# THE EIGHT COMMON ERRORS IN THE HUMAN THINKING PROCESS

Carl Pacifico

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# INTRODUCTION

Your response to stimuli is determined entirely by the information present in your brain at that time. When your information about the stimulus and how to handle it is complete and correct, you respond appropriately and achieve your objective. When your information is incomplete and/or incorrect, your response is inappropriate, sometimes fatally so. An inappropriate response will be called an "error."

All errors in thinking occur because of incomplete or incorrect information about how to deal with the stimuli detected. These two basic sources of error can be subdivided into the eight principal types of errors inherent in the thinking process. These errors occur because:

1. Your brain uncritically accepts the first information it gets in any new subject area as correct, whether it is or not.

2. Subsequent information that is in keeping with the information already present in your brain is uncritically accepted as correct, whether it is or not.

3. A new item that is contradictory to the information present in your brain is automatically rejected as incorrect, whether it is or not.

4. Your brain considers every item that is compatible with the majority of its information in a given subject area to be correct and every item that is contradictory to its information to be incorrect. As a result, the brain has no internal way to know which items of its information are correct representations of the real world and which are not.

5. Your brain has no way to know whether or not it has all the information required to respond appropriately to a given stimulus.

6. Unless your brain has additional information to the contrary, it interprets similar items as being identical.

7. Your brain cannot measure anything directly. All measurements must be made by comparison against an appropriate standard, which is often done incorrectly.

8. Your brain continues to interpret the external world as it was when the last sensory signal about a given subject area was received. As a result, the brain is not aware that some of its formerly correct information is now incorrect.

These few, seemingly innocuous shortcomings of the thinking process affect every aspect of your personal life, your relationships with others, and your happiness.

This material is only a brief summary of these important errors. More information on their origin, their effects, and how to handle them is described in "Think Better, Feel Better." (Pacifico, 1990)

Carl Pacifico
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## GETTING THERE FIRST

The human brain uncritically accepts as correct the first information it receives in any new subject area. The only requirement is that the subject area be completely new. Any contradictory information that is present blocks acceptance of the new item, as will be described in a later segment.

This is a familiar error because everyone has suffered its effects innumerable times. It is especially common in children because more of his or her brain is virgin. Unfortunately, sayings like “Give me a child before he is seven and I’ll give you a Nazi, pickpocket, etc.,” are true. Parents who wouldn’t think of putting bad food into a child’s body sometimes inadvertently put incorrect information into the child’s brain, which will make him or her just as sick.

Adults are also assaulted with incorrect information. Some of it is intended to induce you into actions that are contrary to your best interests, as with some advertisements, political speeches, and investment promotions. Some incorrect information comes to you from those trying to be helpful, as with parents, teachers, and peers, but it can be just as harmful.

When your senses detect a set of stimuli, your brain assembles all the information it has about the source of those stimuli and how to deal with them. It processes all this information to arrive at the response that is most likely to promote your survival. As the only information in a virgin subject area is the new information itself, your brain responds as though this new information is correct. An Incorrect item of information in a virgin subject area not only causes an incorrect response at that time, but it also tends to block acceptance of correct information encountered later.

It would be desirable to check the validity of all new items, but this isn’t possible. Nevertheless, you can:

- Develop a defense against the automatic acceptance of all important new items until they can be evaluated, such as “Don’t believe anything you hear and only half of what you see.”

- Attach tags to the new item, such as “I read in the newspaper....” or “My professor says....” These tags identify the item as an unproved assumption and so prevent you from accepting it as a fact. If the item is proved to be correct later, the tag can be removed.

- You can be equally careful in communicating items of uncertain validity to others by adding tags, such as, “I think that....” or “The rumor is....”

## COMPATIBLE AND INCOMPATIBLE INFORMATION

The previous segment showed why the first information you detect in a novel subject area is uncritically accepted as being correct. How does this affect information you receive later in the same subject area?

Subsequent items that are compatible with this first information are also accepted uncritically as correct. The detection of similar items reinforces and broadens your information in that subject area.

The way your brain handles contradictory items in this subject area is quite different. It automatically rejects contradictory information, whether the new item is correct or incorrect. This is not due to stupidity, stubbornness, or a character flaw. Unless you consciously consider the validity of the new item, your brain will automatically reject it as being incorrect.

There is an evolutionary basis for this effect. When a creature detects a stimulus it considers to be a benefit, it automatically begins to move toward it. When it detects a threat, it automatically moves away from it. Suppose a creature has information that a stimulus is both a benefit and a threat. When this stimulus is detected, the creature would attempt to move both toward and away from it simultaneously, which is impossible. The thinking mechanism evolved in a way to reduce the occurrence of this impasse.

When you detect any stimulus, all the information associated with it in your brain is assembled and processed to arrive at an appropriate response. When little prior information is present, the new item becomes a substantial percentage of the total and so influences the response. The more information you already have about that subject, the less effect any contradictory new item has on your response. At some point, a contradictory new item makes a very small change in the information already present in your brain. In effect, the contradictory new item is rejected as incorrect, whether it is or not.

So correct information tends to prevent the acceptance of incorrect information, but incorrect information just as effectively interferes with the acceptance of correct information.

The damage caused by an incorrect item of information is related to its scope. It probably won't hurt you if your information on the mating habits of prairie dogs is incorrect, but incorrect information about diet and street drugs can be fatal.

Specific items of information in your brain reject only specific items of contradictory information. Broad conclusions, such as "The best way to get ahead is to work hard," or "The Bible is literally true," or "I can't do anything right" are much more serious. The broader the conclusion, the more different items of

contradictory new information it rejects as incorrect. For example, if you have a negative self-image, you cannot accept a compliment, even if it is true.

As your brain accepts only compatible items and rejects all contradictory items, your experiences seem to confirm your conclusions, whether they are correct or not. This makes it is very difficult to identify and replace incorrect information. Some ways to reduce this shortcoming of the thinking mechanism will be described in a later segment.

## ON BEING CORRECT

When you detect a stimulus through any of your senses, your brain immediately assembles and processes all the information it contains about the stimulus and how to deal with it. When your information is correct, your response achieves your objective, obtaining a benefit or fleeing from a threat. When your information is incorrect, you respond inappropriately, sometimes fatally so.

As described in earlier segments, your brain uncritically accepts the first information it receives about a novel stimulus. It then uncritically accepts all subsequent information that is compatible with this first information. In contrast, an item that is contradictory to an established body of information in the brain is uncritically rejected as incorrect. The validity of neither the present information nor the new item is not a factor in this process. The first information in a novel subject area is accepted as correct whether it is or not. And while correct information inhibits the acceptance of incorrect items in that subject area, incorrect information just as effectively blocks out correct items.

In short, the brain's criterion for the correctness of a new item is simply its compatibility with the information already present in that subject area, whether this new information is right or wrong.

Even when you suspect that some of your information might be incorrect, you have no internal mechanism to identify which items are correct and which are not.

An important example of this mechanism occurs in the votes of our Supreme Court justices. Each justice reads the same written information and hears the same oral testimony. Each reads the same laws and hears the same comments from colleagues on the issue. Yet they usually come to different conclusions. So the reason for this difference is not in the external stimuli detected, but in the information already present in the brain of each justice. They would vote in the same way whatever the evidence presented.

You obviously can't check each item of your information for its validity. So, with the exception of familiar items, consider all your information to be "unproved." As a result, the new items encountered are no longer contradictory to your present unproved information and so can be accepted into the brain and included in the process of arriving at a response to the stimuli you detect.

When an important decision is required, you can, to the extent possible, gather additional information. This will help you by:

1. Checking whether or not your present information is correct.

2. Increasing your information on how to deal with the stimulus.

3. Including contradictory information, which might be more correct than your present information.

## INCOMPLETE INFORMATION

\When a person cannot deny an error, he or she often offers the defense of, "I didn't know..." I didn't know the report was due today. I didn't know he used drugs. I didn't know the gun was loaded.

This introduces the source of another major error in the human thinking process. The brain has no way to know when its information about a stimulus is incomplete. In fact, it is only from experience in other situations that you can suspect that there might be more to this subject than you now know and even then there is no mechanism to identify just what information is missing. In short, except in specific situations, you have no way to know what you don't know.

This type of error is due to another shortcoming in the evolution of the human thinking mechanism. When our ancestral creatures caught a glimpse of a something or had a whiff of an odor, they had to respond to it instantly in order to survive. If they did so correctly, they didn't need to know what information was missing. And if they failed to do so, it was too late to gather more information. As a result, the human brain still responds to a stimulus based on whatever information, complete or incomplete, it has at that time.

Although your brain arrives at the best response for the information it has, this is often quite different from the response it would make if its information were complete. Responses based on incomplete information are always less than the best and sometimes are fatal.

The obvious remedy is to gather as much information about the stimulus as possible, especially when a correct response is important. You can check into that stock tip, talk to present employees about the new job offer, and learn as much as you can about your prospective partner. Most inappropriate responses occur not because additional information is not available, but because most people don't try to get it.

We often bridge these gaps in our information with assumptions. We assume that the car will stop when we press the brakes and we assume that the surgeon knows his or her profession. Nevertheless, we also know that all assumptions are not correct, so we must do what we can to reduce the damage that incorrect assumptions cause.

The first line of defense is identifying and labeling unproved assumptions that are masquerading as facts. A recognized assumption carries a warning sign, such as "I suspect that...." or "Professor Jones claims that..." Others can be labeled as opinions, beliefs, or hypotheses. These labels reduce the possibility of accepting an assumption as a fact.

There is no easy way to recognize an item of information as an assumption. As noted in an earlier segment, the brain has no internal mechanism to recognize incorrect items, so you usually don't know which items are correct and which are not. So, consider all your information to be suspect until you validate it. It doesn't help you achieve your objectives to convert incomplete information into incorrect information.

## SIMILARITY

Do all Asians, all soldiers, or all leopards look alike to you? Does all rock music sound the same?

Unless you already have information to the contrary, your brain interprets similar items as being identical. This shortcoming of your thinking equipment evolved because it had survival value for our ancestral creatures. It was more important for them to respond instantly to a stimulus than to distinguish one fish or one bear from another.

Similarity has important advantages even today. It combines similar but different items into groups, such as trees, foreign cars, and Mexicans, so that you don't have to study each member separately. In fact, verbal communication would be impossible if you weren't able to interpret a wide range of similar sounds and scribbles as representing the same words.

On the other hand, similarity causes some serious errors. Most people consider items that are similar in some ways to be similar in all ways. For example, based on similar physical form, they group koalas with bears and expect all boys named Percy to behave in the same way. The most ridiculous example is "Men (or women) are all alike!"

Similarity causes most people to assume that each member of a group has the same qualities. That is, they assume that all members of a group are identical. Yet there are differences even among the proverbial peas in a pod.

Similarity also causes errors in the way you respond to stimuli. An appropriate response to one type of snake, drug, or chest pain might be fatally inappropriate for some other member of that group.

Because of similarity, you are usually unable to detect gradual changes. Employers often fill a job opening from the outside because they still see their present employees as they were when they joined the company. Some parents continue to respond to a teenager as they did when the child was six.

One measure of intelligence is the ability to distinguish among seemingly identical items. This is achieved by gathering additional information about them. The first distinction is usually "black-or-white." Labor unions are good or bad. Foreign countries are friends or enemies. Each additional item of information permits additional distinctions among similar items. You learn the differences among trees, dogs, and universities. Then you learn that there are evergreen trees and deciduous trees. The next item might separate the different kinds of evergreen trees. This makes smaller and smaller groups of similar items until you

have narrowed the broad class down to a set of individual items. Obviously there is great survival value in being able to distinguish correctly among similar items.

A is A and not A'. A rose is a rose is a rose and nothing else.

## MEASUREMENTS

Our society is obsessed with measurements. We measure almost everything about everyone, including height, income, and job performance. Although a person's happiness is often based on these measurements, most of them are meaningless.

It seems that our ancient ancestors did not need to measure anything because the human brain never developed any mechanism to do so directly. However, if two or more similar objects are detected simultaneously, the brain can determine that one is longer, thicker, brighter, etc. than the others. So all measurements are made through comparisons. However, the comparison must be made correctly for the measurement to be valid.

Let's say you want to measure the length of a metal cylinder. The object to be measured must first be identified completely and correctly. Otherwise you might think you were measuring the potency of a drug when you are actually measuring the effect of an impurity.

You need something to compare the cylinder to. This something must be identical in every respect with the object except for the one property being measured; any other differences might distort the comparison. For example, if the second cylinder were made of a different metal, a measurement made at one temperature would be incorrect at every other temperature. This second object becomes the "standard" for the comparison.

Now you need some means of comparing these objects. You place the objects side by side and note any difference detected by your senses. Even if mechanical devices are used to aid in this task, direct sensory perception by a person always occurs somewhere in this process.

Next, the person making the comparison must be objective. The comparison will be meaningless if you think the standard is longer and I think it is shorter.

You see that the cylinder is some multiple of the standard that has been selected as the unit for length. You've "measured" it. Other arbitrary standards can be selected for weight, speed, and every other physical property of objects you want to measure.

The process to this point is satisfactory for measuring the length of a stick, but now you want to measure how fast grass will grow to a height of 3 inches from some new seeds. You use the present seeds as the standard for the comparison. The grass from the new seed reaches the target height in half the time. Wonderful, but would you accept this measurement if one seed was grown in loam and the other in clay? Of if one seed received more water than the other?

So for any measurement to be valid, all factors that might influence the comparison, other than the one item being measured, must be absent.

Of course, this requirement cannot be met in most practical situations. You can't eliminate the soil and moisture from the measurement. Nevertheless, it really is the only way to get a correct measurement. If there are any other variables, known or unknown, in the system, you can never be absolutely sure that the measurement is correct.

Since you can't eliminate all the other factors in this system, you'll make them identical. You'll use the same soil, the same amount of water, sunlight, etc. for both seeds. Will the measurement be correct now? Yes, but.... Yes, it will be correct but only for that specific set of conditions and no other. In a different soil, at a different moisture level, with some other degree of sunshine, etc., etc., the measurement will no longer be correct. So it is essential to specify the conditions for a measurement. A common error is considering a measurement that is correct under one set of conditions to be correct under some other set of conditions.

Since an item being measured must be compared with a standard that is identical except in the one property being measured, how can we measure intangible items such as intelligence, job performance, success, and values? The errors that occur in measuring intangibles will be described in the next segment.

## MEASURING INTANGIBLES

As shown in the previous segment, all measurements are made by comparisons. In order for a comparison to be valid:

1. The object being measured is identified completely and correctly.
2. The standard used is identical with the object except for the one property being measured.
3. There is a means of identifying the difference in this property.
4. The observer is objective.
5. There are no other factors in the system. If there are, they are identical for both the standard and the object being measured.

In this case, the measurement is valid only under these conditions.

By taking all these requirements into account, we can measure the physical properties of objects. But since the standard must be identical with the item except in the one property being measured, there is no perfect standard for any intangible item, such as intelligence, job performance, success, and values. As a result, there is no way to measure any intangible item correctly.

Nevertheless, almost everyone attempts to measure intangible items. The first obstacle is that we are unable define them completely and correctly so we don't know just what we are measuring. For example, different people have different definitions for "love," "morals," etc. As a result, the item being measured, say "behavior," can be satisfactory by one person's standard and unsatisfactory by other persons' standards.

As a familiar example, we want to measure "intelligence," even if we can't define it. We use some set of questions as the measuring device, so what we are measuring is not "intelligence" but the ability to answer these questions. If there is a connection between the ability to answer these questions and, say, job performance, it will have to be established in some other way.

A common standard for measuring intangible items is someone's "expectations." These expectations might be adopted voluntarily or imposed by an authority figure. A person's performance is then measured against these expectations. However, performance that is "success" for one person's expectations can be a dismal failure for some other person's expectations.

Another common error is measuring other people's performance by your expectations. When an interviewer told the late Jackie Gleason that people said he drank too much, he replied, "People who say that are measuring my drinking by their capacity!"

Although most measurements of intangible items are incorrect, irrelevant, or meaningless, they affect a person's occupation, income, social acceptance, and ego. By being aware of the source of this error in thinking, you can better handle the incorrect measurements others make of you and you can reduce to a minimum all the unnecessary expectations you impose on both yourself and others.

## OBSOLESCENCE

The external world is constantly changing. Your brain, however, interprets the world as it was when you last received a sensory impression in each specific subject area. That is, you continue to interpret each aspect of the world as it was at some time in the past rather than as it is now. As a result, some correct information becomes incorrect. And because your responses to stimuli are derived from your information, correct or incorrect, obsolescence becomes another major source of error.

This shortcoming in the thinking mechanism occurred early in evolution. The earliest creatures lived short lives in the oceans. As there was very little change in their environment during their brief existence, there was no need to evolve a mechanism to warn them that their information had become incorrect. The modern human lives much longer in an environment that changes frequently. As we have no mechanism to alert us when a memory no longer represents the current world, we are unaware when an item of information becomes obsolete. And even though we know that some of our information is probably obsolete, we have no internal way to know which items are still correct and which are not.

As a result, we continue to interpret and respond to the world as it was, instead of as it is. As a familiar example, almost everyone retains the values and morals of his early years long after younger people have adopted new behavior patterns. This is the reason for the "generation gap."

As you have no way to know which items in your brain have become obsolete, you can’t correct them all. However, you can be alert for three principal sources of obsolescence. A common type of obsolescence occurs with items that change frequently or erratically, such as prices and styles. More difficult to detect are items that change slowly and steadily, as with human aging. Finally, the more time that has elapsed since you received information in a given subject area, the more likely it is that your information about it has become obsolete.