

ultimately subjective and that cannot be data handling. Given that two variables causes which?

le and that there appears to be a causal decide which is the cause and which the in Western culture—but it is still only a blished that it seems “natural” to us—is accordingly, if we can establish that change the other, and if we are sure that there is h variable must be the cause. We assume ollows, rather than vice versa.

simplifies things for the researcher, there used. Survey research, in which variables ggle interview, is a case in point. If voters o oppose welfare programs, which causes se the party that offers the policies they se the Republican Party for other reasons, enced by the party’s leaders to adopt its

point. It generally is not enough for us to also want to interpret *why* they coincide. o us:

ie phenomena coincide because of logical e is tautologically determined. Thus, by e do not think of winter as producing spring. in the social sciences. It often happens that same concept coincide. We would expect measure the same thing; we do not think of or example, members of Congress who vote o support increases in welfare spending. This *cause* them to vote the way they do on the ession of their general disposition to spend ecide from outside the data at hand whether this type or whether it involves causation.

ult of outside factors that cause the two r of these phenomena causes the other. ference was an example of this. By setting control for various outside factors in order

usation does not necessarily work forward in time is that ie people could prophesy what was to come in the future. o occur.

to concentrate on the relationship in question. In the hair color example, such a control was used. To this extent, we can see *from the data* whether the coincidence of the phenomena is of this sort. But we are still not exempt from making assumptions, for we must first have assumed the outside factor(s) causally prior to the two coincident phenomena. This is not always an easy decision to make. If it is possible to set up a true experiment (described in the next section), we can eliminate this possibility. But this is often not possible in “field” social sciences such as political science or sociology.

3. **One of the phenomena causes the other.** Here we have a true causal statement. We are still not finished making assumptions, of course, for we must decide which of the phenomena is the cause and which the effect. That is ultimately a subjective decision, though often we are aided in making it by the convention that causation must run forward in time.

As I have said so often in this book, one of the pleasures of research is that nothing in it is automatic. Even the most “quantitative” techniques do not take away our obligation and our right to be creative and imaginative. The fact that causal analysis is ultimately subjective may trouble us—objectivity always seems more comforting than the responsibility imposed by subjective judgment—but in a way it is also a great comfort, inasmuch as it keeps us, and what we do with our minds, at the heart of our research.

A FEW BASICS OF RESEARCH DESIGN

It should be evident from the discussion so far that the basic problem in causal analysis is that of eliminating alternative causal interpretations. Whenever two variables vary together (are related, coincide), there is a variety of causal sequences that might account for their doing so. A might cause B, B might cause A, both A and B might be caused by something else, or there might be no causation involved. Our task is to eliminate all but one of these, thus leaving an observed relationship, together with a single causal interpretation of it. Some of these alternatives can be eliminated only if we make assumptions from outside the actual study. But we also can design the study in such a way that certain alternatives are impossible. This will leave an interpretation that is dependent on fewer subjective assumptions and can thus lend a greater measure of certainty to the results. In other words, we try to design our research so as to rule out as many other explanations as possible.

Consider these examples:

1. **Agency study.** An organizational analysis of a government agency is made in which workers keep track of their output for a week. The organization is then restructured to decentralize decision making. After the reform, another week’s tabulation shows increased output. Conclusion: Decentralized decision making increases output.
2. **Reagan’s victory over the Soviet Union.** During the Reagan administration (1980–1988), the United States steadily increased its military spending. Over the

three years from 1989 to 1991 the Soviet Union collapsed, which conservatives hailed as a victory for Reagan's policies. Conclusion: The economic strain of matching Reagan's military buildup had been too much for the Soviet system and had led to its collapse and the end of the Cold War.

3. **Organizing the poor.** In anticipation of a major campaign to organize the poor of a city, a survey is taken among them to measure their interest in politics. At the end of the organizing campaign, the same people are asked the same questions a second time. It turns out that those who were contacted by the campaign workers have indeed acquired an increased interest in politics, compared with those who were not. Conclusion: The campaign has increased the political awareness of the poor.
4. **Tax-reform mail.** The *Congressional Quarterly* reports the proportion of each senator's mail that favored tax reform. Comparing these figures with the senators' votes on a tax-reform bill, we see that senators who had received relatively favorable mail tended to vote for the bill, whereas those who had received relatively unfavorable mail tended to vote against it. Conclusion: How favorable a senator's mail was on tax reform affected whether or not she voted for it.
5. **Presidential lobbying.** In an attempt to measure his influence over Congress, the president randomly selects half the members of the House. He conducts a straw vote to find out how all the members of the House intend to vote on a bill important to him. He then lobbies intensively among the half he has randomly selected. In the final vote in the House, the group that he had lobbied shifted in his favor compared with what he could have expected from the earlier straw vote; the other half voted as predicted from the straw vote. Conclusion: His lobbying helped voting for the bill.

Let us look at the design of these studies to see how many alternative causal interpretations each can eliminate.

Designs Without a Control Group

In the first two examples, the design is of the form:

1. Measure the dependent variable.
2. Observe that the independent variable occurs.
3. Measure the dependent variable again.
4. If the dependent variable has changed, ascribe that to the occurrence of the independent variable.

Thus, in "Agency Study," (1) the workers' output is tabulated; (2) the organizational structure is decentralized; (3) the workers' output is once again tabulated; and (4) the conclusion is reached. This kind of design operates *without a control group*. As a result, there are a number of alternative causal sequences that might have produced the same result.

For example, a plausible alternative explanation for the increased productivity might be that the initial measurement of production, in which each worker kept

track of output for a week, focused t that had not been done before, leadi words, it was not the decentralizati caused productivity to rise.⁴

Had the study included a second one in which output was measured ; which there was no decentralization been plausible. That is, if the increa due simply to the act of measuring, p same measurements were taken as ir Accordingly, if we found that pro agency than in the control agency, v because of the act of measuring, fo same measurements. That particula eliminated by the design of the study. alternative interpretation can be elin very risky.

"Reagan's victory over the Soviet of alternative explanation that may b It is quite possible that other things the two events (1980-1988 and 1989 collapse. Reform in Communist Ch Soviet Union, feuds among Soviet l causes of the Soviet Union's collapse a similar system that went through tl an arms race with the United States, tested and perhaps eliminated. But of

This is a good example of how diff group in a design. Some circumstanc compared. As another example, consi has affected the foreign policy of eve; a student of international politics dis effects of the Soviet-American rival liberation of former colonies, and so time? One cannot, of course. It is sim; contemporary countries for which the

⁴A famous example of this sort is the Hawth much productivity increased when factories were r of workers who were placed in better surroundings groups whose surroundings had not been improved paid to the workers, and increased social cohesiv these raised productivity irrespective of the exper made for some (but not all) of the groups. If a c probably have concluded, mistakenly, that brighter See Roethlisberger and Dickson (1939).