CHAPTER

# 6

# Inducing

## Looking For Patterns Within and Across Media Messages

We use the skill of induction when we draw general conclusions about elements after making a small set of observations about those elements. For example, let's say you watch a video in which a young child throws a temper tantrum. Then later you are in a store and see a young child whining because his father won't buy him some candy. You find yourself thinking "All children are so spoiled these days!" After you have experienced only two instances of children behaving badly, you have inferred a pattern (both children were spoiled) and generalized that pattern to all children. In essence, *induction* is the skill of inferring a pattern among a few observations and then generalizing that pattern.

The skill of induction is important for media literacy because we are continually drawing conclusions about all kinds of things we experience in media messages. We watch news coverage of several politicians lying to the public and draw a conclusion that all politicians are dishonest. We watch a few episodes of a new video series, observe the way the characters behave, then draw conclusions about how they will behave in future episodes. The conclusions we construct from our small number of observations are speculations about a pattern that explain what we have perceived in those few observations. When we generalize that speculated pattern, we are in essence creating a belief that the pattern holds across many situations that we have not observed. These beliefs we construct through induction then become our standards when we evaluate all kinds of experiences in the media as well as all kinds of things in real life. If those beliefs were constructed too hastily from a few idiosyncratic experiences, then the faulty nature of those beliefs will have a negative cascading effect as we use those faulty beliefs to guide how we make decisions and how we live our lives.

All of us want a good amount of useful knowledge about how the world works, but we cannot possibly experience everything the world has to offer. Our experience is always limited. No matter how many people we meet, we will never be able to meet everyone; yet we want to feel that we understand human behavior. The skill of induction is a tool we use to make sense of our experiences and to leverage what we learn from those experiences into general principles about how the world works.

Induction is the skill we employ when we use the *scientific method*. Remember learning this in high school? With the scientific method, we first pose a question, then make observations to find an answer to our question. As we make our observations, we look for patterns that could provide an answer to

our question. When we see a pattern, we continue to make observations to see if this initial claim for a pattern holds up. As additional observations continue to support our initial claim, our confidence grows that this pattern will continue to hold up, so we generalize this claim; that is, we use this claim to explain all kinds of situations, events, and people, beyond those we have observed.

Psychologists often refer to people as **naïve scientists** because of the way we approach problem solving in our everyday lives. In this term, the word *scientists* refers to our use of the scientific method, and the word *naïve* refers to our lack of knowledge about the full power of induction as well as its limitations. Of course, when we confront most of our everyday challenges, we do not need to know the full power of induction or be wary of its limitations. In everyday life, we are motivated by efficiency; therefore, we want to perceive patterns as quickly as possible and then move on to other things. The consequences of being wrong are slight, so we are motivated more by efficiency than by accuracy.

In other situations, however, when being right is more important than speed alone, we become motivated more by accuracy than by efficiency. When we are guided by the goal of accuracy, we need to know more about the process of induction and how to get the most out of it. We need to be more systematic in how we use this skill and avoid traps that will lead us to inaccurate conclusions. You already know how to use the skill of induction to achieve efficiency. The information in this chapter will help you develop your skill of induction in order to achieve the goal of accuracy.

## I. The Induction Algorithm

Induction is a process of formulating a question, determining the element, making observations, inferring a pattern, generalizing the pattern, then continuing to test your claim of a pattern (Table 6.1). Because we live in an information-saturated society, we are continually making observations; we cannot avoid doing so. Therefore, the inductive process starts not when we make observations. Instead, the inductive process really starts when something grabs our attention in a way that stimulates us to begin asking questions about what is really going on, and we seek an explanation.

### Step 1: Formulate a Question

The process of induction begins while you are making observations and some kind of question occurs to you about those observations. For example, you come across a political blog and begin reading the comments that are posted there by a person calling himself Horatio. You notice that Horatio

**TABLE 6.1 The Skill of Inducing**

**Purpose:** To infer patterns across individual observations

**Algorithm:**

1. Formulate a question.
2. Determine the element to observe.
3. Make observations of several elements of a given type.
4. Infer a pattern. Look for commonalities across those elements to make a claim about a pattern.
5. Generalize a pattern. Claim the pattern holds throughout the full set of elements from which you made your few observations.
6. Continue to test your claim. The additional observations will either support your pattern, which will increase your confidence in the accuracy of your general claim, or not support your pattern, which falsifies the general claim. With falsification, we can either reject the entire general claim or alter it so that it is less general—that is, so the claim is no longer so broad that it includes the nonsupportive observations.

presents some very strong and controversial arguments and that he supports those arguments with facts and figures that do not seem accurate to you. A question arises in your mind: Can I trust Horatio's arguments?

Sometimes your question is more fully formed. For example, let's say you watch a local television newscast and notice that the first few stories presented dealt with crime and violence that made you feel fear. You also notice that as the newscast continued, the type of stories seemed to shift into things that made you feel comfortable and happy (human interest stories, diversions, sports, weather). It occurs to you that there might be a relationship between part of the newscast and type of story, where news shows try to grab your attention by scaring you then shift the tone of their stories to make you feel good. You wonder if all newscasts begin by hooking viewers with fear then proceed to make them feel happy with humorous or uplifting stories.

## Step 2: Determine the Element to Observe

The next step is to figure out what you need to observe across media messages. All media messages are clusters of many different elements. Not all elements are equally important to observe. In the Horatio example, we need to focus on the facts Horatio presents in his blog because we want to look for a pattern of accuracy. Although the fonts, colors, and pictures in Horatio's blog pages are all elements in those media messages, they are not relevant to our purpose. In the newscast example, our focus needs to be not on the stories themselves but on the emotions that are likely triggered in audiences.

### Step 3: Make Observations

Your question sets up a need to make some observations. With the Horatio example, you check the accuracy of the facts and figures that he cites to support his arguments and you find that they are the same as the facts and figures you find in reputable sources, so you draw a conclusion about Horatio that he does good research and that his arguments can be trusted. Over the next week, you continue to read Horatio's comments and continue to check a fact here and there, always finding his facts to be accurate. With the newscast example, the question guides you to watch more newscasts and pay particular attention to the *types* of stories and how they may change in tone throughout the duration of the newscast.

The first two steps of this process of induction can be treated as a cycle that is repeated. This is especially the case when it is difficult to formulate a clear question initially. Perhaps you are motivated to engage in an induction process not because you have a clear question but because you have a nagging feeling. It may take several cycles of steps 1 and 2 to progress from the nagging feeling to the articulation of a clear question.

### Step 4: Infer a Pattern

When you have a clear question and are making observations, you need to look for commonalities across those observations. This requires a careful examination of the elements you are observing.

Returning to the Horatio example, let's say that you have checked reputable sources for the facts that Horatio cites in his arguments and each time you find that his facts appear to be accurate. So you draw a conclusion about Horatio that he does good research and that his arguments can be trusted. This conclusion leads you to continue reading Horatio's blog, to trust the accuracy of his facts, and therefore to accept his opinions as valid. The more observations you make that confirm your speculation about a pattern, the more confidence you have that your inferred pattern is a correct explanation.

In the newscast example, you need to do a breadth analysis to identify the list of stories that are presented. Then you need to ask yourself if the same pattern of stories occurs in each newscast. Are the fear stories always presented first and never at the end of a news program? Are the humorous and human interest stories never presented first? Once this pattern occurs to you, you look at the sequence of stories in other newscasts to see if your guess at a pattern holds up in the other newscasts.

Let's say we watch a second newscast and perceive the same relationship between feelings of fear at the beginning and feelings of happiness at the end. You then watch a third, then a fourth newscast. In each newscast you see the same pattern of elements (sequence of stories). At this point in the inductive process, you have inferred a pattern: the initial stories evoke fear but then the later stories evoke positive emotions like happiness.

The process of pattern inference requires trial and error. You make some observations and notice some things occurring over and over. List those things. This list of commonalities is your initial pattern. Then add a few more observations and see which commonalities from the list should be retained and which should be deleted. Repeat this process over and over until it stabilizes—that is, the same commonalities consistently appear across all your observations.

This pattern is an inference that you have made from your observations. This inference only claims that a pattern is consistent across the elements you have observed. Returning to our newscast example, let's say you observed four particular newscasts, so the pattern is inferred from only those four newscasts. At this point, you make no claim that a fifth or sixth newscast would exhibit this pattern.

### Step 5: Generalize the Pattern

The next step in this inductive process is to **generalize** the pattern; you claim that the pattern you inferred from your limited number of observations is not limited to only those observations but that it is more general; that is, you claim that the pattern holds across all possible elements, even those you have not observed. We elevate our initial claim (that there is a pattern across the observations we made) to a **general claim** (that the pattern exists across a broader set of elements that we have not observed).

Returning to the newscast example, we inferred a pattern across the four newscasts. However, we are more interested in *all* newscasts than we are interested in only four. If we generalize our pattern to all newscasts, we have a more interesting claim: All newscasts begin with stories of crime and violence to evoke fear in the audience and then shift to stories that will make the audience feel happy. This general claim gives us the sense that we know something about all newscasts without having to observe them all. Thus, we have created a general claim about all newscasts even though we only expended the effort to observe four.

With the Horatio example, what does generalizing mean? Let's say that you checked the accuracy of a dozen facts in a week's worth of his blog posting and you confirmed the accuracy of all those dozen facts. But let's also say that he reported 20 facts during that time, eight of which you did not check. A conservative generalization would be "Horatio can be trusted because he reported only accurate facts this week." This is relatively conservative because you are generalizing from 12 observations to a pattern across 20 elements (facts, in this case). A less conservative generalization is "I can trust all of Horatio's postings throughout the coming week." This is less conservative because you are using the 12 facts you checked in last week's posting to make a general claim that all the facts he will present in the coming week will also be accurate. An even less conservative generalization would be "I can always trust Horatio to present only accurate

facts." And an even less conservative generalization would be "I can always trust anyone named Horatio at any time, in any situation." This is quite a generalization!

When we generalize, what we are doing, in essence, is removing the limitations of time, space, situation, and/or people. In our example, we removed the limitation of time by moving beyond four newscasts (accounting for about 2 hours of airtime) to all newscasts. Our general statement is not limited to four newscasts, 1 week of newscasts, newscasts only in the evening, newscasts only during sweeps months, newscasts only during one season of the year, or newscasts only this year. This statement is also very general as far as space; that is, it is not limited to newscasts in only one television market. Our generalization implies that the pattern holds in all 215 local markets in the United States; it also does not limit itself to only U.S. broadcast markets. And this statement is also very general as far as people; that is, it is not limited to only stories presented by people of one gender, age grouping, or ethnic background.

### Step 6: Continue to Test Your Claim

Because your general claim was inferred from a small number of observations relative to the large number of observations that are theoretically possible, you need to continue making observations to see if the claim continues to hold. To do this efficiently, consider the dimensions you used to make your statement general—stretching on time, space, situation, and people. Select your messages strategically in those areas so as to maximize the return on your effort.

We could continue testing our general statement on the dimensions of time and space. The more testing we do, the more precisely we can craft our generalization and the more confidence we can have in the accuracy of that generalization. This testing step is what separates a good process of generalization from a poor one.

In everyday life, we frequently skip this step. When we are in a hurry or when the cost of making a wrong general claim is low, we do not continue to observe examples to see if our generalization holds. As a result, many of our general claims are wrong but we do not notice this. If our goal with induction is accuracy, then it is important to continue testing our generalizations so we can weed out the claims that initially generated support but later were found to have many exceptions. Even if we are very insightful in seeing patterns across as few as two messages, there is no guarantee that the pattern—no matter how brilliantly inferred—will show up in the third or 503rd observation. Therefore, the more observations we have to back up our inferred pattern, the more confidence we can have that our general claim accurately captures the pattern of all the elements in the set. How many observations are required? There is no way to answer this question in the abstract. For some guidelines on this point, see the falsification heuristic below.

## II. Heuristics

More than any of the other seven skills, the tool of induction is least likely to be used with fully specified problems. The primary reason for this is that with few exceptions, the number of messages you would need to examine to support your claim completely would almost always be infinite. Generalizations can never be proven completely, because the number of observations that would have to be made in order to be complete is far too great. You may be asking "But if we can never make all the observations necessary, how can we ever know if the claim for a pattern we generalize is accurate?" The answer to this question is that we need some heuristics to help us increase our confidence in the claims we make. This section presents two heuristics to help you become comfortable with this problem that the algorithm by itself cannot resolve: (1) the **falsification heuristic** and (2) the **tentativeness heuristic**.

### Heuristic 1: Falsification

You will never have absolute certainty that your general claim is accurate unless the number of elements in a given **population** is small enough that you can observe every one of those elements to make sure they all conform to your general claim. Almost all populations of elements are very large, so it is not possible to observe them all. Also some populations include elements that can never be observed. For example, if your generalization is not limited by time, then elements from the past are included in the set, and there is usually no way to make observations of those elements if they no longer exist. So your observations constitute a **sample** of elements from the full set of elements that compose the population of interest.

Why continue to test the accuracy of a general claim if it is not possible to fully confirm it? Even though you can never completely confirm the *accuracy* of a generalization, you can confirm the *inaccuracies*. As you continue to make observations of new elements, it is possible to find an exception to your pattern in the general claim. If you do find an exception, then the general claim is found to be faulty; that is, it is falsified. All it takes is one exception to falsify a general claim. Therefore, falsification is easier to demonstrate than is support, because full support would require that your sample of observations be as large as the population itself.

The power in falsification rests not so much in the negating of a pattern. That would be a pessimistic use, because it would invalidate all the work we did in making all the observations that supported the pattern in the general claim. Instead, the power in falsification lies in its ability to identify the boundaries of the pattern. Returning to our example about television newscasts, let's say that you viewed 99 newscasts and found every one of them to fit the pattern; then you view one that does not fit that pattern. Does this mean you have falsified the entire pattern and you must throw out all your work and start over? No, of course not. Instead,

we have reached the boundary of the pattern. We need to examine the characteristics of the one newscast that does not fit the pattern and try to determine in what ways it is different from the other 99 newscasts. Perhaps, the 99 newscasts were all from United States television stations and the one that did not fit the pattern was from a Canadian television station. In this case, we have found the limit to the pattern and must revise our general claim, but before we do, it would be good to examine newscasts on other Canadian stations and also perhaps stations in Mexico and other countries. Depending on what we find, we may end up revising the generalizing of our pattern from "all television stations" to the more limited "United States television stations."

It is a good technique to use the power of falsification to test for the boundaries for generalizing your pattern. Think about what the pattern's limits might be in terms of time, place, situation, and people. Make observations of elements that test these limits. By doing this, you will be using your time well. When you find examples that do not fit the pattern, then you have found a boundary for generalizing. If you examine instances where your conclusion is not likely to hold and yet it still does hold, then you have reason to expand the boundaries. Testing your pattern in a variety of times, places, situations, and people thus has several advantages over testing in a very narrow range. When you test within a narrow range, even if you do find support for the pattern, this does not help you delineate the boundaries of generalizing.

With a falsification perspective, the goal is *not* to confirm the general claim but rather to alter it to make it less general by eliminating its coverage of instances where it has been found not to hold. Returning to our newscast example, we generalized by situation to include first all television newscasts, then reduced it to all television newscasts in the United States. Let's say all our observations had been on local newscasts up until this point. If so, it would be good to check for patterns in national newscasts. Let's say we watch some national newscasts and again find some inconsistencies with our generalized pattern. In that case, we have found another limit to our general statement, and we must reword the general statement to reflect this limit. At this point, our general statement needs to be amended to read: All *local* television newscasts *in the United States* begin with stories of crime and violence to evoke fear in the audience then make the audience feel good with feature stories and humor. This is still a general statement covering thousands of examples that we never observed, but it is not as general as our first generalized statement. By testing, we have lost some breadth of explanation, but we have gained much in accuracy.

Weeding out the inaccuracies makes for better, although less broad, generalizations. Therefore, the testing process allows you to make better generalizations through falsification. This is significant, because it reduces the number of faulty general claims in your knowledge structures and thus increases your ability to make good decisions.

### Heuristic 2: Tentativeness

Remember that you can never fully confirm any inferred statement of a general pattern unless the size of your sample of observations is equal to the size of the population—that is, when you have observed every single element in the entire population to which you want to generalize. Therefore, you need to hold the perspective that your general claims are always tentative. You need to remember that as you continue to test your claim, it is always possible that you could make an observation that will not support your claim. When this occurs, you need to be willing to alter your general claim by shrinking its scope so it no longer includes examples from the observation you made that does not support the full span of the general claim.

Some people feel very uneasy when they are told that the patterns they infer might be wrong and the claims they generalize might be too broad. They don't like being vulnerable to criticisms like these. However, they can take comfort in the fact that this criticism is a two-way street. People who criticize your patterns or generalizations have the burden to back up their criticism with evidence of exceptions to the pattern. If they cannot do this, then their criticism is groundless. If instead they can provide evidence of the limits of your general claim, then you have benefitted from those observations and you have learned something you would not have learned had they not raised their criticism. Remember, if you care about the accuracy of your general claims, then supported criticism is helpful because it shows you how to increase the accuracy of your general claims.

While general claims can rarely be fully supported, there are degrees of support. Just saying that all statements are tentative does not mean that they are all equally valuable or accurate. Some have more support. There is a difference between a haphazardly inferred claim based on only two observations and a carefully inferred claim based on hundreds of observations that find support for it.

## III. Avoiding Traps

Induction is almost always used with partially specified problems, so there are many traps that can prevent a person from arriving at an accurate and useful solution. This section provides warnings about five major traps. The first two traps deal with problems that hinder people from noticing patterns. The other three traps deal with generalizing those patterns.

### Trap 1: Getting Lost in the Details

Sometimes people get so wrapped up in all the details in each message that they miss seeing the big picture. This happens less with field independent people, but even with those people, there are times when the details seem so overwhelming. When this happens, you need to realize you are too

close to the task. Take a break, then come back later with a different perspective that will allow you to see the big picture more clearly and this could make it easier for a pattern to emerge.

## Trap 2: Reluctance to Use Intuition

Induction requires the use of some intuition, especially in the early stages when you need to find a pattern across the elements in a set. By *intuition* I do not mean taking a wild guess, which is the way many people define it in everyday language. Instead, I use the definition found in most dictionaries, where **intuition** is defined as the direct perception of truths without any reasoning process. This means that oftentimes you look at the set of elements and you simply "see" the pattern without going through any reasoning process at all. It is as if a light bulb is turned on in your head and you "see" things much more clearly.

This is not to say that reasoning and logic are not important in the inductive process. They are important, but they become much more important after a pattern occurs to you. At that point, you need to think logically about how to make more observations in order to provide a good test of the stability of the pattern you intuited in the initial set of elements. Thus the inductive process values the "jumping to a conclusion" early on, but that is not the end of the process. This conclusion, or claim for a pattern, needs to be tested with more observations.

Although intuition has acquired a pejorative spin (meaning un-scientific, unsystematic, and unsupported claims), it is essential to the inductive process. If you fear taking the leap of inference that enables you to move beyond the limits of providing a literal summary of the examples, you will be stuck in a trap. Take a chance and make a guess. You could be wrong, but if you don't make a tentative guess about a pattern, you will not have the direction to make additional observations to find out if you are wrong. You are stuck. To get unstuck, guess at a pattern. Then you will have some direction when you make more observations and now know better what to look for. If you find evidence of that pattern, your guess was good, so keep making observations. If you do not find evidence of that pattern, then ask yourself what is missing. Look for answers to that question and this will direct you to look for different patterns.

## Trap 3: Generalizing Too Far

Generalizing is making a claim that the pattern you perceive in the few observations you made also holds across a much larger set of elements that you did not observe. The temptation is to ask "How far can I go?" and expect a quantitative answer. Rather than think in quantitative terms, think in terms of levels. The examples you observe are limited by time, situation, and people. Each of these concepts is composed of levels. As you move up each level, you are including a larger class of things. For example, let's think

about moving up levels of people. Let's say you go visit your friend Sara in her hometown of Savannah, Georgia. When you meet several of her friends, you observe that those people are very sociable and friendly. So you conclude that Sara's hometown friends are all very sociable and friendly. You have not met all of Sara's hometown friends; you have only met a few. On the basis of those few observations, you have generalized to a class of people (all of Sara's hometown friends). Let's call this a level 1 generalization, because you have observed a pattern in a *few* of Sara's friends and moved up one level to *all* of Sara's friends. A level 2 generalization would be to say that all people in Savannah are sociable and friendly; this would include all of Sara's hometown friends plus many more people. A level 3 generalization would claim that all people in Georgia are sociable and friendly; this would also include all the people in Savannah, which also includes all of Sara's hometown friends.

How many levels should you generalize? When generalizing, it is more conservative to move up only one level; that is, a generalization to one higher level is easier for people to accept and for you to defend than is a generalization that moves up several levels. Going up a second level opens you to a barrage of questions: *How do you know all people in Savannah are sociable and friendly when you have only met a few of Sara's hometown friends? What about people Sara does not know? How do you know that they are sociable and friendly?* This is a valid point. How do you know? You have no evidence. So it is better to gather at least some evidence to represent that level of people. Generalize up one level at a time, then gather evidence at that more general level to support that generalization. Then move up one more level, and gather evidence at that level, and so on.

The more you generalize, the shakier is the ground you have to stand on to defend your generalizations. To illustrate this, let's return to our example with Sara. Let's say that during your visit with Sara, you met four of her dozen friends, so your generalization about all her friends is based on about a one-third exposure to her friends. Now let's say you make six more observations, noticing that waitresses in restaurants, clerks in stores, and people on the street are very sociable and friendly. From these 10 observations (four of Sara's friends and six around town), you conclude that all people in Savannah, Georgia are sociable and friendly. This is a class of people that includes Sara's friends but is much larger, about half a million people. Now, let's say you take some day trips and visit some tourist spots around the state of Georgia and during those trips you notice that people are sociable and friendly from 20 observations. So you conclude that all people in Georgia are sociable and friendly. This is a class of people that includes all people in Savannah, which also includes all Sara's friends. You have now moved up to an even higher level of people and this level includes many more people, perhaps 5 million. While you are gathering more observations from a wider group of people, the ratio of the number of observations to the number of people to whom you are generalizing is going down—way down. So while your generalizations are

still based on some evidence, the proportion of that evidence to your speculation is becoming very small indeed.

With induction, you end up walking a very thin line with a big trap on either side of you. On one side is the trap of overgeneralizing, so that your conclusion looks like wild speculation that you cannot possibly defend when challenged. The only thing you can do to avoid this trap is to try to make as many observations as possible and make sure they are not clustered too much in one level (with only one type of person, one type of situation, or one time). On the other side of the thin line is the trap of refusing to generalize at all. This trap dooms you to treat every observation as unique, so that you are unwilling to regard similarities across elements as important enough to conclude there is a pattern. You then are in danger of living life in the particulars and lose sight of the big picture.

There *are* differences across people; we are all individuals. However, there are also similarities. If you are unwilling to consider the similarities you observe as being patterns that are worthy of generalization, then you cannot proceed with the skill of induction. Recognition of patterns across elements we observe helps us understand much better the nature of things, helps us predict what will happen, and helps us explain where we fit in the larger world.

### Trap 4: Narrow Base of Observations

Sometimes people will generalize from only one observation (or a very small set of observations). In this trap, people focus on an isolated incident and conclude that it represents the typical. For example, people who read a news story about a criminal who copies an unusual bank robbery depicted in a popular recent video might conclude that all videos are bad because they are responsible for the high rate of crime in society. Concluding that all videos are bad because one person copies a particular action in one video is a faulty general claim. No one video can represent the incredible variety of all videos. Also, concluding that videos alone are responsible for crime in society is a faulty induction, because this conclusion fails to consider the many factors that can lead a person to commit a crime.

This induction trap is also frequently in evidence when we try to assess risk in our personal lives. Often the media will present a story—either as news or fiction—of an airplane mishap, a stalker, or something that makes us fearful. We then use this one portrayal to overestimate the risk to ourselves from this type of occurrence while ignoring other things (that the media do not talk about) that may pose a much higher risk to us. For example, in 1987 many news reports told about the danger of asbestos in older school buildings and the risk to children. Fear spread as people induced a belief that all schools had problems and that their children were at risk. Almost overnight the asbestos removal industry more than doubled its revenue. However, the actual risk of a premature death from exposure to asbestos is 1 in 100,000. Compare this to

the rate of premature death due to being struck by lightning at 3 in 100,000. There is also a generalized belief by many in the population that exposure to x-rays in dental and medical offices is risky. It does present a small risk, but the risk of premature death due to smoking cigarettes is 2,920 *times* greater than premature death due to exposure to diagnostic x-rays (Matthews, 1992). However, many people believe that smoking is only a minor risk to their health, while a dentist x-raying their teeth once a year is a major risk.

### Trap 5: Faulty Base for Generalizing

Another trap is to infer a pattern from observations of X, then make a general claim that holds for not just X but also Y. For example, sometimes people will make careful observations about how characters in Hollywood videos find romantic partners and how those characters build relationships. They see clear patterns that they use to create beliefs (general claims) about how successful people generate and build romantic relationships. But then they will use these beliefs to guide their behavior in their real lives. This is faulty because they developed the belief from observing one class of elements (characters in Hollywood videos) and generalized it to a belief that it applied to another class of elements (real people in everyday life).

## IV. Chapter Review

- The process of induction begins with observations of particular elements in media messages. You need to use your intuition to perceive patterns across those elements and be willing to infer conclusions, knowing that some of them may be wrong. Then once you have inferred a tentative pattern, you need to be willing to continue making observations to test the accuracy of the pattern. As additional observations are found to support the pattern, you have increasing confidence that the pattern can be generalized to all elements in the class of elements you have been observing; that is, you have confidence that you can generalize from your sample of observations to all elements in your population of interest.
- Inferred patterns should always be regarded as being tentative explanations. Someone could always come along later and find an example that does not fit the pattern. However, such nonconfirming examples are valuable in their own way, because they can be used to reformulate the pattern or clarify the extent to which a pattern can be generalized.
- There are also several heuristics that are needed as guidelines to do a good induction. These heuristics provide help to use the power of falsification and to adapt to tentativeness. Finally, it is important to avoid traps, particularly getting lost in details, reluctance to use intuition, generalizing too far, using a narrow base of observations, and relying on a faulty base for generalizing.

# Exercise 6.1 Practice Using the Induction Algorithm

This is a sequence of three challenges designed to increase your understanding of using your skill of inducing. This sequence starts with the easiest challenges by providing you with the maximum degree of guidance. As you progress through this sequence, you will find the exercises increasingly challenging because you will have to do more of the thinking for yourself.

### Challenge I

1. *Formulate a Question*: Start with asking yourself if Hispanics are underrepresented in entertainment videos. In the United States, Hispanics make up about 12% of the total population, so in order for this ethnic group to be fairly represented in the world of video entertainment, they should be about one character for every eight characters shown.
2. *Determine the Element to Observe*: The portrayed ethnicity of characters in videos is the element that is the focus of this induction process.
3. *Make Observations*: Start watching videos with a bit more concentration than you usually do; that is, pay special attention to the ethnicity of characters. As you watch videos over the next few days, keep a running count in your head (or perhaps you want to make marks on a piece of paper so that you don't lose track of your counts over time).
4. *Infer a Pattern*: You are likely to see a pattern very quickly. That pattern is that Hispanics are about one in eight characters, Hispanics are rarely represented, or Hispanics are heavily represented.
5. *Generalize the Pattern*: Think about whether the pattern you found in your few days of viewing videos reflects all videos. Remember that the key to generalizing is that the observations you made in constructing your initial pattern are representative of the larger aggregate. In this case, if the videos you watched were all from Hispanic apps, video on demand (VOD) services, and cable channels, then you were likely to have observed a very high proportion of characters being portrayed as Hispanic; but this pattern is not likely to be an accurate reflection of character portrayals of all characters in videos.
6. *Continue to Test Your Claim*: Search out a wider range of sources of videos and continue to make observations. For example, if your initial pattern was constructed from your exposure to videos from only one cable television channel, then make observations of videos on other cable television channels or pay-per-view services (such as HBO, Netflix, Prime Video, etc.). As you increase your base of observations, notice whether your initial pattern holds up or whether you need to make adjustments to it.

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**Challenge II**

1. *Formulate a Question:* Start with asking yourself whether women who appear in entertainment videos are portrayed as being as powerful and successful as men are.
2. *Determine the Element to Observe:* The simple part of determining an element to observe is gender—that is, whether the character is male or female. The challenging part of this task is determining what it means to be powerful and successful. Can you observe this simply by noticing their portrayed profession? Or is something else required, such as how they act in social situations? Will you need to observe their body language, how they speak, or something else?
3. *Make Observations:* Start watching videos with a bit more concentration than you usually do. Look for indicators of power and success by using the guidelines you developed for yourself in the previous step. As you watch videos over the next few days, keep a running count in your head (or perhaps you want to make marks on a piece of paper so that you don't lose track of your counts over time).
4. *Infer a Pattern:* You are likely to see a pattern very quickly. That pattern is either that women are portrayed with the same indicators of power and success as are men or that the sexes are portrayed in a different manner.
5. *Generalize the Pattern:* Think about whether the pattern you found in your few days of viewing videos reflects all videos. Remember that the key to generalizing is that the observations you made in constructing your initial pattern are representative of the larger aggregate. In this case, if the videos you watched were all from female-focused apps, VOD services, and cable channels, then you were likely to have observed a very high proportion of female characters being portrayed as powerful and successful; but this pattern is not likely to be an accurate reflection of character portrayals of all characters in videos.
6. *Continue to Test Your Claim:* Search out a wider range of sources of videos and continue to make observations. For example, if your initial pattern was constructed from your exposure to videos from only one cable television channel (such as Lifetime or the Hallmark Channel), then make observations of videos on other cable television channels or pay-per-view services (such as HBO, Netflix, Prime Video, etc.). As you increase your base of observations, notice whether your initial pattern holds up or whether you need to make adjustments to it.

**Challenge III**

1. *Formulate a Question:* In this exercise, the challenge starts with formulating your own question. Think about something that is bothering you across some kind of media message. Maybe you are concerned about pop-up ads, how certain products are advertised, or something about how people treat you on a social networking site. The list of possible questions is endless, so be creative with posing your question.

2. *Determine the Element to Observe:* Your question will suggest what it is you need to observe. If it is not obvious what you need to observe from the way you have posed your question, then you need to refine your question to make it more specific.
3. *Make Observations:* Start observing media messages that would present the kind of elements that are featured in your question. Also think about the range of media messages that could be observed to answer your question. As you make your initial observations, do not worry about trying to cover the entire range. That will come later.
4. *Infer a Pattern:* After you have made a handful of observations, start thinking about whether a pattern is emerging. Don't be afraid to make wild speculations but when you do, continually check those speculations with your observations so that you move toward constructing a pattern that conforms to all your observations as much as possible.
5. *Generalize the Pattern:* Think about how far you can generalize your pattern. For example, if you made observations on only videos, do you think your patterns would also show up in print or audio messages? Or if you made observations only on entertainment messages, do you think that pattern would apply to advertising and news/informational messages also?
6. *Continue to Test Your Claim:* Search out a wider range of sources of media messages and continue making observations to test the stability of your pattern.

## Exercise 6.2 Practicing Induction With Other Media Messages

1. Pick a textbook from one of your courses. Flip through it to see if there are pictures.

   Choose another textbook and see if it contains pictures. Keep making observations in many different kinds of textbooks.

   After having examined about half a dozen texts, do you see a pattern developing? Do all textbooks have pictures? If not, what types of textbooks have pictures?

   - Are texts in introductory courses more likely to have pictures?
   - Are texts used in certain academic departments more likely to have pictures?
   - Do texts with pictures tend to cost more than texts without pictures?

   Using your tentative statement about texts with pictures, keep looking at texts to see if your claim holds up. Look for examples to falsify your claim.

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2. Think of the videos you liked best from Exercise 6.1. Go through your memory and write down the list of those videos.

   Analyze those videos for elements that you particularly liked. Do those same kinds of elements show up in all the videos you like? If so, write a general statement that expresses what you like best in videos.

   Now continue to test this general statement. Think of television shows you like. Does that statement apply to TV shows? If so, expand that statement to apply to not just videos but also TV.

   Continue to test this general statement. Think of novels you have read and liked the most. Does this general statement also apply to print stories? If so, expand that statement to apply to stories.

   Continue to test this general statement. Think of happenings in your real life that you have enjoyed the most. Does that statement about stories apply to what happens to you in real life? If so, expand that statement to apply to all events, including mediated stories as well as real-world happenings.

   Think back on the pattern of expanding the statement. How far were you willing to go with it? If you could not expand it past videos, why? What is it about videos that makes certain stories your favorite when they are on the big screen but not when they are on the small screen (TV)?

3. Go to your favorite source of news. This source can be a daily newspaper, a magazine, a website, a blog, or another source. Pick a day and read through several news stories presented by your selected news source.

   Analyze the news stories for the number of facts each one presents. Also, notice several characteristics about each news story (e.g., the author of each story, the topic of each story, etc.).

   Do you see a pattern? For example, is there a particular author who presents a lot of facts in her news stories compared to other authors? Or perhaps local news stories seem to present more facts than do news stories about national or international topics.

   Now test your initial impression of this pattern by analyzing the news stories across different days presented in your favorite news sources.

   Does your initial speculation about a pattern hold up? Or are there lots of exceptions to your speculation of a pattern? If this is the case, then you will need to alter your perception of a pattern.

   Continue to test the pattern and make alterations when needed.

   As you continue to test your pattern, you will eventually find that your pattern is exhibited over and over without exception (or very, very, few exceptions). At this point, you have found a pattern that is very stable. Remember that you need to avoid claiming that you have "confirmed" the pattern, because you have not tested it on all possible news stories presented by your favorite news source. However, you have achieved the goal of induction, which is to discover patterns that are highly stable.

4. Think about the people who you regard as your closest friends.

   Analyze those friendships for elements that you particularly like. Do those same kinds of elements show up in all your friendships? If so, write a general statement that expresses what you require most in close friendships.

   Now continue to test this general statement. Think of television shows you like. Does that statement apply to TV shows? If so, expand that statement to apply to not just videos but also TV.

   Continue to test this general statement. Think of novels you have read and liked the most. Does this general statement also apply to print stories? If so, expand that statement to apply to stories.