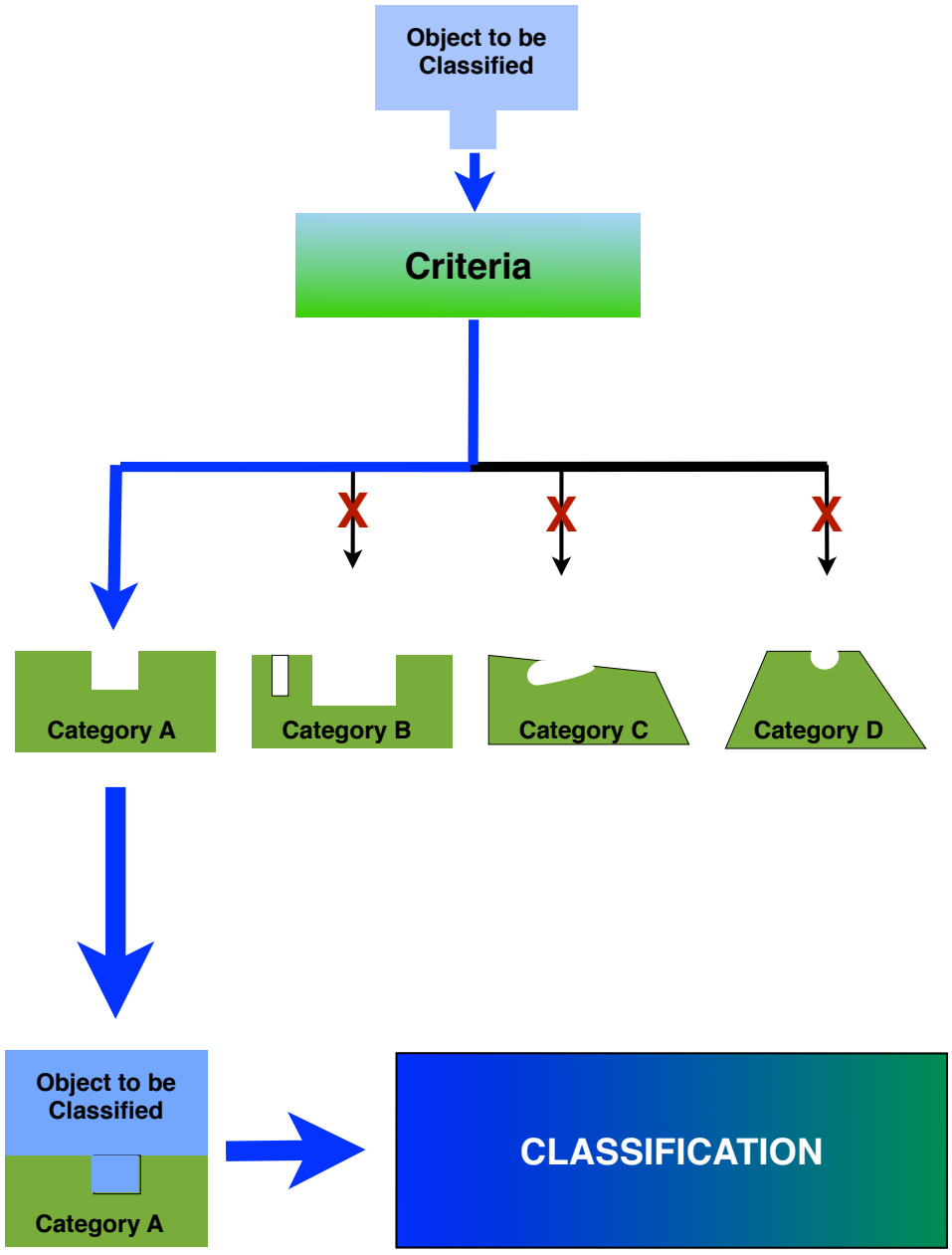
Putting Classification to work

Many teachers attack *Wikipedia* for its editorial process. Because it is collaboratively produced, it does not fit into familiar categories. Some believe that this means that the information on its pages is not accurate. You can begin to think about the nature of *Wikipedia* by determining its similarities to existing categories of information. Fill out the chart below, and then make a judgment about how to classify the online publication.

Classifying Wikipedia										
	Free	Pay	Peer Reviewed	Crowd Sourced	Author Named	Liberal	Conservative	Digital	Paper	Audio
Wikipedia										
Encyclopedia										
Newspaper										
Magazine										
Journal										
Blog										
Journal Database										
Television Program										
Radio Talk Show										

How does the ability to classify the publication affect your judgment about its credibility?

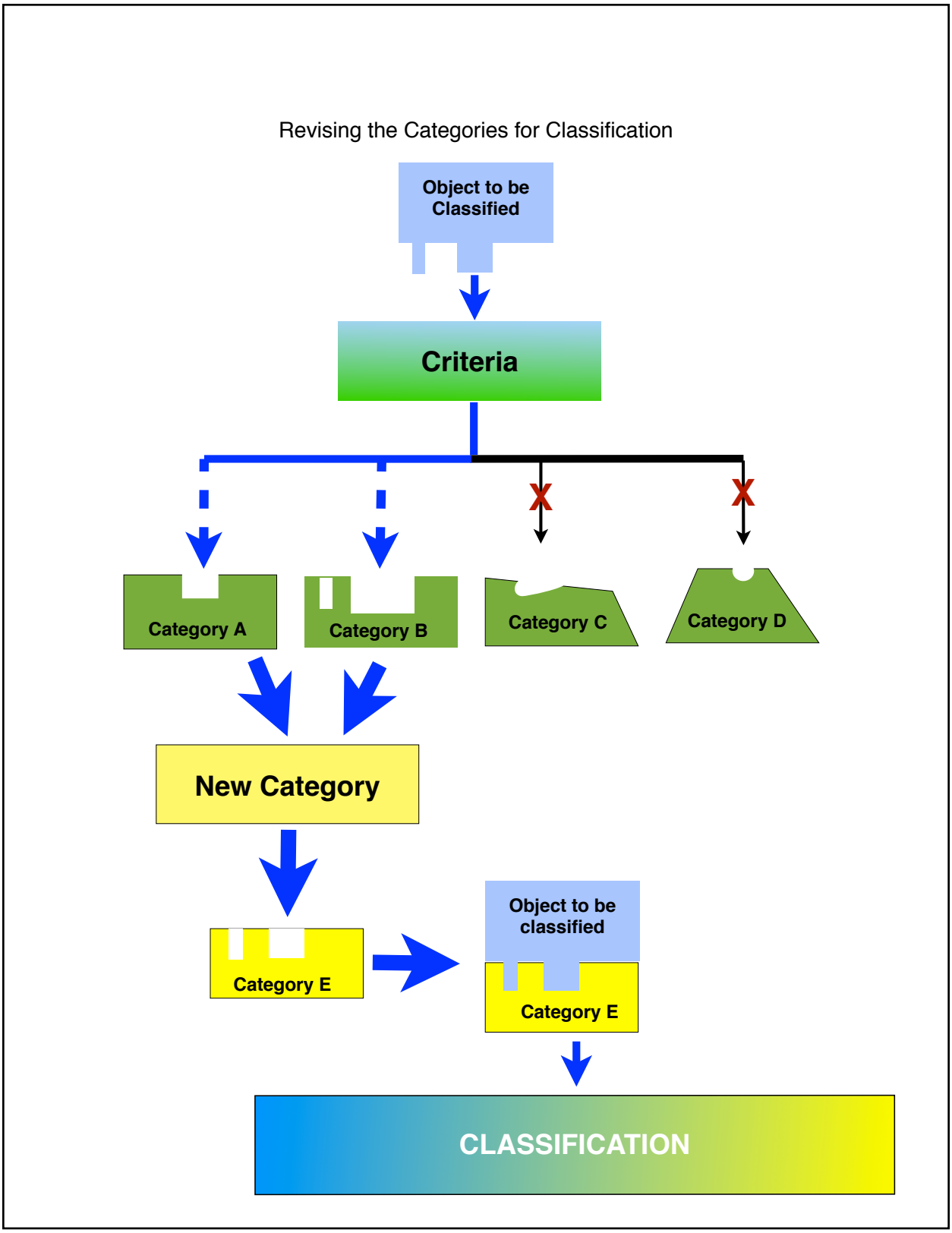
Classifying an Object as a Member of an Existing Category



Placing the object in the correct category is one kind of classification. It is a basic tool for guiding our understanding of the world.

Classification for adjusting the criteria to solve new problems

Classification can focus on the *system* of classification. It can focus on the criteria by emphasizing their usefulness. For example, the British scientists interested in the platypus began with an emphasis on existing criteria, but their focus shifted to inventing and adjusting the criteria for classifying animals. The new criteria required a new category. Out of their classification work came a revised system that solved a new problem: the platypus. This type of classification *increases* our understanding of the world.


Revising the Categories for Classification
Object to be Classified
Criteria
X
X
Category A
Category B
Category C
Category D
New Category
Category E
Object to be classified
Category E
CLASSIFICATION

Revising the Categories

When you classified *Wikipedia* in the previous exercise, it probably did not exactly fit with any of the other categories. Look at the existing chart and make additions to it. Add criteria across the top to create a more thorough system for identifying publications. Then, add a category in the left hand column that would include publications such as *Wikipedia* and other online, collaborative sources of information.

You may wish to review the story about the classification of the platypus.

Classification for discovering the assumptions, values, and beliefs of the classification system

Classification can focus on values that the categories reflect. For example, the Constitution of the United States initially classified people into men old enough to vote, men too young to vote, women who could never vote, and slaves who were 3/5 of a person. If we look at the values, beliefs, and assumptions in the classification system, we see the issues that will come to shape the future of the nation: slavery, women's rights, and voting rights. This type of classification increases our understanding of problematic issues by building upon the other two types.

CLASSIFICATION AS A DISCOVERY METHOD

Platypuses and other anomalies become understandable when they are classified as members of a category. For an anesthesiologist, a good classification system means that a patient can receive the right anesthetic, can survive surgery, and can recover. For the scientists who examined the platypus, the slots were useful even when they did not work. They understood that the classification system served reality. If that was so, reality could dictate changes in the categories. They carefully adjusted their system once it became clear that the platypus really was different from other orders of animals.

Classification can be a tool for solving a problem, but it can also be used to add new alternatives for solving problems. There is no need to choose between using existing solutions and adding

new ones. Each relies on classification to produce an insight. Think about the platypus again: the first specimen *did* fit into part of the classification system for animals. The scientists could easily classify it according to some parts of the existing system. The little animal was part of the Kingdom (Animalia) which includes *animals*, Phylum (Chordata) which includes *animals with backbones*, and Class (mammals) which includes *animals that nurse their young, have hair, and have warm blood*. That was the good news. The interesting news was that the classification began to fail because the platypus lays eggs. Until the biologists re-drew the map, they could not classify it any further. Scientists knew that they could classify it, but they had discovered the limits of the existing system. Only when additional sub-categories were created could the classification go further. In 1835, scientists changed the classification system by adding four additional "slots":

Order - Monotremata (monotremes)

Family - Ornithorhynchidae (platypuses)

Genus - Ornithorhynchus (modern platypus)

Species - Anatinus

Once these were added, the classification system could go about its work without stirring up any attention. The discovery of a new and anomalous creature re-drew the map. Thus, the goal of classification is to have a useful and flexible system. The only other alternative is to claim that the animal does not exist or that the specimen is a hoax.

Classification appears in many practical settings because it comes at the end of the process of mapping out a topic. By consolidating what is known, classifications prepare the writer to move on to two key tasks:

1. Naming opportunities for new insights, that is, seeing the gaps in the map
2. Making a claim that re-integrates the map in a new and useful way.

Classification often organizes the existing knowledge of a topic and helps the writer see both what is known and what is not yet explained.

How to Write a Classification

Name the Categories, Criteria, and Classification System

A classification begins by understanding how the existing classification system works. A practical step is to list each category, and then make a list underneath each one that specifies the stated criteria and unstated criteria. For this task, the TEQ Sheets are especially useful. They help the writer see the places where the categories and criteria need to be clarified so that the classification is more accurate. The result sometimes leads to disagreement among writers, but that can be useful for the next writer who comes to the topic because it creates an opportunity to make further improvements.

Specify the Criteria for the Category

Once the categories are identified, the thing being classified has to be examined in detail by assessing the criteria. The more specific the assessment of the criteria, the easier it is to judge if the fit between the two is good enough to say that the classification is justified. To do this, classifications tend to use specific words:

species	order	breed	style
kind	genre	group	rank
category	field	section	type
segment	hierarchy	sub-section	genus

When reading, these words are a reminder that a classification system is being used. When writing, they are effective tools for naming the categories and identifying the fit between them and the object being classified.

Use the Categories and Criteria to Examine the Object Being Classified

A simple chart helps the writer keep track of the fit between the category criteria and the object. Classification is valuable because it focuses on the *relation* between these two rather than on just one of them. If a criterion only partially applies, the writer has to consciously decide what is "good enough" to justify the classification.

Adjusting the Criteria

Classifications are created by people who are attempting to make sense out of the world by naming how it is organized. This means that classification systems are always changing and developing. Real world projects frequently require such adjustments, and the process of adjusting criteria cannot be separated from classification.

Assess the Classification System

This next step is not always necessary, but it is a natural outgrowth of the critical thinking that classification performs. The classification can proceed even further by discovering the assumptions, values, and beliefs of the people who have developed it. The classification system can become a window onto those background frameworks.

TWO EXAMPLES OF CLASSIFICATION

Below are two examples of classifications to help you understand how to use and to analyze classifications.

Example #1: Mapping the Meaning of Classification

Let's begin with an old and familiar parable:

Three blind men are traveling through the jungle when they stumble over a sleeping elephant. One man touches the leg of the elephant and announces, "This animal is like a . . . rubbery barber pole." The second man touches the trunk and says, "No, this animal is like a snake." The third man touches the tusk of the elephant and announces, "It is like a fossilized banana." The three fight fiercely, but can conclude nothing. The Buddha hears of their fight and says, "The elephant will awaken when all its names become one name."	The men are literally and figuratively "blind" to the need for a common focus to the criteria. Further, they are blind to the goal of integrating the criteria into an understanding of the object (elephants) so that they might make use of the information in some other setting. If they were able to "see" that the criteria were aspects of something larger, they would be able to "see" the larger category called "elephants." Of course, their blindness is metaphorical. Classifications need fully described categories.

What does this example tell us about classification?

This example shows that the criteria for a category must share a focus. The blind men's work seems to be a classification, but it only fragments the elephant. It does not place it among similar types of things. The blind men have no shared perspective. Usually, the parable is recited as part of some purpose of the teller: the teller wants us to think about things like the incompleteness of human knowledge, the arrogance of individuals, or some other large idea. But within the story itself, there is no such purpose. The blind men see only one thing, not a set of criteria that reflect a larger object's complexity. They think they know something, but their confidence is based on too few criteria. How do we avoid doing this? First, we examine our criteria to make certain that the criteria share a focus. Second, we ask how the category serves the needs of others who would use it in a different setting.

Example # 2: Mapping the Meaning of Classification

The following example is from a student's classification of an artist's home, *Luna Parc*. The artist

-- Ricky Boscarino -- refers to the house and grounds as an "environmental sculpture." His term is useful, but *Luna Parc* also seems similar to the work of another category of artists called "Outsider Artists." The student's assignment required her to read about "Outsider Art" and "Outsider Artists." She discovered that many scholars have identified important features of such work. There are many criteria, but she decided to use the basic features that almost all the experts accept: 1) Outsider Art is created by an artist who has no formal training; 2) Outsider Art is not intended for the world of museums, galleries, and commercial sale. It is her job to see if *Luna Parc* should be classified as Outsider Art.

She began by filling out TEQ Sheets on several of the readings. She also filled out a TEQ Sheet on information from Boscarino's web site (www.lunaparc.com). After mapping out the categories that classify an artist as an "outsider," she applied them to what she discovered on the website to determine Boscarino's relationship to the concept.

Bringing the Outside In: Boscarino's Luna Parc When you hear the term "Art," what comes to mind? Most people would say they visualize paintings hung on the wall, sculptures in museums, photographs, and drawings. But the term, "Outsider Art," makes most of us scratch our heads in confusion. We wonder if it's just one person's name for a group of similar art works, or if experts have created the category. In fact, experts have been using the term for about forty years. It's a category that already exists and is ready to use. What does it mean? How is Outsider Art different from any other kind of art? The experts disagree about some aspects of Outsider Art, but most agree about two things: first, the artist's lack of formal education, and second, the fact that the works don't typically appear in galleries, museums, and other public exhibits during their lifetimes. Artists who create the traditional, insider art we typically envision have gone to art school, but Outsider Artists are self-taught.	The writer begins by recognizing existing categories. She understands that experts have created categories to help understand specific types of art. She immediately begins to examine the criteria for two types of art: traditional and outsider. By naming education, she focuses the category and enables herself to understand her topic: classification itself.

The difference I found in these artists' "imagination" is the technical skills used to create objects. Outsider Artists use non-traditional techniques, but artists use traditional techniques. I have also been researching and examining Boscarino's *Luna Parc* to see if his work can be classified as "Outsider Art." Trying to categorize Boscarino and his Luna Parc as Outsider Art/Artists can help understand the idea of classification. My test of the classification system is a tool for explaining how classifications are created. How Boscarino's *Luna Parc* relates to "Outsider Art" is an open question. By classifying *Luna Parc* according to the existing ideas, I can find ways to improve the criteria and thus produce better, more useful classifications. It may be easy to classify some things but not always. Readers and writers must always carefully examine the criteria to avoid misinterpreting classifications.	This paragraph prepares for a more complex understanding of classification. She notes how classification can go astray (stereotyping) in order to set the stage for her claim that Boscarino necessitates a revision of the criteria for outsider art. She reads the categories according to the criteria because the criteria create boxes. If she calls Boscarino an Outsider, then she must know some things about him, and about both what he does, and what he does not do. That enables her to further understand the criteria because she already has some knowledge or experience that augments the category.

The classification of *Luna Parc* and Ricky Boscarino may hinge on his education, but the complexity of his work and his life are not represented by classifying it/him as "Outsiders." Before the creation of *Luna Parc*, Boscarino graduated from the Rhode Island School of Design, gaining further artistic exposure during his period of postgraduate work at the New York University Film School. Later, he basked in the creative cultural atmosphere of Rome. Clearly Boscarino is not untrained. Boscarino has a formal education in art, but an important criteria for the "Outsider Artist" is that s/he be untrained or self-taught. When first viewing *Luna Parc*, it appears to be "Outsider Art" simply because it is a different creation than anything we've typically seen or heard. I find this to be problematic because despite the similarities to Outsider Art, there were differences as well. The criteria aren't specific enough to tell how to classify Boscarino and his work. Classifying *Luna Parc* and Outsider Art is problematic because while it can be easily labeled as Outsider Art, it also fits other categories. The categories overlap, and when they do this, we see that they are conveniences rather than statements about real differences.	She now looks at features of Boscarino and his work that make it difficult to classify him and/or *Luna Parc.* She identifies the specific criteria and discovers if they are present or absent. Just as the platypus overlaps several categories, so do Boscarino and his *Luna Parc*. Both require something new.

Luna Parc and Outsider Art have allowed me to realize the limits of classification systems. Classification is not something discovered about the real world. Instead, it is something that humans create for the sake of convenience. This allows me to say something more useful about Outsider Art. The problem with the term is that it has become so popular that many others criteria have been added. Outsider Art involves categories such as Folk Art, Primitive Art, Tramp Art, Prison Art, African Sign Painters, African Coffin Carvers, Haitian Muralists, Australian Aboriginal painters and other specific categories. Luna Parc can not be classified as Outsider Art because the category includes too many types of things. How can we classify something into a category that is so complex? Classifications can have limitations when the categories can lack focus.	The paper does not ever classify *Luna Parc*. Instead, it attempts to do so, and uses the failure to say something about an artist, about a category, and about how classifications sometimes need to be adjusted. The list of alternative names for such art is evidence of the category's weak structure.
Putting Boscarino's *Luna Parc* into the category of Outsider Art shows the term's many limitations. Aside from what I have read about the term, "Outsider Art," I have come to identify it as art that is raw and pure. It is art without the layers of training that afflict mainstream art. That is how I have redefined the category of Outsider Art by using *Luna Parc.* It forced me to look beyond the existing categories by revising the criteria. My case shows that we have to be careful about accepting an existing classification system. Classifications can mislead readers; if something meets all the criteria, in this case, "Outsider Art," we automatically classify it that way. My case study makes me more skeptical about classifications.	The conclusion makes two points: 1) that classifications are invented; they are not natural groups; 2) that classifications can overlap and thus reveal either a new category and/or the artificiality or limitations of those that exist. She has managed to transform the classification of *Luna Parc* into an analysis of classification itself. Note that she rejects the existing map and insists on classifying according to something more useful.

Putting Classification to Work

The student's essay uses classification to test the value of a category (Outsider Art) in a classification system.

- How does the student discover weaknesses in the classification system?
- What improvements does she create for the classification system?
- What does the improvement add to the understanding of outsider art?

Imagine what the paper would have been like if she had simply said, "Nope. *Luna Parc* does not fit the criteria I've been given." There would be no growth in the criteria and no classification. Good writers are always wary of the categories. The student re-drew the criteria for Outsider Art because she had a major interest: classifying *Luna Parc*. She reviewed the "map" that others had drawn of the concept, found a gap, and then re-drew the map to fill in some of the places that were not clearly explored.

SUMMARY

Classifications are more than a list of existing slots. They are part of the critical thinking that makes sense of a new discovery. Sometimes, classification puts the discovery into a slot that will enable it to be better understood. For example, when a librarian reviews a new book, one of the key tasks is to classify it using the categories of an established framework such as the Dewey Decimal System. Readers and writers benefit from knowing what kind of book has been published.

Classification is also part of the kind of critical thinking that stands back from the practical "slotting" of a discovery and assesses the criteria that make up each slot or category. Classification has a flexibility that moves between an emphasis on the established criteria for making sense of the world and adapting that framework to the flow of new and anomalous discoveries.