A Rhetoric of Argument

Second Edition

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McGraw-Hill Publishing Company

New York St. Louis San Francisco Auckland Bogotá Caracas
Hamburg Lisbon London Madrid Mexico Milan Montreal
New Delhi Oklahoma City Paris San Juan São Paulo
Singapore Sydney Tokyo Toronto

10 The Tactics of Causal Argument

Now that you know the kinds of causes and the general purposes of causal argument, you are ready for the next question. How can you actually convince an audience in writing that a cause and effect are linked? It is one thing to name a possible cause, quite another to convince an audience that it operates. Fortunately, convincing an audience is easier than you might think because both arguer and audience will share a storehouse of assumptions about what causes what. You draw on that storehouse in causal argument, just as you appeal to shared definitions in arguments about the nature of things. If, for example, you argue for the characterization that "Benedict Arnold was really a patriot," you must try to evoke a sharable definition of *patriot.* Similarly, if you argue for the causal claim that "Benedict Arnold's treason caused others to abandon the American side in the Revolution," you are appealing to a sharable assumption, namely, that one person's action can influence others.

AGENCY: OUR BASIC ASSUMPTION ABOUT WHAT CAUSES WHAT

What convinces us that one thing causes another? Suppose we see a two-year-old child fly forward on a swing, the mother pushing from behind.

This is a capsule case of cause and effect, for we know that the mother's push causes the child's motion on the swing. When we can see the actual push and the forward motion that follows it, we have the most satisfying kind of evidence of a causal connection between two actions, in this case the push and the swing.

We need a word to stand for this most basic connection between a cause and an effect. Let us use the word *agency* for this "touching" of cause and effect, this link between them. In a sense, agency is the smallest unit of cause. The simplest kind of agency is literal physical contact: the mother's hand *touches* the child's back; lightning *strikes* a dry tree to ignite it; a car *bumps* into a store window and shatters it.

We intuitively understand such physical agencies of force, motion, resistance, and reaction. (And, of course, there are many other chemical and physical agencies in nature, such as light, heat, motion, and chemical reagents.) Even if we are not scientists, we have a common-sense understanding of how things work in the natural world. We know that plants need water and sunlight to grow, although they can get too much of either. We know that we cannot fry an egg without heat, that if we eat too much we get fat, that cars need fuel.

But what agencies operate in individual lives, in social and historical events? In any society, at any time, there are quite a number of accepted agencies whose operation we believe in as readily as we believe in the operation of physical law. Philosophers, psychologists, anthropologists, and social scientists debate about what to call these agencies—motives, instincts, or learned patterns of behavior. But we all recognize a believable appeal to the way human nature works, in the same way we recognize how physical nature works. We no more accept happiness as a motive for murder than we would accept the power of rocks to fly.

What are some of these accepted agencies of human behavior? We believe that people do things to *imitate* one another, and that they also do things *to be different from one another.* We believe that people usually act *to maximize their own good* (as they see the good) *with the least amount of effort.* We also believe that people act *to avoid pain.* But since this text is not the place for an analysis of human motivation, let us just say that certain fundamental motives, causes, or agencies of human action are widely accepted. And these same agencies that move individuals also move groups, communities, and even nations. They too imitate, rebel, seek their benefit, and minimize pain and expense.

We will be able to understand the concept of agency better if we look at some human cause-and-effect relationships and identify the assumed agency in each. If we say that watching violent programs on television causes violent behavior in children, the assumed agency is imitation. If we say that living in a tract development caused Bertha to paint her house pink, the assumed agency is the desire to be different. If we say that the citizens of a community voted to increase taxes because they want to build

a new school, the assumed agency is the desire to maximize their own good. If a nation builds a system of dams to prevent floods, the assumed agency is the desire to avoid disaster. Of course, less obvious agencies may also be operating; whether we argue about them depends on how much we want to elaborate on the springs of human action.

Often when we connect a cause and an effect in argument, as in the cases above, we do not even mention the agency between them. We *assume* it. Fortunately, people in the same culture share more or less the same assumptions about causal agency, about what causes what. So we are usually able to claim that one thing causes another without going into elaborate explanations. We develop our argument to the point where we and our audience share assumptions about agency. We want the readers to nod and say to themselves, "Yes, I believe that could cause that."

With agency in mind, we can distinguish between causal arguments that assume agency and those that do not, those that get the reader's nod easily and those that do not. Let us first look at a causal argument where agency is obvious enough to be assumed.

Suppose you want to argue that juvenile pot smoking in a particular community is in part caused by parents' drug and alcohol dependence. Depending on your audience, you could spend much of your time in this argument presenting evidence of the large number of children who smoke pot and of the large number of their parents who smoke pot, take Valium, and drink excessively. In short, your effort would go only into proving the simultaneous existence of the two events you call the cause and the effect. In this case, you bring the cause and the effect into juxtaposition and stop because your audience will most likely assume the agency between them. The agency between the parents and the children is imitation; you could mention it to be emphatic, but you probably would not need to.

Now let us look at an example where agency cannot so easily be assumed. Two types of arguments fall into this category. First, there are implausible agencies. Any argument that depends on an implausible agency is likely to arouse the resistance and incredulity of its audience. If a woman claims, for example, that her presence in a room causes spoons to bend, books to levitate, and lamps to shatter, she is assuming an unbelievable agency. Most of us do not accept telekinesis as an agency connecting the human mind and physical movement. There are many other such agencies currently unacceptable to educated audiences: copper bracelets that cure arthritis; the Bermuda Triangle, which makes ships and planes disappear; vision into the future by dreams, astrology, or biorhythms. With an audience of unbelievers to assume that any of these is a causal agent would be the death of argument. With such an audience an arguer who seriously wants to claim that one of these mysterious forces caused something must move the argument to a different level. He must argue for agency itself, and establishing a new agency requires a major intellectual effort.

The other kind of argument where agency cannot simply be assumed involves a distant cause. That is, the cause and the effect are so far apart that we cannot see immediately the agency between them. If we claim that a childhood disease is the cause of a heart attack at age sixty-five, that an army's need for spurs gave rise to feudalism, that greased cartridges led to the Indian Mutiny of 1857, we are likely to lose our audience because assumable agency, the link between cause and effect, is missing. In these cases we can supply agency by establishing a *chain of causes.* (See below for a fuller discussion.)

You can now see the crucial importance of *agency* in causal argument. In fact, the essence of causal argument is getting down to assumable agency that your audience will accept. If you have assumable or acceptable agency, you spend all your time in causal argument showing that cause and effect exist and lining them up by any of the methods that follow. If you do not have agency, you have to establish it. If you cannot establish it, you have no causal argument.

EXERCISE

Describe the agencies that would plausibly operate between the following pairs of causes and their effects. Are any of the linkages implausible because no assumption of agency is possible?

1. Parental strictness causes teenage rebelliousness.
2. One seventh-grade girl gets her ears pierced; two weeks later, fifteen other seventh-grade girls get their ears pierced.
3. An old woman looks at a cow; the cow stops giving milk.
4. The salesman was physically out of shape, so he failed in his career.
5. France refused to boycott the Olympics, so the Russians held a special summit meeting with the French.

TACTICS FOR SUPPORTING A CAUSAL RELATIONSHIP

Mill's Four Methods

The English philosopher John Stuart Mill gave us a detailed explanation of how to carry on a causal investigation. He was concerned with identifying potential causes and making the connection between cause and effect as certain as possible. In the laboratory, once a potential cause-and-effect

relationship is identified, it can usually be tested and established with certainty. That one thing causes another becomes a fact. However, in most ordinary causal investigations, outside the controlled conditions of a laboratory, certainty is an unreachable goal. We settle for probability. That one thing causes another becomes a matter of argument, not proof, because most human actions cannot be repeated in a laboratory.

Nevertheless, in supporting a causal argument, we use versions of Mill's basic tactics in two ways. First, they help us find or single out a dominant cause; they are especially useful when we have a number of sufficient causes to choose from and need something to convince us that a particular one was working. Second, the same tactic that helped us select a dominant cause can also be used to convince a reader. In other words, if one of Mill's tactics convinced us, it will also convince our audience.

The Common-Factor Method (Mill's Method of Agreement)

The common-factor method works only when the effect we are interested in occurs more than once. People catch the same disease, nations invade one another, and some people have difficulty waking up every Monday morning. Investigators looking into the causes of any events like these first assume that the cause(s) came before the effect in time. They look at the events that came before the effects to see if they have anything in common. Assuming agency, the simplest unit of cause, they reason that the common factor is likely to be the cause.

Here is a fuller example of how the common-factor method works. A literary historian interested in how some prolific novelists accomplished so much looks for anything alike in their very different lives. She may find that many of them (Charles Dickens, Anthony Trollope, George Eliot, Edith Wharton, Henry James) set aside a time in the morning, even if only a few hours, for uninterrupted writing. She can then reasonably infer that this common factor, regular morning work habits, was the cause of their productivity, rather than some other possible cause such as intermittent inspiration. When she writes up her argument, she can assume that readers will accept the agency linking regular work habits and great productivity.

A search for the cause of food poisoning is a frequently cited example of the common-factor method. If six people come down with the symptoms of botulism, health officials will obtain a list of what the victims ate in the past twenty-four hours and check for things in common. They will eliminate the salad or coffee that all six had because they know that *Clostridium botulinum* grows only in an anaerobic (airless) environment. But when they find that all six ate the canned vichyssoise at the local diner, they can be certain that they have found the cause. Health officials looking for the source of botulism have an easy time because they know exactly

what they are looking for; botulism has only one necessary and sufficient cause.

But in the famous case of the so-called legionnaire's disease that struck 182 conventioners at a Philadelphia hotel in 1976, some time went by before a possible cause was located. Investigators did not know at first what they were looking for; they had not identified the agency. They tried every possible common factor—food, water, air, location of rooms, even whether all the victims passed through the same lobby.

Notice the difference between the food poisoning example and the one about the novelists. The health officials' knowledge of the cause of botulism simplified the investigation and led to a certain conclusion, but in the example about the novelists, the conclusion is only probable. Though we know the necessary cause of botulism, no one has yet identified a necessary and sufficient cause of productivity (one in whose presence productivity must follow).

Remember that frequently your purpose in causal argument is to persuade your audience that a dominant cause indeed produced the effect. If you discovered this cause by the common-factor method, you can simply relate that process. Write it out in your argument; it may read like a detective story. The health officials will explain in the local press how they tracked down botulism to the vichyssoise. The literary historian will describe the working habits of each individual novelist and point out the common pattern and the common result: how Trollope had a servant wake him each morning with a cup of coffee at 5:00 A.M.; how Dickens went every morning to a little house built for him to write in, complete with a mirror to make faces in; how Edith Wharton wrote on a lapboard in bed. Since such an argument is not scientific, the literary historian may have to refute or concede other possible sufficient causes of prolific writing such as vital energy or a need for money. The need for money could be refuted by pointing out that it is not really a common factor, since at least one of the novelists (Edith Wharton) had plenty of money, or the literary historian may concede that all the novelists had extraordinary vital energy, and that is exactly what caused them to get up early and write every morning. Thus, vital energy is a cause of regular work habits and a remote cause of prolific output. All the novelists may have had brown hair too, but it is not easy to imagine any agency between hair color and creativity.

EXERCISE

This exercise will show you how the common-factor method is both a tool of causal investigation and a convincing technique in causal argument.

Here are some situations that lend themselves to the common-factor method of analysis; after you have identified a dominant cause, write up your argument by explaining how you did it.

Begin by identifying a group of at least five incidents or five people who have some effect or condition in common: people who scored the highest on a recent test; people who have chosen the same major, especially an unusual one; people with unusual diets, hobbies, exercise routines; the accidents that have occurred in one location; the best-selling hardbacks or paperbacks or record albums for a single year.

Now look for a common factor shared by all the members of the group. You might even come up with several factors, but some will have to be rejected as implausible or insignificant. Don't be dismayed if all the members of your set do not share one common factor. You may simply be dealing with an effect that has several sufficient causes. But at least you will have identified one of them.

The Single-Difference Method (Mill's Method of Difference)

The single-difference method works only when there are *at least two* similar situations, one leading to an effect and the other not. One seed grows, another doesn't; one president's term is peaceful, another's is full of conflict; one sponge cake rises, another flops. You look for the possible cause that was missing in one case and present in the other—the single difference. You assume that if everything else is substantially alike in both cases, the single difference must be the cause—the sandy soil that one seed was planted in, the international inflation that faced one president, the thundering herd that passed through the kitchen of the flopped cake.

Here is how the single-difference method works in an extended example. Two students in a course have a B+ average on the exams, but one gets an A and the other a B as a final grade. Both students attended class regularly, both sat in the second row, both were attentive in class; but the one who got the A participated in class discussion, while the other did not. If you know that this participation was the single difference between their performances, you can reasonably conclude that it caused the difference between their grades.

If you argue for a cause discovered by the single-difference method, you must first persuade your audience that the two cases being considered are substantially alike. Convincing an audience of such a comparison is sometimes difficult, for rarely in human events are two situations *exactly* alike. You can, however, establish likeness in two ways: List all the important things the two cases have in common, or show how any differences other than the one you are interested in are insignificant or trivial. For instance,

if the student who got the B missed one more class than the one who got the A, you may have to argue that such a difference was insignificant in determining their grades.

If you are arguing a case like the one above, you must be especially careful not to overlook any other possibly significant difference. If someone else were to point one out, your argument would be weakened. So you have to anticipate any plausible rival difference and refute it. For example, someone may point out that the student who got the A was a man and the one who got the B a woman. That may be a significant difference. How would you argue that it wasn't?

EXERCISE

This time you will have to find pairs of similar situations, one in which an effect occurs and the other in which it doesn't: two tests in the same subject, one that you do well on, the other less well; two dates with the same person, one a success, the other a failure; two attempts to do something (pole-vault, get elected), one successful, one a failure; two very similar international crises, one resolved peacefully, the other not; two lab experiments, one that yields a result, the other not.

Try to find the single difference between these two situations. That single difference may be the cause of the effect occurring in one case and not in the other. Remember that when you nominate a single difference as a cause, other factors must be alike in both cases. You have to convince your reader of similarities or argue that apparent dissimilarities are unimportant.

The Method of Varying Causes and Effects (Mill's Method of Concomitant Variation)

The concomitant-variation method can be used only when an effect persists and varies. Sunspots come and go, SAT scores rise and decline, the cost of living rises, the stock market lurches. Faced with fluctuations and trends, you look among the possible causes to find at least one that persists and varies in a similar way. In doing so, you assume that the correlation between the cause you are supporting and the effect is evidence of their connection. But you can make this assumption only when the agency is plausible.

Both cause and effect may increase together, decrease together, or one

may increase while the other decreases. They may even jolt up and down together in absolute harmony. Sunspots may increase when electromagnetic activity on the sun increases; SAT scores may decline while the number of students enrolled in advanced high-school English and math courses declines; and the standard of living may rise when family size decreases. In each of these cases, an assumption about agency is as necessary to your argument as the rising and falling patterns of cause and effect. That is, your audience must see the plausible connection between the two. It is easy, for example, to see the agency between declining SAT scores and declining enrollments in advanced math and English. If students are not learning skills, they will not do well on tests of verbal and mathematical ability.

Let us look at a more complicated case where concomitant variation is the key to causal argument. The library in Centreville keeps careful records of the number of books taken out per year. The librarians noticed that over a period of ten years, from 1950 to 1960, the number of books taken out decreased from 30,000 in 1950 to 15,000 in 1960, despite a population increase of 10 percent in the town. Casting around for an explanation, the librarians discovered that the number of TV sets in the community increased dramatically during this ten-year span. The agency between TV sets in the home and library books still in the library is obvious. And in this case, the relationship between cause and effect is inverse: As one went up, the other went down.

Between 1974 and 1976 the librarians were pleased to notice a sudden upsurge in the number of books taken out. This time there was no single obvious explanation, so they noted a number of trends that might have contributed to the increase: the sudden increase in the price of oil, a big rise in community enrollment in night-school courses, a steep rise in the rate of inflation, an increase in the number of fast-food chains, and an increase in the number of senior citizens living in the area. None of these is an obvious cause of increased book circulation without further explanation.

Let us compare how difficult it would be to convince an audience of causes for the decline or the increase in library use in these two instances. Persuading an audience that it was an increase in the number of TV sets that led to a decrease in the number of library books taken out would not be very difficult. You could simply present statistics of increase and decrease; as we said, the agency between them is obvious: Most people cannot read and watch TV at the same time. You could, of course, make your argument more interesting by giving a detailed, specific example of one family whose evening reading had been replaced by TV watching.

But making a causal argument out of the relationship between book circulation and any of the other simultaneous trends between 1974 and 1976 might be more difficult. There is no obvious connection between an increase in the price of oil and an increase in book circulation. If you suspect they are causally related and want to convince yourself and others, you must construct a chain of causes to connect them. Your argument might go something like this: An increase in the price of oil leads to an increase in the price of gasoline. An increase in the price of gasoline leads to fewer nonessential car trips, so people find themselves at home with more time on their hands. To fill that time, they may turn to their local library instead of simply turning on the television set.

Arguing a causal connection on the basis of concomitant variation can depend in part on forestalling some obvious objections. First, even though trends vary in the same way, they may be unrelated. For example, the increase in the number of fast-food chains and the increased book circulation probably have nothing to do with one another.

Second, both the supposed cause-and-effect trends may really be the effects of yet another cause. For example, increased book circulation and an increased number of senior citizens may both be the result of an overall increase in the population. Third, the trends may be the cause and effect of each other—remember reciprocal causality. For example, a rise in continuing-education enrollment could lead to more books being taken out, which in turn could lead to more continuing-education enrollment. It takes skillful arguing to maneuver around all these pitfalls and place causes in their proper relation to one another.

EXERCISE

Think of some trend that has been either increasing or decreasing over a period of time: vandalism in your town; drug use in your former high school; enrollments in certain kinds of courses (for example, business, classical languages, forestry); summer unemployment among young people in your area; increase in the number of special-interest magazines; female crime in the United States.

Among plausible causes of these trends, try to find one that has increased or decreased in a similar way. Remember that in your argument you will probably have to support the existence of both trends with the

techniques learned in Part I. And be careful that the two trends you line up are not better seen as effects of yet another trend or cause.

The Elimination Method (Mill's Method of Residues)

Like Mill's three other methods, the process of elimination is both a method of arguing about causes and a method of writing about causes. As a method of investigation, scientists use elimination in controlled experiments, doctors use it in diagnosis, Sherlock Holmes used it to find criminals, and common sense makes it available to everyone. If your car stalls in traffic, you systematically eliminate all possible causes, beginning with the most likely, until you find the cause—gas, water, battery, oil. Obviously, the elimination method works only when an effect can be produced by several possible sufficient causes. We assume that since only one cause was needed to bring the effect about, only one cause operated. (This assumption is a potential weak spot in this method.) In the process-of-elimination method, then, we argue for one dominant cause, not by proving it happened, but by proving that the other possibilities did not.

The success of convincing an audience by this method in argument depends on how complete the initial set of possible causes is and how validly the other members of this set are eliminated. For example, in the story "The Adventure of the Speckled Band," Sherlock Holmes considered all the possible means of entering and leaving a bedroom. The room was sparsely furnished, so no one could hide in it. The door was locked from the inside, so no one could either enter it from the outside or, once inside, leave it without a sign. The window was shuttered from within, and no one could open it from without. After Holmes eliminated these obvious possibilities, he concluded that the only remaining way of getting into the room was through the very small ventilator above the bed, "So small that a rat could hardly pass through." Thus, by the process of elimination, Holmes concluded that he was not dealing with a human intruder. (If you want to know whodunit, read the story.)

Such Holmesian thoroughness is possible only when the set of causes is limited, as it is by the physical facts of a room. More often, we use the process-of-elimination method loosely. That is, we argue by simply eliminating the most *obvious* possible causes—other than the one we are interested in, of course. Setting up and then eliminating the *entire* set of possible causes is not always necessary. Since we are not often involved in matters as crucial as identifying murderers, it is usually enough to dispose of only the most likely of other possibilities, especially those that the audience of the argument might anticipate.

For example, you may want to persuade your audience that media

favoritism was the cause of one candidate's victory in a Senate race. One tactic you could use to support this case would be to eliminate obvious rival causes. One such rival cause might be the candidate's support for a tax cut, a position that certainly attracts votes. But if the other candidate supported the same tax cut, you could certainly eliminate this cause of your candidate's victory. You could go on to eliminate other possible causes such as the candidate's attractive spouse, family's wealth, and dedicated staff. You may decide not to bother with some of them, but *only* if you think them insignificant and *only* if your audience is likely to ignore them too. You must always remember that you risk easy refutation if you leave out anything likely to occur to your audience.

EXERCISE

List at least four possible causes of the following effects. Try to show that three of them could not have operated.

1. The increase of foreign tourism in the United States and the Soviet Union in the 1980s.
2. Deterioration of the coral reefs off the Florida keys.
3. One student's dropping out of high school.
4. The decline of polygamy among Mormons.
5. The decline of travel abroad from 1985 to 1986.

Mill's Methods and Agency

Mill's methods will convince an audience whenever agency can be assumed. But what do you do when agency cannot be assumed? Say you have some evidence that two things are causally connected. Your evidence comes from one of Mill's methods in the first place—you have identified a single difference, a common factor, a concomitant variation, or have eliminated everything else. But there is no obvious connection, no agency between the cause you have identified and the effect.

If you are left with a gap between cause and effect, you have to do some imaginative model building to close it. Two rules govern this imaginative model building: (1) The agency you invent must be in line with accepted causal laws; that means no magic. (2) You should apply the centuries-old wisdom of Occam's razor, or the Principle of Parsimony. Occam's razor advises looking for the simplest agency that explains the effect, rather than

an elaborate Rube Goldberg contraption with fourteen interlocking steps between cause and effect.

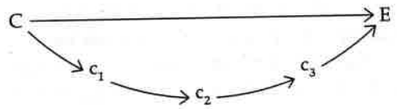
OTHER RHETORICALLY EFFECTIVE METHODS

Mill's methods are rhetorically effective but complex. In newspaper editorials, magazine articles, speeches at meetings, and so on, we often use simpler, almost shorthand methods to support causality. Instead of telling a long story, we may combine several of the techniques listed below to indicate a likely causal connection. These methods may not be as rigorous as Mill's, but they can be convincing when agency is assumable. They are better as methods of *presenting* causes than of finding them in the first place.

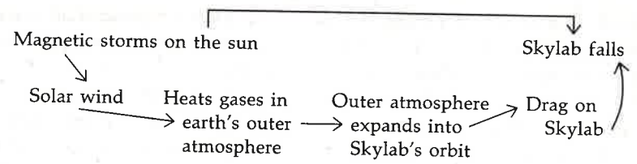
Chain of Causes

Often you may want to link two events whose connection as cause and effect will not be obvious to your audience. The cause might be incongruous or remote. For example, it has been argued that the deforestation of England in the sixteenth century led to the industrial revolution, that not learning to crawl leads to reading problems, and that the rising divorce rate leads to a boom in the kitchen appliance industry. We are likely to respond to any of these statements with "Huh?" When an audience is likely to find a causal connection implausible, a chain argument is often called for.

A chain-of-causes argument is a persuasive way to support an improbable or remote causal link. Such a chain divides the big leap between cause and effect into a series of little steps, making it easier for you and your audience to share assumptions about agency.



Here is an example of a chain-of-causes argument. NASA announced that sunspots caused Skylab to fall in its orbit. That sounds magical, but NASA persuaded the public by establishing a chain of cause-and-effect relationships between sunspots and Skylab's fall. Its argument went like this: Sunspots are a sign of magnetic storms on the sun. These storms hurl a stream of charged particles, called the solar wind, into space. The solar wind heats the thin gases in the earth's outer atmosphere, which then expand into Skylab's orbit. The expanded gases increase the drag on the craft, which then slows down and falls, as Skylab did.



This chain of causes looks very persuasive. But, like any chain, it is only as strong as its weakest link. It works by appealing to an audience's assumptions about what are believable causal links.

EXERCISE

To get some practice in describing a chain of causes, try linking these remote causes with their effects by describing the intermediate steps between them. Notice that there may be several ways to get from one to the other.

1. A childhood interest → a career choice.
2. A misunderstanding → a broken friendship.
3. A political crisis → a war.
4. Shutdown of a major industry → the decline of a town.
5. Clear cutting of a forest → increase of deer population.

Time Precedence

We are often warned not to assume that one thing causes another just because it came before the other in time; to do so, we are told, is to commit what is called the *post hoc fallacy* (*post hoc ergo propter hoc,* after this, therefore because of this). The man who plugged in his electric broiler a split second before the East Coast blackout in 1965 may have felt a surge of fear and thought, "What did I do?" But although his act immediately preceded the effect, he was not responsible. Nevertheless, although there are many such examples of exact time sequence without causal connection, causes *do* precede or accompany their effects in time. Can you think of an exception?

This notion of cause first and then effect is our most primitive causal assumption. (Here is our one-way-street model again.) Lightning strikes the transformer and then the electricity goes out; the voyages of discovery took place in the fifteenth and sixteenth centuries and then the colonization of the New World began; the spoon falls in the garbage disposal unit and then the unit breaks. We usually assume this order of cause first and

then effect without bothering to point it out in our argument. But mentioning a time sequence does tend to support a causal relationship between two events when the agency is already plausible.

For example, on October 19, 1987, stock prices declined sharply. An analyst explaining the causes of the drop might point out that just the week before, two economists from two major banks forecast a credit crunch. Making a causal connection between the experts' pronouncements and the decline in stock prices simply required presenting the two events in sequence. The writer could assume that an educated audience would understand the impact of experts' predictions on the world of finance. Thus, time precedence by itself is enough support only when we can assume agency very comfortably.

EXERCISE

Which of the following sets of events paired in time order seem plausible because agency can be assumed?

1. The secretary of the treasury predicts recession.
   The stock market declines.
2. The president announces he will seek reelection.
   The stock market declines.
3. A student takes a study skills course.
   The student's grades improve.
4. A student changes roommates.
   The student's grades improve.
5. A roller-skating rink opens.
   The orthopedist gets more patients.
6. A roller-skating rink opens.
   A bowling alley closes.
7. The prime interest rate goes up.
   The sale of houses declines.
8. The prime interest rate goes up.
   The export of steel declines.

Singling Out Examples

Causal propositions can be either generalizations—"TV violence causes violent behavior," or specific cases—"Because the defendant watched *Miami Vice,* he committed this crime." As you learned in the section on

arguments about the nature of things, generalizations can be supported by examples. Thus, any causal statement that stands for a number of instances can be supported by describing one or more of those instances.

Here is an example of using examples. A social scientist may want to persuade us about the effectiveness of halfway houses for parolees as a cause of their successful reintegration into society. The argument will be persuasive if it describes some detailed case histories of former prisoners successfully rehabilitated in halfway houses. Of course, the case histories presented, no matter how inspiring and persuasive, may have little to do with the overall statistics of success versus failure. After all, we may be given as examples the only three successes the system produced and the eighty-seven failures may be ignored. Thus, this technique can falsify the facts of the case.

However, when this method is used legitimately, the examples are backed up either with overall statistics or, in the absence of exact evidence, with an assessment (as accurate as possible) of the relationship of the examples to the whole. The social scientist, arguing for a very specific thesis such as "The Barrabas Halfway House rehabilitates its residents" would have access to the kind of exact evidence we mean; he or she should have at least counted all the Barrabas alumni who stayed out of jail and all those who went back.

But what if exact evidence is impossible to attain? Suppose, for example, you are arguing for the proposition "Running frequently produces a sense of well-being." Your causal argument is ultimately based on the common factor method and time precedence: Running frequently is accompanied by a sensation of euphoria. Since you could never know how every runner feels, you have not worded your proposition to suggest all. But even though you cannot know all, you can know some. You might create a sample and compile statistics about it ("Of the ten runners I talked to, nine claimed to be suffused with well-being after running"). Or, you can simply give your few examples (yourself, your friend, and your brother) and leave it at that, letting the reader assume they are typical. Your reader could skeptically respond, "So that's ten. What about the other 25 million?" Examples of causal relationship also require the assumption of agency. What is it about running that actually produces euphoria?

EXERCISE

Here are a few common causal generalizations. Find two or more examples to support them.

1. Absence makes the heart grow fonder.
2. Lying hurts the liar.
3. High expectations create success.
4. Friendly parents increase the popularity of their children.
5. Idleness produces mischief.

Analogy

You use analogy when you establish one cause-and-effect relationship by comparing it with another. This other relationship, which is held up as a model, should be familiar and acceptable to your audience. If it is not, you must back up and clarify it.

Like the use of examples, analogy is a common technique in supporting a causal argument. FDA scientists, for example, used mice to test the cancer-causing effects of saccharin. When they found that large doses of saccharin produced cancer in mice, they announced that saccharin is dangerous to humans. The persuasive power of their argument depended on the acceptability of the analogy between human and rodent physiology, diet, and metabolism. Most people find such animal-human analogies convincing; many theories about human disease, learning, and behavior are based on animal experiments.

Analogies can be used to argue for the causes of events in the past and to predict events in the future. When we argue for the causes of a completed event, we can compare that event with another whose causes are better known. For example, the causes of the Athenians' difficulties in the Peloponnesian War can be compared with the causes of America's problems with guerrilla warfare in Vietnam. (We take up predictions in Chapter 11.)

EXERCISE

Below are some possible causal analogies. Choose one and make an extended argument for it, or argue for a similar analogy of your own.

1. Ecologists know that even a small disturbance in a delicately balanced ecosystem can lead to its destruction. Think of a neighborhood as a kind of ecosystem, and construct a causal argument based on that analogy.
2. Historians have argued that many wars (World War I and the Vietnam War especially) are the result of diplomatic blunders and an overriding will to go to war. Could you argue that similar causes could produce a marriage?

3. The well-known Peter Principle says that a worker will be promoted until he or she reaches his or her level of incompetence, and there he or she will stick. Can you use this principle in any other domain, such as the growth of institutions or students' choices of careers?
4. The second law of thermodynamics, the law of entropy, states that all systems tend to disorder unless energy is invested to maintain their stability. Use this law analogically to argue for a tendency you have observed in your own life or in the life of any group from community to nation.
5. A classic law of physics states that for every action there is an equal and opposite reaction. Could this law be used analogically to explain phases in history, the 1950s and the 1960s, the 1960s and the 1970s, the 1970s and the 1980s?

HOW CAUSAL ARGUMENTS CAN GO WRONG: COMMON DIFFICULTIES IN CAUSAL ARGUMENT

The most important characteristic of causal argument is plausible connection between cause and effect, that is, believable agency. Without it, no causal model building or application of Mill's or any other tactics will make a convincing causal argument. An argument that claimed, for example, that closing the university library at 10:00 P.M. caused depression among students could not get by without explaining agency, what comes between such an implausibly paired cause and effect. To refute such an argument you would ask, in effect, "What on earth is the link between closing libraries and student depression?"

Even when agency is plausible, a causal argument may require further support to show that a particular cause operated. It is one thing to be convinced that a cause *could* have operated, another to be convinced that it *did*. A critical audience needs to have cause and effect linked by the tactics described in this chapter. One of the most common faults in a causal argument is to underestimate the audience's need for this additional support. Though everyone knows cyanide can kill, that known agency is not enough to convince a jury that it did kill the body in question.

We have already pointed out the pitfalls of the various tactics used to establish or emphasize a particular causal connection. The common-factor method works only when there are no unrefutable rival factors; the single-difference method requires convincing an audience that any but the singled-out dissimilarity is insignificant; the problem with concomitant variation is that the supposed cause and effect may both be the effects of still another cause; and elimination arguments depend on the plausible completeness of the original set of possible causes. The other tactics, which are less rigorous to begin with, have their dangers as well: Time order may

be coincidence, not cause; analogies may be more apparent than real; examples may be atypical; and chains may break at the weakest link.

We have said that causal arguments aim to depict the interaction of causes or to emphasize the power of a particular cause. The causal model of an argument may be inadequate for either of these purposes. A causal explanation can be too full, going farther and farther back, finding influences on causes and multiplying conditions, until the coherence of the whole is lost in a dissolving view. Or the single cause featured in an argument may be unable to bear the importance placed on it. Another way of oversimplifying is to ignore reciprocity, to miss a mental U-turn and fail to see the effects operating on their causes.

EXERCISES

Identify the techniques of causal investigation or argument used in the following examples.

Pistachio I Scream!

"My car won't start when I buy pistachio."

The manager of a Texas automobile dealership thought the woman who confronted him with this bizarre statement must be crazy. It seems that on hot summer days she would drive to a certain shop for ice cream to take home. It never failed, she said: the car would always start when she bought chocolate, vanilla or strawberry—but when she bought pistachio, she got stranded.

The manager had to see this to believe it. He tried a chocolate trip, and the car worked fine. Vanilla or strawberry—no problem. Then came the trip for pistachio and, sure enough, the engine refused to start.

It was an engineering troubleshooter whose insight solved the problem. He observed that chocolate, vanilla and strawberry were pre-packaged flavors, sold right out of the freezer. But take-home orders of pistachio were hand-packed at the shop. The time needed to have the pistachio packed was just enough for the car to develop vapor lock in the summertime Texas heat. The woman wasn't crazy after all—her car *wouldn't* start when she bought pistachio.

—Bulletin of the Greater New York Automobile Dealers Assn., quoted in *News and Views*

SAT SCORES—HOW TO STOP THE DROP

Jane Whitbread

Scholastic Aptitude Test (SAT) scores—a critical factor for college admissions—have slipped in the past 15 years. The decline, seen as a sign that American education is on the down-grade too, has been blamed on everything from marijuana use to divorce. Now the National Association of Secondary School Principals may have a simpler answer: *too many elective courses* and *too few required courses in English and math*—the skills SAT's are designed to test.

While SAT scores in most of the country's 20,000 high schools have dropped by more than 50 points in English and about 30 in math since 1963, in about 100 schools, scores have remained level or even gone up. Concluding that these schools might have something to teach the rest, the Principals' Association looked at 34 of them and compared them with similar schools whose scores had dropped the most. What stood out was the total dedication of the successful schools to giving the kids the best possible preparation for college:

- College-preparatory students *must* take at least two years of math and four years of English—literature, language (grammar, spelling, punctuation, vocabulary) and writing.
- Teachers stress good writing (clear, precise expression) in *all* courses.
- Qualified college counselors help students choose appropriate colleges and follow through so they take *the courses required for admission* before they take nonqualifying electives.
- Students, particularly in math and English, are grouped by ability. Thus, the faster may go farther, and the others can learn more effectively, free from pressure to rush.
- Teachers in success schools had an average of five more years' experience than those in low-scoring schools.
- Faculty efforts have the support of the entire school administration. Excellence in scholarship is valued as highly as skill in sports. "Our student body is as proud of the winning math team as they are of our champion athletic groups," says A. R. Cramer, principal of Newtown High School in Connecticut.

SAMPLE ANALYSIS

The effect that is the subject of causal investigation in this short article is not an event but a trend, the infamous fifteen-year decline in SAT scores. The opening paragraph makes passing reference to the large social conditions (such as marijuana use and the increasing divorce rate) that have been cited as causes of the drop. But among all the factors influencing such a complex phenomenon, this article focuses on a more immediate cause: the education that high-school students receive prior to taking the test. Such a cause can be changed, while the larger social conditions of the past fifteen years cannot. Not surprisingly, the people responsible for high-school education, the National Association of Secondary School Principals, sponsored the investigation.

Behind the investigation is the assumption that learning is a cause of test performance; this assumption is so obvious it need not be mentioned. Since education should make a difference, the principals want to know

what kind of education does. The investigative technique employed is first of all the single-difference method. Among the nation's 20,000 high schools is a small set of 100 high schools in which scores have not declined. Thirty-four of these are compared with "similar schools" in which scores have declined. That simple word *similar* represents a crucial step in the method. The schools compared must be similar (even paired) in location, size, affluence of the school district, and so on. In other words, any other differences that might be causes of test performance must be cancelled out so that differences in education alone can emerge. The investigation is designed to yield the kind of cause the investigators are interested in, but this does not mean that the cause is any less real.

Once the single-difference method has produced the comparable schools, the common-factor method takes over. What do the successful schools have in common that could produce the kind of education that yields better test scores? Six common attributes were discovered: four years of required English and two of math, emphasis on clear writing in all courses, qualified college counselors, ability grouping, greater experience of the staffs, and administrative support.

Whether these common attributes can be seen as causes depends on whether we can construct plausible agencies between them and the effects. It is fairly easy to see how four years of solid instruction in English vocabulary, grammar, and writing would have a strong effect on results in the verbal component of the SAT, but what about the greater experience of the teaching staffs? Could their greater experience mean something about different teaching techniques? We might need a chain to connect this particular discovery of the common-factor method to its effect. And the last common factor, the administrative support and equal emphasis on academic as well as sports excellence, looks as though it may reflect a difference in the local community's values, values that in themselves may be a quite important cause of good SAT performance.

In New England, Canada and western Europe the summer of 1816 was extraordinarily cold. A meteorological record for New Haven that had been kept by the presidents of Yale College since 1779 records June, 1816, as the coldest June in that city, with a mean temperature that would ordinarily be expected for a point some 200 miles north of the city of Quebec. . . . In New England the loss of most of the staple crop of Indian corn and the great reduction of the hay crop caused so much hardship on isolated subsistence farms that the year became enshrined in folklore as "Eighteen Hundred and Froze to Death." The calamity of 1816 is an interesting case history of the far-reaching and subtle effects a catastrophe can have on human affairs.

The chain of events began in 1815 with an immense volcanic eruption in the Dutch East Indies (now Indonesia), when Mount Tambora on the island of Sumbawa threw an immense amount of fine dust into the atmosphere. . . .

This eruption, which was considerably larger than the better-known one of Krakatoa in 1883, reduced the height of Mount Tambora by some 4,200 feet and ejected some 25 cubic miles of debris. Ash was encountered by ships at sea as large islands of floating pumice as much as four years after the event. Climatologists rank the eruption as the greatest producer of atmospheric dust between 1600 and the present. The dust circled the earth in the high stratosphere for several years, reflecting sunlight back into space and thereby reducing the amount of it reaching the ground.

The idea that dust in the upper air can result in lower temperatures at ground level is quite old. Benjamin Franklin invoked it to explain the cold winter of 1783–84. Today the idea can be confirmed more conclusively through long records of temperature from many parts of the world, which can be compared with the fairly complete record of the volcanic eruptions that have been observed during the past two centuries.

As the dust in the upper atmosphere circled the earth after the eruption of Tambora, it gradually shadowed the higher latitudes. The first two months of 1816 were not exceptionally cold in New England, but by May observers had begun to comment on the lateness of the spring. June began auspiciously, and crops that had survived the unwonted frosts of mid-May started to progress. The first of three unseasonable cold waves moved eastward into New England early on June 6. The cold and wind lasted until June 11, leaving from three to six inches of snow on the ground in northern New England. A second killing frost struck the same areas on July 9 and a third and fourth on August 21 and 30, just as the harvest of twice-ravaged crops was about to begin. The repeated summer frosts destroyed all but the hardiest grains and vegetables.

—Henry and Elizabeth Stommel, "The Year Without a Summer," *Scientific American*

During a period of severe depression several years ago I began to study jujitsu. My purpose was to feel safer on the streets of New York City; everyone I knew seemed to be getting mugged. The immediate results, however, were totally unexpected. Within two weeks I found that the training had begun to have a dramatic effect on my life.

My posture and my mood changed markedly as passivity and depression gave way to energy and euphoria. In the next several months I was able to seize the initiative in several important areas of my life. I applied for a grant to write a book, entered and won a competition for a writing award, and began the steps out of a difficult relationship. Although I was also in psychotherapy at the time, I believe that the jujitsu and the physical fitness that came with it had a significant effect.

Many other women have had similar experiences. One friend of mine took up running and discovered a new sense of calm and ease. "I feel freer, as though I've recovered a lost part of me," she says. "I have a sense of wholeness—body and mind come together in a way they don't otherwise. Although the running, changing and showering take up an hour a day, I feel as if I have more time, not less. Whereas I used to push things out of my life to save energy, I now feel

able to investigate some of the things I always wanted to do but thought I didn't have time for."

Margo Lawrence, a TV producer, took up ballet three years ago and now goes to class four or five times a week. Although she has changed physically, it's the psychological change that's dramatic. Her image of herself is so improved that she recently auditioned to appear on camera. "I was tubby as a teenager and as a result I've always had bad feelings about my body," she says. "I can't tell you how exhilarating it is to stand up and let myself show."

—Susan Edmiston, "The Surprising Rewards of Strenuous Exercise," *Woman's Day*

THE BUBONIC PLAGUE

Colin McEnedy

Finally, after innumerable cycles of onslaught and retreat, the [bubonic] plague disappeared from Europe. London's last experience with the disease, the Great Plague, began in 1665 and ended in spectacular fashion with the Great Fire of 1666. At that time it was natural for Londoners to believe they owed their deliverance to the purifying conflagration. Later it was suggested Londoners owed their resistance to the plague to the reconstruction that followed the fire and the fact that the rebuilt city boasted brick houses and wide, rubbish-free streets in place of the higgledy-piggledy structures and malodorous alleys of medieval times.

This explanation is attractive but does not hold up under scrutiny. One reason is that the fire destroyed only the central part of London, the area least affected by any of the outbreaks of plague earlier in the century, leaving untouched the overcrowded suburbs that had provided the disease with its main lodging in previous times. A second reason is that other cities in Europe, such as Paris and Amsterdam, became plague-free during the same period—a phenomenon that could not be linked to the Great Fire of London.

A somewhat more convincing (but still flawed) theory suggests that the disappearance of the plague coincided with a slow rise in prevailing standards of health and hygiene. Although hygiene cannot be eliminated as a factor, it does not explain why subsequent outbreaks followed the standard course, complete with high rates of mortality, but were farther and farther away from the center of Europe each time they appeared. It was almost as if Europe were developing some form of resistance to the plague that kept the infection from propagating in the usual way. In the north the path of retreat was to the east; in the Mediterranean it was to the south. The later the epidemic, the less it seemed to be capable of spreading. This, moreover, was at a time when, according to every available index, traffic by land and by sea was increasing.

When the role of rats was finally established late in the 19th century, it was suggested that the subsidence of the plague could be explained by changes in the population dynamics of the black rat, *Rattus rattus.* During the 18th century

it had been observed that the black rat, the historic carrier, had been largely displaced by a new species, the brown rat *(Rattus norvegicus),* which would have been a much poorer vector of the plague: the brown rat is as susceptible to the plague bacillus as the black rat but does not normally live in close proximity to humans. Brown rats typically live in dark cellars or sewers, whereas black rats overrun the upper rooms and rafters of a house. Because the oriental rat flea has a maximum jump of 90 millimeters (a little more than 3.5 inches), the difference in preferred habitats may have been enough to isolate humans from plague-infested fleas.

The brown-rat theory seems plausible but does not fit the geography: the brown rat spread across Europe in the 18th century from east to west, whereas the plague retreated from west to east. The brown rat was in Moscow long before the city experienced a particularly severe epidemic of the plague in the 1770's; it did not reach England until 1727, more than 60 years after that country's last bout of the plague.

The late Andrew B. Appleby of San Diego State University suggested an alternative theory, namely that a certain percentage of black rats became resistant to the plague over the course of the 17th century and that the resistant animals would have increased in number, spreading across Europe during the next 100 years. Although these rats might still be infected by the plague bacillus, they would not die from it and therefore could support a large population of fleas, rendering it unnecessary for the fleas to seek other hosts. This theory, however, does not conform to what is known about resistance to plague in animal populations. As Paul Slack of the University of Oxford has pointed out, rat populations often develop resistance when exposed to a pathogenic bacterium or virus, but such resistance is short-lived and is therefore unlikely to have been responsible for broad-based immunity to the plague.

A more plausible theory suggests that a new species of plague bacillus, *Yersinia pestis,* may have evolved that was less virulent than the previous strain. Being less virulent, it might have acted as a vaccine, conferring on infected animals and humans a relative immunity to more virulent strains of the bacterium.

The bacteriological theory is acceptable on several grounds. First, it conforms to the dictum, proposed by the American pathologist Theobold Smith, that "pathological manifestations are only incidents in a developing parasitism," so that in the long run milder forms of disease tend to displace more virulent ones. Second, it explains why the decline of the plague is associated with a failure to spread beyond local outbreaks: a disease cannot travel far when the number of people susceptible to it is low. Third, it is supported by the existence of a close relative of the plague bacillus, *Yersinia pseudotuberculosis,* which does not induce visible illness in rats but does confer on them a high degree of immunity to the plague.

Did *Y. pseudotuberculosis,* or a relative with similar properties, gradually spread through the rodent population of early modern Europe, making it impossible for *Y. pestis* to gain a foothold there? Although no direct evidence exists to support that hypothesis, it seems more reasonable than any other. . . .

FOR YOU TO WRITE

We cannot ask you to discover new cause-and-effect relationships in chemistry, astronomy, or physics. Instead of research, then, do some reading in the extensive and accessible literature of science, so that you can synthesize already existing information and interpretation in any of the following areas or on similar topics. You should frame all your arguments for an educated but inexpert audience.

1. Trace the causes and/or the immediate and long-term effects of a natural disaster, such as the eruption of Mt. St. Helens, the drought in the United States in the summer of 1988, or any of the scourges of flood, earthquake, or pestilence.
2. Write an argument singling out the predominant cause for the extinction of a species, such as the passenger pigeon, the dodo, the great auk, or the Irish elk. You may even wish to take on the great question of paleontology: Why did dinosaurs disappear from the earth with such apparent suddenness in the late Cretaceous period?
3. What is the latest causal explanation of a disease or phenomenon that has stumped medical investigators? Examples: sudden infant death, senility, multiple sclerosis, Legionnaire's disease, lupus, or Kawasaki's disease.
4. Trace the causes and/or effects of a form of pollution or a particular incident of pollution. Examples: acid rain, ozone depletion, automobile exhaust, sewage in lakes and rivers, any particular oil spill, Love Canal, a train derailment leading to the release of toxic chemicals.
5. Try your hand at cosmological causality. Why should there be volcanic activity on one of Jupiter's moons and not the others? What are the causes and effects of sunspots? What is the origin of the moon/earth system?
6. What technological advances have made today's computer revolution possible, and/or how are its effects taking shape? Or what have been the effects of computerization on any particular business or industry?
7. Why have we not been able to progress in some area of science or technology: exploring and using the resources of the ocean, interfering with the weather, harnessing a particular form of energy?
8. Argue for the importance of a particular animal or plant in an ecological nexus: bears, squirrels, ragweed, aphids, purple martins, dung beetles, bats, or the bacterium *E. coli.*
9. Identify the most important effect of an advance in agricultural technology: the McCormick reaper, a particular pesticide, drip irrigation, a breeding technique.
10. What was required to create a new development in transportation? Examples: high-speed trains, the monorail, trailer trucks, automatic transmissions on automobiles.

Searching for causes in the social sciences rarely means finding a cause that is both necessary and sufficient. Instead, social scientists usually discover influences, contributing factors, and responsible agents. What can current research offer as answers to the following causal questions?

1. Identify a large-scale social trend, like the increase in divorce rate, decline in birth rate, increase in cocaine abuse, or the increase in teenage pregnancy. Such trends are the products of many causes, but try singling out one you find significant and relating others to it. Remember that you may have to document the existence of the trend.
2. What, would you argue, is the dominant cause of job satisfaction in any particular field?
3. What psychological factors influence success in a sport? Do different sports attract different personalities, and if so, why?
4. Using the common-factor method, can you argue for a dominant influence in alcoholism, drug addiction, agoraphobia, or stuttering?
5. Can you make a causal connection between any method of instruction and success at learning? Examples: drill in math instruction, grammar in composition instruction, learning a foreign language at the elementary level with later language learning.
6. What does current research say are the causes of sleep disturbances or dreams?
7. Why do people fall in love, or do they?

History

1. The cataclysms of history—wars, revolutions, plagues, and other upheavals—prompt the question "Why?" Against the background of conditions and factors, argue for one overriding cause behind an event such as the Spanish–American War, the bombing of Pearl Harbor, the battle of Gettysburg, the 1967 Arab–Israeli War, the overthrow of the Shah of Iran in 1979, the Iran–Iraq War.
2. The perception of unexplained difference also leads historians into causal investigation. Why, for instance, did the South have slaves and not the North? Why has Japan been influenced by the West more than China? Why did France have a revolution in the eighteenth century and not England? Why are there more labor unions in the North than in the South?
3. Economic historians analyze changes, fluctuations, and cycles, often finding evidence of reciprocal causality. What brought about the rise and fall of strip development in the suburbs of U.S. cities? Can you argue for any predominating cause behind any identifiable recession or boom? What has caused any particular change in banking or credit policy?
4. The biggest questions in history concern the growth and decay, the rise and fall of nations, peoples, religions, even whole civilizations. Any full answer to such questions would require a book, but a shorter argument can place

deserved emphasis on one major cause. Consider, for example, the decline of the Minoan civilization of Crete, the Etruscans of Italy, the Mayans of Mexico, the Shakers or other such utopian communities in the United States, or the flourishing of the Shiite Moslems, the Hasidic Jews, or the economically powerful Japanese.

5. Ideologies and isms of all kinds are moving forces in history. Their effects tend to scatter, but in a chain argument you can follow an idea into action. Argue for at least one important effect caused by Malthusian ideas on population, Russian nihilism in the nineteenth century, Saint Simonian or Fabian socialism, populism, or civil rights in the United States.
6. History is made not only by people and ideas, but also by technological innovation. Again looking to effects, what is or has been the impact of the astrolabe, the Jacquard loom, the cotton gin, nylon, cable television or the VCR, the photo-duplicating machine? In military history what have been the results of inventions like radar, the tank, the machine gun, the missile?

In the study of languages, literature, art, and philosophy we engage in a kind of open-ended causal inquiry that relies heavily on time sequence, analogy, and assumptions about intention. You can fill in the following causal propositions with specific content drawn from works and artists you are familiar with.

1. Trace the origins of a movement in any of the arts. Examples: English Romanticism, punk rock, art deco, abstract expressionism, Pre-Raphaelite painting, the Victorian Gothic revival, the blues.
2. Argue for the influence of one artist on another. Is pointing out similarities enough evidence of influence, or do you need to establish agency? Examples: English novelist Anthony Trollope on Russian novelist Leo Tolstoy, Paul McCartney on Billy Joel, Frank Sinatra on Barry Manilow, Fred Astaire on Michael Jackson, Jack Benny on Johnny Carson, Beethoven on Brahms, Ravi Shankar on the Beatles, Japanese watercolorists on James McNeill Whistler.
3. Why did a particular popular art form or style flourish and decline? Examples: the mini-skirt, the blond furniture of the 1950s, disco, movie musicals, pop art, front porches.
4. Explore the motivation of a major character in a novel or short story or drama you are familiar with. Can you argue for one predominant cause behind that character's behavior?
5. Choose a book you think important and argue that it has affected the way some people think and act. Such a book can be a precipitating or remote cause of other events. Examples: *Unsafe at Any Speed* by Ralph Nader, *The Feminine Mystique* by Betty Friedan, *Walden II* by B. F. Skinner, *Silent Spring* by Rachel Carson, *The Jungle* by Upton Sinclair, *Looking Backward* by Edward Bellamy, *The Interpretation of Dreams* by Sigmund Freud, *Origin of Species* by Charles Darwin, *Free to Choose* by Milton and Rose Friedman, *In Search of Excellence* by Tom Peters, and *Cultural Literacy* by E. D. Hirsch.

11 Precision and Prediction

We spent a great deal of time looking at the exact wording of claims to see what that could tell us about supporting them. Now that we have surveyed causes—what kinds there are, what tactics of support we can use, and how important agency is in causal argument—we are ready to examine the wording of causal propositions. They come in five possible forms. The way the proposition is worded suggests how to support it. Reviewing these forms will help you make a proper adjustment between the wording of your thesis and its supporting arguments.

CLAIMS WITH CAUSAL VERBS

Some claims have verbs that clearly indicate causality and often reveal something about the degree and kind of the causality. Some verbs indicate immediate or precipitating cause, others remote; still others show that the cause under consideration may be only one of many, and a weak one at that. The verb may also suggest the nature of the causal connection—that is, whether one thing creates, destroys, or alters another.

Here are some of the more common verbs that turn their subjects into causes.