How to Think About Information
A Journalist’s Guide to Critical Thinking
By Carl Hausman

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The Principles in Brief

I. ANALYZE WORDS

1. Remember that words and phrases are slippery, elastic and abstract in their meaning, and this is particularly true of English.

2. Disarm the impact of loaded words by keeping in mind that most words have a literal meaning and an implied meaning.

3. Do not mislead yourself into thinking that use of words is a neutral process.

4. Begin your reading, writing, or analysis with some careful thought about underlying definition of terms; do not take them for granted.

5. Be alert to what is obscured by use of the passive voice.

6. Identify and ignore words and phrases that are essentially devoid of meaning but are used in such a way as to imply a conclusion that doesn’t follow from the facts.


8. When comparisons are made, check to be sure that they are not distorted or comparisons to something that is virtually nonexistent.

II. INTERPRET NUMBERS

1. Do not equate a specific-appearing number with accuracy.

2. Determine which “average” you are talking about.

3. Be skeptical of any figure than mixes apples and oranges.

4. Note that what is left out of a figure is at least as important as what is put in.

5. Check comparisons to make sure they are, in the literal sense of the work, comparable.

6. Identify any veiled variables used to change the meaning or impact of the number in question.

7. Remember that polling data can be skewed by where, when, and how the questions were asked, and that certain things cannot be measured very well.

III. EVALUATE IMAGES

1. When shown a graph or other visual representation, make sure it communicates something other than “this is an attempt to make you think what I’m saying is scientific.”
2. Resist the temptation to make a judgment based on one picture or piece of video.
3. Do not be drawn in by counterfeit images that attempt to borrow legitimacy from the real thing.
4. Remember that a legitimate image can be used out of context to imply something beyond the original meaning.
5. Identify what is being obscured by clutter in a confusing graphic or a muddled collection of images.

IV. THINK LOGICALLY
1. Attempt to apply logical rigor to analyzing information, recognizing that while humans are not computers, some universal standards do apply.
2. No matter how tempting, do not automatically assume a cause and effect relationship between events that follow one another, and do not automatically assume they are statistically linked.
3. Do not accept an “appeal to ignorance” -- that is, a statement claiming that because something has not been disproved, it must be true.
4. Be careful of a statement that invokes vague or anonymous authority.
5. Put examples into context, examining whether they really illustrate the point being made.
6. Be skeptical of an argument that draws conclusions about premises by a personal attack on the person making the claim.

V. WEIGHT COMPETING ARGUMENTS
1. Ignore gross oversimplification or exaggerated characterizations of opposing opinion; question and closely examine claims that are suspiciously broad and unbelievable.
2. Don’t be trapped by arguments that appeal to spurious consistency.
3. Remember that experts disagree and can be wrong.
4. Red-flag propagandistic arguments.

VI. ESTIMATE THE RELIABILITY OF INFORMATION SOURCES
1. Consider what motivation your source has NOT to be wrong.
2. Examine your source’s willingness to tell the truth.
3. Examine your source’s ability to tell the truth.
4. Look behind official- and noble-sounding organization names.
5. Do not assume that because one or more sides are presented in an article or other source of information that you are receiving a “balanced” view.

VII. UNDERSTAND MEDIA

1. Remember that media and most other information sources are part of profit-making enterprises – meaning that their goal is not necessarily to provide you with accurate, unbiased information.

2. Interpret television news with the understanding that it is part show business and must compete with what people expect of show business.

3. View accounts of events with skepticism, because many occurrence that are seemingly spontaneous have been planned primarily for media consumption.

4. Do not allow your media consumption habits to create a personal echo chamber.
Introduction

The original concept behind this work was to illustrate the culture of mindlessness that erodes our quality of life: thoughtless designs, the mental disconnect that allows voters to be manipulated by propaganda, and the way that mediated information in popular culture distorts our grasp of “reality.”

A few thoughtful readers of the original proposal, however, suggested that the whole business might be more valuable if it were written from a positive perspective. In other words, instead of flailing people for their mental disconnect, show them how to reconnect with reason and, in particular, become better consumers of information and, in the case of journalists, better conduits of that information.

Other readers noted that because I teach courses about reporting, research, and writing, it might be particularly appropriate if at least one version of the work focused on what journalists ought to know about the thinking process – using and understanding words, numbers, images, logic, and various information sources.

So that is the approach of this work, and I hope you find it useful. First, though, I need to make an important clarification about the title and approach: Please don’t be offended by what might seem to be a fundamental arrogance of this work -- the apparent assumption that students are somehow mindless consumers of information, incapable of critically analyzing information and argument. That is not my claim or my opinion. In my view we are all amateurs at evaluating information, especially in a time of galloping technology and information overload, where trying to ingest information is like trying to take a sip out of a fire hose. Each and every one of us has gaps in knowledge and background that leaves us vulnerable to mistakes and manipulation. For example, I know several highly educated professionals, including a surgeon and a judge, who have fallen for the most transparent of “phishing” scams, in which a huckster sent them an email allegedly from their bank and asked for account information, which the suckers in question gladly provided. So it’s all a matter of our personal backgrounds. All of us have better judgment about some areas than others.

The other part of the presumed equation seems more than a little condescending and self-important, too: the assumption that I, the author, can tell you how to think more effectively. Well, I believe I can, for the same reason a coach in whatever sport you pursue can help you improve your performance. I have studied the practice of thinking about information for decades, and even if I can’t do it better than someone else I probably know enough of what works and what doesn’t to help others improve their own performance. To extend the sports analogy further, I have made my share of mistakes and misinterpretations, and like a boxer who realized the necessity of not getting hit in the head too often, I can do a pretty good job of showing you how to duck.

Just so you know, my professional background not only includes reporting but the study of propaganda, persuasion, and ethics. I’ve written several other books about the field, one of the more recent being Lies We Live By: Defeating Doubletalk and Deception in Advertising, Politics, and the Media. Lies was received some generous reviews, but much of what praise there was centered on what was essentially a
tacked-on appendix, several lists of suggestions on how to become a better consumer of information. That led me to believe I was on to something there, and some of the basic brush-strokes of that how-to appendix are visible in this work.

You can find advice on being a better information consumer in many books that address what is often called “critical thinking.” Many of them are quite good but don’t, in my view, meet the particular needs of those of us who are in the business of gathering information and using it to paint what a journalist named Walter Lippmann once called “a picture of reality on which the citizens can act.”

Incidentally, the approach and structure of How to Think About Information is transparently a copy of The Elements of Style by Strunk and White. That famous little book on improving writing was effective because it provided clear, declarative guidelines followed by brief discussion and examples, and that is the form I have emulated.

One last caveat: In this work I take a few jabs at misleading communication in politics. I’ve divided the jabs equally between both sides of the political aisle, so please don’t ascribe any political leanings to this work (other than an interest in truthful and straightforward political communication).

Carl Hausman
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1. Remember that words and phrases are slippery, elastic and abstract in their meaning, and this is particularly true of English.

English was cobbled together from bits and pieces of other languages, and it is endlessly elastic. This quality can be a real advantage in science, for example, where we can invent words like “modem” from “modulator-demodulator.” Many other languages simply don’t have mechanisms for such on-the-fly invention. But those languages are probably much more precise than English, something that becomes evident when you consider the fact that Shakespeare is virtually untranslatable. All those puns, word-plays, and dirty jokes based on double-meanings just don’t compute in a language where words mean what they mean.

Any sort of word-play, modern or Elizabethan, illustrates the vagueness and abstraction of English. Comedian Steven Wright is a master at making us laugh at elastic English:

- I’d kill for a Nobel Peace Prize.
- Half the people you know are below average.
- A conscience is what hurts when all your other parts feel so good.
- All those who believe in psycho kinetics, raise my hand.
- I almost had a psychic girlfriend, but she left me before we met.
- What happens if you get scared half to death twice?
- OK, so what’s the speed of dark?

But elastic English isn’t a laughing matter when it is used to mislead. Elected officials, for example, can vote to increase spending in the federal budget and claim they voted to lower the federal budget based on the fact that the budget is presumed to increase by a certain amount each year – and they voted for a smaller increase than was scheduled. A presidential candidate can appear to deny that he smoked marijuana by telling reporters that “I never broke the laws of my country.” (Hint: he’d smoked it in England.)

2. Disarm the impact of loaded words by keeping in mind that most words have a literal meaning and an implied meaning.

Consider “liberal” and “conservative.” Those words certainly had a clear literal meaning once, but they have since devolved into weapons, and when a political candidate sneers that his opponent is a
“conservative” or a “liberal,” we’re not sure exactly what it means except that it’s probably not good. Couple this with a vague modifier such as “radical conservative” and you have something that sounds like “Nazi”; or call someone, as did a recent American president (not the one who smoked marijuana in England), a “card-carrying liberal” and you are slyly implying that the person is a communist. (“Card-carrying communist” as a popular catchphrase in the 1950s used in a political witch-hunt by Sen. Joseph McCarthy, whose name is used in the term “McCarthyism,” which means making vague, unfounded, and reckless accusations.)

3. Do not mislead yourself into thinking that use of words is a neutral process.

Words are tools, and tools often take on or reflect the characteristics of the people who use them. This extends so deeply into the veins of the language that it’s impossible to dissect or disconnect all the associations between words and ideas. As an example, have you ever wondered why farmers raise a “cow” but when you go to a restaurant you order “beef”? It’s because of the French conquest of England ten centuries ago, when French words began to be used by the aristocracy and Anglo-Saxon words were retained by the native, who were mainly reduced to peasantry. “Beef” is a French word, the aristocratic word; “cow” is an Anglo-Saxon word, the peasant word.

Because we live in a world built by words that have absorbed so many shades of meaning, it becomes pretty much impossible to be purely objective about anything – as much as we would like to pretend we are -- because the words actually get in the way. A journalist and former presidential press secretary named Bill Moyers really nailed the situation when he wrote this:

...journalists look at ideas and events through their own eyes. There is nothing wrong with that practice: The mistake is to pass it off as something other the pursuit of truth by men less opinionated than their peers.

I learned at the White House that of all the great myths of American journalism, objectivity is the greatest. Each of us sees what his own experience leads him to see. What is happening often depends upon who is looking. Depending on who is looking and writing, the White House is brisk or brusque, assured or arrogant, casual or sloppy, frank or brutal, warm or corny, cautious or timid, compassionate or condescending, reserved or callous.

Think about how your own use of words, coupled with the use of “loaded words” described in the previous entry, shapes your world-view. Do you define a certain group as “terrorists” or “freedom fighters”? Is an event a “protest,” “demonstration,” “riot,” or “rally”?

4. Begin your reading, writing, or analysis with some careful thought about underlying definition of terms; do not take them for granted.

Definitions are the bedrock of arguments but if you are not careful about them they can have the flexibility of quicksand.

By starting an argument from a slanted definition you can make it follow virtually any path you want. For example, consider the argument that the “traditional” American family is a thing of the past, which can be made by noting that, “only six in ten American families now fit the traditional model.” That’s true, if you define the “traditional model” as a father who works full-time, a mother who does not work,
even part-time, and two (not one, not three, but two) children. By tinkering with the definition, though, you can completely turn that argument around: 73 percent of dependent children live in a home with two married parents.

5. Be alert to what is obscured by use of the passive voice.

There are two basic ways of expressing the relationship between subject and action in a sentence. “Active voice” means that the action in the sentence is performed by the subject: John lost the briefcase. “Passive voice” means that the subject of the sentence receives the action: The briefcase was lost by John. The sinister thing about the passive voice is that it allows omission of the person or thing that committed the action. “The briefcase was lost.” When someone uses a passive construction such as, “mistakes were made,” the proper analytical response is, “who made the mistakes?” When you read or hear, “it has been decided,” the next question should be, “who made the decision?”

6. Identify and ignore words and phrases that are essentially devoid of meaning but are used in such a way as to imply a conclusion that doesn’t follow from the facts.

Sometimes we call meaningless verbiage “weasel words.” The origin of term is variously ascribed to the weasel’s ability to squirm out of situations or (as appears more likely) to the animal’s talent in sucking the insides out of eggs without destroying the shell, thus leaving the egg hollow – like the weasel word. Weasel words are abundant in advertising because they can convey “benefits” that may or may not exist. A certain food, we are told, “helped” someone lower cholesterol by 30 points. What’s meant by “helped?” What else did the person do? Another food “helps” you to lose weight “when part of a well-balanced diet and exercise.” Wouldn’t eating almost anything result in weight loss if it were part of a well-balanced diet and exercise?


An unspoken contingency, what you might call an “incognito if,” is the part of an argument, offer, or agreement that it left out for purposes of deception. For example, you get a credit report for free – if you sign up for a program in which you buy future reports. The offer may be further obfuscated by describing the incognito if as an “enrollment” in a “free trial program” with a catchy name.

8. When comparisons are made, check to be sure that they are not distorted or comparisons to something that is virtually nonexistent.

When something is “30 percent more effective,” it is important to determine more effective than what. (More on this is the following chapter on Interpreting Numbers.) If hotel rooms are priced “from $40” it is imperative to find out where that “from” is. One hotel chain ran a national advertising campaign based on “weekend rates from $40” but that rate was only good in one town: Mount Laurel, New Jersey. New York was $229 and Baltimore was $144. Both are examples of what essentially is a “comparison to the nonexistent.”
Distorted comparisons are particularly deceptive when obscured by elastic English. For example, as a joke (explained with an asterisk) I once proclaimed in a press release about a book I wrote that the work was “destined to become the number #1 best-seller by Carl Hausman.” I lied and told the truth at the same time. I meant that the book was going to become the number one bestseller among all books written by Carl Hausman – something that probably won’t be factored into the gross national product. What you might have thought I meant was that was going to be a number-one bestseller when compared to other books on a legitimate list, such as the New York Times.

Your mistake, and even if I’m wrong in the first assumption – comparing it only to my books – you can only look to the weasel words and blame “destiny.”
II: Interpret Numbers

1. Do not equate a specific-appearing number with accuracy. Garbage in means “precision garbage” out.

Just because something is worked out to two decimal places does not mean it conveys accurate or meaningful information. Remember, garbage in equals garbage out. I might, for example, ask four people in Rochester, New York, how many hours per week they exercise. First of all, they are likely to lie to me, or at least stretch the truth, as most people will do when talking about how much they exercise or how little they eat. But suppose one person tells me “five hours,” another says, “three hours,” a third says, “maybe an hour and a half,” and a fourth says, “nine.” The mean average (see below for a definition of “mean”) is 4.625.

When I inform you that “the average person in Rochester, New York, exercises 4.625 hours per week,” it sounds like a well-researched number, even though it is simply “precision garbage.” The moral: when given a number as evidence, ask how that number was derived.

2. Determine which “average” you are talking about. Don’t use an apples and orange average.

People interested in using averages to prove something will sometimes quote the average that is most favorable to them. “Average” can mean three different things:

1. A mode, the most frequently occurring variable
2. A median, the variable in the exact middle of a range of variables
3. A mean, what you get when you add up everything and divide by the number of variables

Why are there different types of averages? There are good reasons for using different measures of how large collections of numbers tend to cluster around one value, or, as mathematicians would say, cluster around a “central tendency.” For example:

A mode gives you a good idea of the “average” grade for a college course. If in a class of 33, there are three Fs, five Ds, 15 Cs, seven Bs and three As, “C” is probably the fairest representative grade because it occurs most often. Besides, you don’t really have a way to mathematically add and divide letter grades.

A median is often used to convey the average of something when there are not many variables and there is a wide range in values. Real estate is a good example of proper use of a median. Simply adding up the cost of 11 homes that sold in a small town last month and dividing by 11 could produce a wildly inflated number if 10 of the homes sold for between $150,000 at $225,000 but number eleven was a mansion and sold for $3 million. Assume the houses sold for $155,000, $160,000, $170,000, $180,000, $180,000, $195,000, $195,000, $200,000, $220,000, $225,000, $230,000, and $3,000,000. Your arithmetical mean -- what you get if you add up the price of the eleven houses and divide by eleven --
would be $446,000, which is not even close to a reasonable “average.” But your median, the house that was right in the middle with five cheaper and five more expensive, would be $195,000.

A mean is most accurately representative when you are looking at a great deal of numbers where the numbers all mean the same thing. Average life span is a good example: a year is a year and dead is dead, and if you compute the mean for millions of people you will get a reasonably meaningful number. (Remember, though, that there will be many variables in the mix, such as whether you add in infants who died in childbirth.)

There are also, of course, bad reasons for using different types of averages -- the most common being persuasion or deception. It is not unusual for two sides in a labor dispute, for example, to come up with different “averages” for workers’ salaries. The mode is often the lowest, the median the next highest, and the mean the highest. The choice of which one to cite can rest on what you are trying to prove.

On a related note, be careful of inferences from the word “average.” Someone seeking election to a school board once inadvertently quoted Steven Wright by castigating the school administration because “half the reading scores in the district were below average.” (Of course half were below average; in this case, average means the point were half are above and half are below.)

3. Be skeptical of any figure than mixes apples and oranges.

What’s wrong with this average?

The average person treated for a workplace-related injury by a chiropractor returned to work more quickly and spent less money on treatment than people who sought traditional medical care.

This “average” was actually used in an advertisement. It’s probably true, but misleading because it mixes apples and oranges: people with minor injuries and people with major injuries. People with sore necks would be more likely to consult a chiropractor than would some poor wretch who had both legs torn off by a threshing machine. The fellow who lost both legs would certainly be seen by an emergency medical crew, a trauma surgeon, and a physical therapist. Recovery would take years – and would obviously cost a great deal of money.

4. Note that what is left out of a figure is at least as important as what is put in. Beware the veiled variable.

A few years ago, several major universities were caught inflating their average SAT score by leaving out people who did not score well on the test, such as international students whose native language was not English and thus didn’t do very well on the verbal part of the test. Some colleges just dropped poor testers altogether, while others developed elaborate ruses, such as admitting them in August, not September, and thus putting them off the books.

You can make a number say almost anything you want by leaving out components that work against you. Police departments, under pressure to lower crime rates, have been caught lowering the rates by simply not counting the actual crimes. Again, they sometimes developed ruses for doing this, such as reclassifying crime reports. What was once classified as a “theft” report became a “lost property”
report. Or an auto theft report might be classified as “lost auto,” which is the category usually used when someone can’t remember where they parked their car at the mall.

5. Check comparisons to make sure they are, in the literal sense of the work, comparable.

Phone companies are notorious for running television commercials that use unbalanced comparisons. For example, one phone company may say its rates for calling overseas are 40% lower than its competitor’s, but compare the rates on their international calling plan to their competitor’s basic plan. Before regulators clamped down, phone-card companies were making numerical comparisons to the non-existent, saying their cards offered “more minutes” but not saying more minutes than what, or could “save you up to 70 percent” -- leaving hanging the question, 70% of what?

6. Identify any veiled variables used to change the meaning or impact of the number in question.

Let’s continue with the phone company example because their advertising makes use of cleverly veiled variables. One 10-10 calling service proclaimed it charged 99 cents for calls “up to 20 minutes.” Not a bad deal on its face, but remember that the “up to” means that if you get an answering machine and leave a brief message, you are basically paying more than a dollar minute, more than it would cost you to call China with conventional phone service.

7. Remember that polling data can be skewed by where, when, and how the questions were asked, and that certain things cannot be measured very well. Data can be profoundly misleading when produced by a malformed polling question.

As a nation, we are addicted to polls, which have become one of the major ways we shape public policy. While polling data can be used to accurately measure and predict many quantities and qualities, polling does have limitations.

For example, you can almost literally reverse the answers to some questions by the way you phrase them. Ask, “Do you favor increasing benefits to disabled veterans even though it will mean an increase in taxes?” and you will likely get a majority of “yes” respondents. Switch it around, asking, “Do you favor increasing taxes in order to increase benefits to disabled veterans?” and you are likely to get a majority of “no” answers.

You can skew results of a poll depending on when and where you ask the questions. A poll conducted near the subway entrance at 6 a.m. is likely to snare a lot of respondents on their way to work at blue-collar jobs. People on the street at 1 p.m. near several swanky restaurants will likely give you a sample from a far different social spectrum, and those differences could be significant if you are measuring attitudes toward economic or labor issues.

Some beliefs and abstractions can’t really be measured very well, such as generalized public opinion about an issue. Of course, some things can be measured with precision, such as (usually) U.S. presidential elections. But we tend to mix up the two, and believe that generalized opinions about a complex issue, such as immigration reform, are as “accurate” as the poll that called the election to
within a percentage point. And yet, we seem mystified when poll results seem to produce contradictory philosophies, such as reporting that most Americans want more border control and favor letting illegal immigrants become citizens.

There is a deeper layer to this. Polls measure responses from people who may not know or may not care about the issue; they are confronted by a poll-taker and feel compelled to cough up an answer. Also, some people will tell you what they think you want to hear. The results may be statistically accurate, but can hardly be interpreted as a measure of “public opinion.” One of the best examples of this particular foible was when a satire magazine named Spy polled U.S. Congressional representatives about their attitudes toward the nation of Fredonia, pointing out, when the question was being asked, that the president felt Fredonia was important to American interests. Many of the representatives replied that they, too, favored policy favorable to Fredonia.

Problem: There’s no country called Fredonia, except in the Marx Brothers movie Duck Soup, where Groucho was appointed president.
III: Evaluate Images

1. Filter out proportion distortion in graphs and other images. We are trained to think that seeing is believing, and that a graph or other visual compilation of data gives us an objective, unedited view of whatever it is we are trying to quantify. Don’t believe that for a second – seeing is not believing. It’s easy to tinker with a graph and make it say something not backed up by the data.

One of the best examples is the “Gee-Whiz graph,” given its name by an author named Darrell Huff, who wrote the classic book How to Lie with Statistics. Making a Gee-Whiz graph is as simple as lopping off the bottom. For example, if I want to induce you to buy stock in my company I must show you a graph of earnings that gives you the idea that profits are skyrocketing. Figure III-1 doesn’t convey that impression.

![Figure III-1](image)

But by amputating the bottom part of the graph, and changing the relationship between the increments on the x and y axes, we get a genuine Gee-Whiz graph (Figure III-2) that makes it look like profits are shooting through the roof.
Figure III-2

2. When shown a graph or other visual representation, make sure it communicates something other than “this is an attempt to make you think what I’m saying is scientific.”

3. Resist the temptation to make a judgment based on one picture or piece of video – a one-item cross-section.

Photos and videotape can be profoundly misleading, either by accident or intent. If someone followed you around all day with a camera, he or she would be certain to get a shot of you with your eyes downcast and your shoulders hunched, regardless of the mood you were in. Further suppose you were a political candidate and I were a newspaper editor who had the idea that your campaign was in trouble. Consciously or unconsciously, the idea and the image can be married on the page to produce an effect that simply may not be accurate.

Videotape can be extraordinarily misleading because we tend to believe what we see unfolding before our eyes. The problem is that selective camera shots and out-of-sequence editing can change your perception entirely. You are probably familiar with the recent “outings” of reality shows that were caught trying to make the programs more dramatic and confrontational, even to the point of taking a remark such as “I really like her” and editing it into the show so it appears that it reflected a romantic inclination when it did not, and misleading the viewer into thinking it was said about a different person!

I used to give a presentation on the deceptive possibilities of editing, during which I would interview a member of the audience twice. I’d ask the same questions both times. During the first interview we would keep the camera in a discreet medium shot and the lighting subdued. The subject would usually look calm and assured. For the second take, we would turn up the lights, shoot the subject in an extreme close-up, and edit in shots of her hands as she wrung them together, as people often do. The subject would look as guilty as sin.

4. Do not be drawn in by confusing counterfeit images that attempt to borrow legitimacy from the real thing.

People who are trying to persuade will often cloak one type of communication in the visual aura of something else. For example, junk mailers trying to get you to open an ad often make it look like a
check, and internet scamsters trying to lure you into divulging personal information will forge an email that looks as though it came from a bank.

Those are relatively obvious confusing counterfeits. But sophisticated markets like sweepstakes companies pull out all the stops to make their inducements look like something they are not. Publishers Clearinghouse, for example, sends their entry forms complete with winners’ “affidavits” that are supposed to look like legal documents.

Publishers Clearinghouse goes so far as to borrow some authenticity from the U.S. government, affixing a label that looks like registered mail, but isn’t, saying that the delivery has been approved according to U.S. Postal Service Section S916.1.1. A computer-generated check mark tells us that this important body of law has been complied with. (Postal Service Section S916.1.1 is the regulation that authorizes someone to send mail to individuals.)

5. Remember that a legitimate image can be used out of context to imply something beyond the original meaning.

Bottled water companies often decorate their product with impressive association seals, but those seals often mean only that the water meets the same standards as municipal tap water. In fact, despite all those pictures of bubbling brooks on the front of the bottles, about a quarter of bottled water comes from municipal water supplies. (Yes, the same stuff that comes out of the tap.) Once a manufacturer purifies the water, there is no law saying the consumer has to be informed as to its source.

6. Identify what is being obscured by clutter in a graphic garble or a muddled collection of images.

Graphic garble is particularly effective in television, especially when audio, video, and print are hurled at the same time. One of the most infamous ads in the history of U.S. presidential races was used by a political action committee backing George W. Bush in his 1988 campaign against then-Massachusetts Governor Michael Dukakis. The ad, attempting to show that Dukakis was soft on crime, make it appear that Dukakis had furloughed 268 first-degree murderers who had then gone on to commit other crimes. The commercial used a background of actors, playing convicts, marching through a turnstile, symbolizing “revolving-door justice.” The voice-over narrator intoned:

As governor, Michael Dukakis vetoed mandatory sentences for drug dealers. He vetoed the death penalty. His revolving-door prison policy gave weekend furloughs to first degree murderers not eligible for parole. While out, many...

[AT THIS POINT, THE WORDS ‘268 ESCAPED’ APPEAR ON THE SCREEN]

...committed crimes like kidnapping and rape. And many are still at large. Now, Michael Dukakis wants to do for America what he’s done for Massachusetts. America can’t afford that risk.

A false inference was created by the graphic garble. The visual of the words “268 escaped” was superimposed over the sound of the announcer reading “first degree murderers not eligible for parole. While out, many committed crimes like kidnapping and rape.”
In point of fact, 268 did escape; escapes could be anything from actively fleeing or showing up late for bed-check. Four of the escapees were first-degree murderers. And of those four, exactly one of them was involved in a kidnap and rape. But when the tape was played to focus groups many viewers interpreted the superimposition to mean that 268 first-degree murderers had been let out, escaped, kidnapped, and raped.
IV: Think Logically

1. Attempt to apply logical rigor to analyzing information, recognizing that while humans are not computers, some universal standards do apply.

In formal logic, it is possible to prove with elegant precision that a conclusion must inescapably follow from the premises:

All men are mortal
Socrates is a man
Therefore, Socrates is mortal

But in real life, things rarely flow this smoothly. Ideas are complex and words have elastic meanings. Note, too, that arguments can be logical but incorrect if the premises are wrong. Having said that, we can informally apply the rules of logic to claims and arguments, often through basic common sense. Ask, “does that conclusion inescapably follow from the premises?”

For example:

The house that burned down had no smoke detectors
Two people died in the fire
Therefore, the people died because there were no smoke detectors

In this case, there is an evident lapse of logic because we have no way of knowing if the deaths came because of the lack of smoke detectors. Suppose the two people who died were unattended infants? Or perhaps it was a suicide pact and the victims set the house afire and left a note in a fireproof safe. The latter example is far-fetched, of course, but with a little thought you can come up with all sorts of reasons why the conclusion above does not necessarily follow from the stated premises. Logic, as applied to real-world reasoning, often works this way: we look for something wrong, a “fallacy,” to help determine if what we are told is logical.

2. No matter how tempting, do not fall for a spurious cause and effect relationship between events that follow one another, and do not automatically assume they are statistically linked.

Just because Event A happened and Event B followed, you can’t always assume that Event A caused Event B. After all, a rooster crowed this morning and then the sun came up; that doesn’t mean the rooster caused the sunrise. If Event A and Event B seem to be linked statistically, it still does not mean there is necessarily a cause-and-effect relationship because other variables may be the part of the linkage. The smoke detector incident cited above is one example. For another, consider this: it is an
indisputable fact that married men, on the average, live longer than unmarried men. But can you assume, as more than one magazine article writer has, that “Loneliness Kills?” Perhaps it does, but there are many other factors that may account for why single men die younger than married men:

- Men born with chronic illnesses may never marry or die at a young age
- Many young men are killed in accidents before they reach marriage age
- In wartime, single men are often drafted instead of married men and obviously stand a greater risk of dying in combat

In summary: Always hunt for alternate reasons why two events may be linked, and question any assumption of cause and effect.

3. Do not accept an “appeal to ignorance” -- that is, a statement claiming that because something has not been disproved, it must be true.

An appeal to ignorance is sometimes transparent...

“No one has ever proved the Loch Ness Monster isn’t real, therefore it must exist.”

But often appears to be logical even when it is not...

“No one has complained about the new city airport commission, therefore it must be working well.”

Both statements are illogical because the conclusion does not necessarily follow from the premise. The fact that no one complained about the airport commission could be linked to a number of factors, including not knowing where to complain, or the airport commission essentially making decisions in secret so citizens don’t know it exists in the first place, or incoming citizen statements not being recorded as complaints but as “inquiries.”

4. Be careful of a statement that invokes vague or anonymous authority.

Renowned authorities can be wrong and often are, so an appeal to authority does not conclusively prove an issue (although legitimate expert opinion is certainly persuasive). Many appeals to authority are inherently illogical because they invoke no real or explicitly identified experts:

“Researchers at major universities agree that the current tax structure is unfair.”

Many testimonials are fallacies of vague authority because the person offering the endorsement has no real expertise on the matter. An athlete’s endorsement of a tennis shoe may carry some legitimacy, but the same sports star’s endorsement of orange juice or breakfast cereal does not. While an actor may be quite intelligent and offer sound advice on why to vote for a particular political candidate, having an actor’s celebrity for the roles he or she plays in a movie somehow “rub off” on the candidate is illogical.
5. Put examples into context, examining whether they really illustrate the point being made.

Examples give life to expression, but an evocative example does not necessarily prove the premise that it puts forward.

Sometimes examples can be illogical and misleading because they draw on the premise that two things are the same, when they are not:

“The South is too dependent on the federal government. Look at what happened after Hurricane Katrina. In North Dakota they had a category five snow storm and no one called FEMA. And not one person asked for food stamps, or (etc.)”

Snow storms and floods are just not the same thing. As devastating as a snow storm can be, it usually does not level buildings or spread toxic waste. Remember, too, that no matter how many floors of argument you build on the foundation of an invalid example, the structure itself is still unsound.

Another common illogical example is the one-person cross-section, frequently seen in news reports:

The fifth time John Smith was mugged outside his apartment building, he decided to clear out. “New York City is just too dangerous,” he says, “and I’m going to move to a farm and live a decent life.”

Yes, his example is compelling, but by themselves anecdotes prove nothing other than what happened to one person in one incident. If this “trend” can be backed up with abundant facts, that’s another story, but this one-person cross-section does not prove that there’s a mass exodus from New York City.

6. Be skeptical of an argument that draws conclusions about premises by a personal attack on the person making the claim.

The so-called ad hominem (toward the person) argument draws attention away from the premise by an illogical attack on someone arguing the premise.

“We’re supposed to believe that Councilwoman Nugent’s highway bill will make the Interstate safer? She was arrested for drunk driving last year!”

Character is a legitimate issue when the issue is character, but do not be distracted by irrelevant attacks aimed at a person, not the real point of discussion.
**V: Weigh Competing Arguments**

1. Ignore gross oversimplification or exaggerated characterizations of opposing opinion; question and closely examine claims that are suspiciously broad and unbelievable. This amounts to reduction to the ridiculous.

Here is an example from a real political campaign: Two candidates are running for a U.S. Senate seat, one a current U.S. Senator and one a state assemblyman. The state assemblyman, along with many others in the assembly, voted for the construction of a $428.6 million underground parking garage at the state capital. The garage was built not only to provide parking for state officials but also for members of the public who visit the state house and the adjacent library and museum.

To make a long story short—and here is an example of the problem of the whole truth: it tends to be the long version—the incumbent senator took the cost of the garage and divided it by the number of parking spaces, coming up with a figure of $26,000. He then used this figure to imply that his opponent had gratuitously built himself a $26,000 parking space. TV ads showed the assemblyman with the caption, “business as usual,” and another caption, $26,000 for a parking space.”

A good way to think about this technique is to label it “reduction to the ridiculous”: one party to the argument grossly oversimplifies his opponent’s beliefs or actions and then points out how absurd the oversimplification is.

2. Don’t be trapped by arguments that appeal to spurious consistency.

We have a natural tendency to strive for consistency because it tends to affirm our belief system and demonstrate that we are not capricious in our opinions.

But it can be perfectly reasonable for someone to agree with one tenet of a political candidate or party and disagree with another, or act in a certain way in one circumstance but not in another.

It is amazing the lengths we will go to in order to appear consistent in our beliefs. Various psychological studies have shown that once people publicly “buy into” a particular belief, they will go to bizarre lengths to maintain consistency. In one case psychology students posing as workers for a safety campaign asked people if they would display a small “drive safely” sticker on the doors to their houses. Most said yes. Later, the researchers returned to the houses where people had agreed to display the sticker and asked if the homeowners would agree to display a large, ugly, safety-related billboard in their front lawn. Surprisingly, most said yes, while a control group of people who had not been approached before uniformly said no.

Life insurance salesmen are taught to trap you into buying coverage by appealing to spurious consistency. They ask a series of questions to which any sane person would say yes: “You care about your wife and children, don’t you?” “If something happened to you, you’d like to see the kids be able to go to college, wouldn’t you?” Then, of course, comes the hook, where you are led to answer “yes” to
the question of buying life insurance. The technique is successful because you don’t want to appear inconsistent by denying the thrust of all those other statements to which you said yes.

In sum, be very cautious of any argument that attempts to exploit consistency or attack someone else for lack of consistency. Yes, there are occasions, especially in the application of public policy, where consistency is important, and you will need to make appropriate judgments on those matters. But don’t automatically assume that consistency equals logic and truthfulness, or assume that inconsistency equates to intellectual dishonesty.

3. Remember that experts disagree and can be wrong.

Citing an acknowledged expert is persuasive, and when weighing competing arguments, the opinions of legitimate experts should of course be given credence. But anyone who has read more than one article about the economy realizes that top-flight economists often hold conflicting views, and anyone who has witnessed a trial involving expert testimony receives a graphic introduction to the same principle.

Remember, too, that experts can be way off base. A major record executive who auditioned the Beatles once noted that “groups of guitars are on the way out,” and an important business publication concluded a couple of decades ago that Japanese cars would never gain a substantial share of the market. And aeronautical engineers still maintain that bumblebees can’t fly.

Moral: Don’t assume an argument is settled or a point made when someone cites an expert.

4. Red-flag propagandistic arguments.

Propaganda is difficult to define and the word itself is a somewhat loaded term, but for the sake of this discussion we can think of propaganda as persuasion that is intentionally designed to mislead and often to cause ill-will against people who hold an opposing view.

One of the best mechanisms for propaganda detection was published in 1937, a time when the subject was a real worry because fascists in Europe were beginning to use film and print propaganda to spread a doctrine of conquest and mass murder. At the time, an organization called the Institute for Propaganda Analysis described seven basic techniques that remain useful for anyone weighing arguments.

Be wary of any argument that uses these techniques:

- **Name-calling** -- Linking a person to a negative symbol: hippie, Nazi, communist. Name-calling can by sly and subtle, such as the previously cited American presidential campaign during which one candidate called the other a “card-carrying liberal,” invoking (without saying) the 1950s-era slur, “card-carrying communist.”

- **Glittering generalities** – an appealing but essentially meaningless term, such as “red-blooded Americans,” “working people.”

- **Transfer** – taking the attributes of one thing and applying it to another. Having an announcer wearing a white coat for a headache-cure commercial transfers the authority of the physician’s garb to the paid spokesperson. Transfer techniques can become patently absurd, such as an actor appearing in
a commercial for a health-related product saying, “I’m not a doctor but I play one on TV.” Or both candidates for the American presidency making appearances at a flag factory to almost literally wrap themselves in the red, white, and blue.

- **Testimonial** – having someone lend his or her authority to a claim. As discussed earlier, testimonials can sometimes have validity, but often have no basis whatsoever in logic.

- **Plain Folks** – an appeal designed to make us believe that the person is “one of us.” This is a favorite appeal of politicians who are placed by their publicity people in working-class bars, or doing farm chores, or some similar activity—but only when television cameras are present.

- **Card Stacking or Taking Words Out of Context** – Presenting only those facts that justify your case, or, as we often say, “cherry picking.” Along the same lines, taking words or statements in isolation and changing their implied thrust.

- **Bandwagon** – justifying a position or action because “everyone is doing it.” (The phrase comes from the late 1800s, when a wagon carrying a band was often used to lead people to an event such as a circus, with some zealots actually climbing aboard the moving wagon.) The herd instinct is strong, and we often find consolation in the fact that others do what we do or believe what we believe. Unfortunately, the history of the herd instinct shows that humans have been coaxed into deplorable acts because everyone else was involved. Be very skeptical of any appeal that implores you to think or act a certain way and uses the actions of others as a justification.
VI: Estimate the Reliability of Information Sources

1. Consider what motivation your source has NOT to be wrong.

If an error won’t cause your source a major headache, your source will probably be likely to tolerate errors. Consider the free encyclopedia called Wikipedia, a wildly popular source of information among the tech-savvy. It is also free, a great inducement. But with the lack of a price comes a price: While a traditional encyclopedia that you paid for might go out of business if it printed egregious errors, because no one pays for Wikipedia there is no similar protection.

Consider the case of en USA Today founding editorial director John Seigenthaler, who was horrified to find that Wikipedia’s article about him that claimed he "was thought to have been directly involved" in the assassinations of John and Robert Kennedy. It later turned out that the entry had been posted as a joke. Even though Seigenthaler has gotten his entry corrected, he told the New York Times that the absence of accountability teaches a hard lesson: "We live in a universe of new media with phenomenal opportunities for worldwide communications and research, but populated by volunteer vandals with poison-pen intellects."

2. Examine your source’s willingness to tell the truth.

If the source is an employee of an organization he or she may have a vested interest in providing you with information that serves the best interests of that organization. There’s nothing inherently wrong with this; just remember that you may not get the whole story from someone who has a vested interest in not telling you the whole story.

Someone interested in self-promotion may not be entirely willing to tell you the truth, either. This caveat applies to all sorts of information gathering: for example, historians are always wary of someone who recounts a battle in a way that makes him look like a hero. From the other perspective, an information-gatherer might be more likely to believe a statement against personal interests (where, for example, the soldier portrayed himself as being paralyzed by fear) because the person providing the information apparently has no ulterior motive.

3. Examine your source’s ability to tell the truth.

Does the person providing you with the information have access to the whole story? Many reporters have been inadvertently misled by well-meaning sources who thought they knew the whole story but didn’t. To continue the analogy to history, note that one inventive historian even coined a name for this type of misinformation: the corporal-on-the-battlefield syndrome. The corporal sees what’s directly around him, which is fine for the historian looking for those precise details, but when he comments on the overall was strategy he is likely to attempt to provide information that he did not really have access
to. This does not mean that generals will always tell the truth, because they have been known to slant things out of self-interest. Generals will, however, have the ability to tell you about the overall picture.

4. Look behind official- and noble-sounding organization names.

A “council” or a “research center” or an “institute” can be anything. There is no body of law that uniformly covers what an organization can call itself. Even major news organizations have been hoodwinked by organizations with official-sounding names that really have some other agenda at hand. Be sure to do your homework into the vested interests of an organization before accepting their research or statistics.

5. Differentiate between documents that exist only to preserve a record from “instruments” that are designed to persuade.

An example of the difference between a document and an instrument surfaced in the Boston media some years ago when reporters seized on an affidavit for a search warrant and treated it as plain fact. An affidavit is basically a “sales piece” used by police to convince a judge to authorize a search. In this case, the overzealous police had claimed they had seen “the same” jogging suit by a murder suspect in someone’s apartment and wanted to conduct a more thorough search. As it turned out, the jogging suit wasn’t even the same color and the person identified in the affidavit did not commit the crime (a woman was murdered by her husband who made up a story about a mugger wearing a jogging suit.) The mistake in the incident was for journalists to assume that the affidavit, an instrument of persuasion, was a document that was a literal reflection of the truth. One television station even went so far as to say flatly, without detailed attribution, that the jogging suit worn by the “mugger” was seen in the man’s apartment.

6. Do not assume that because one or more more sides are presented in an article or other source of information that you are receiving a “balanced” view.

Two or more sources is generally a good start, but it is not a definitive indication of balanced research or reporting. The so-called extremist roundup may feature persuasive spokesmen from several sides of an issue, but leave the real truth – often somewhere in the middle – uncovered.
VII: Understand Media

1. Remember that media and most other information sources are part of profit-making enterprises—meaning that their goal is not necessarily to provide you with accurate, unbiased information.

Television news has as its ultimate goal attracting viewers, meaning that what you see on television is there because it is likely to make a desirable audience tune in. (More on this in a following entry.) Those elements are not necessarily the same as the important events of the day, events that provide a picture of reality on which the citizen can act. Magazines exist to sell advertising to companies that make a product in which the magazine’s readers are interested. If you see expensive, full-page ads placed pages adjacent to an article about the subject of the ads, you have a right to be a little skeptical.

Do not take this as a claim that media are always out to mislead you; rather, simply remember that there are commercial considerations behind news—and because news has no hard-and-fast definition, you are likely to get a different version of “the news” depending on the underlying interests of your source.

2. Interpret television news with the understanding that it is part show business and must compete with what people expect of show business.

Many of the trappings we take for granted as part of television news have no real connection with news, if we define news as we did in the point above. Theme songs, “teasers” meant to keep you tuned in through the commercial (“a local politician hurt in a car wreck...more after this”), a well-coiffed “family” of an older anchor with a younger female anchor—all these things are show business. Stories that are linked to the network’s popular TV shows (“Tonight we go inside a real ER for a look at how doctors...”), powerful visuals—these, too, are based on an entertainment model.

That model has been studied and perfected with scientific precision, tested on sample viewers hooked up to response monitoring devices, and the anchors have been evaluation on their “Q-factors,” meaning how likeable they are.

There is nothing inherently wrong with this. Television news is what it is. But what it’s not, generally, is a source of comprehensive local, national, and international news or a way to understand complex issues.

3. View accounts of events with skepticism, because many occurrence that are seemingly spontaneous have been planned primarily for media consumption.

Perhaps you turned on the news and saw a demonstration for or against some cause. Are you aware that many demonstrations are planned for the purpose of media exposure? Arranged so that they are convenient for the timetables of local media? That the people holding signs are sometimes hired for a few dollars through temporary employment agencies? Whenever you see a telegenic account of an
“event” featuring someone who plans to gain from exposure of that event, turn your bull-detection radar on “high.”

4. Do not allow your media consumption habits to create a personal echo chamber.

The proliferation of media sources and our ability to pick and choose what we want is a great convenience – but also a problem. We are more comfortable with information sources that confirm our beliefs and reinforce our lifestyle; that is common sense and is also backed up by a reasonable body of research.

Make it a habit to read publications that do not reflect your point of view: at the least, if you disagree with them, you’ll become better able to refute them. Read the international press, a much easier task today than even a decade ago because of the Web.

Remember that what makes us comfortable also can make us complacent and docile, and that is dangerous.

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