THE CONCEPT OF POWER

by Robert A. Dahl

Department of Political Science, Yale University

What is "power"? Most people have an intuitive notion of what it means. But scientists have not yet formulated a statement of the concept of power that is rigorous enough to be of use in the systematic study of this important social phenomenon. Power is here defined in terms of a relation between people, and is expressed in simple symbolic notation. From this definition is developed a statement of power comparability, or the relative degree of power held by two or more persons. With these concepts it is possible for example, to rank members of the United States Senate according to their "power" over legislation on foreign policy and on tax and fiscal policy.

THAT some people have more power than others is one of the most palpable facts of human existence. Because of this, the concept of power is as ancient and ubiquitous as any that social theory can boast. If these assertions needed any documentation, one could set up an endless parade of great names from Plato and Aristotle through Machiavelli and Hobbes to Pareto and Weber to demonstrate that a large number of seminal social theorists have devoted a good deal of attention to power and the phenomena associated with it. Doubtless it would be easy to show, too, how the word and its synonyms are everywhere embedded in the language of civilized peoples, often in subtly different ways: power, influence, control, pouvoir, puissance, Macht, Herrschaft, Gewalt, imperium, potestas, auctoritas, potentia, etc.

I shall spare the reader the fruits and myself the labor of such a demonstration. Reflecting on the appeal to authority that might be made does, however, arouse two suspicions: First (following the axiom that where there is smoke there is fire), if so many people at so many different times have felt the need to attach the label power, or something like it, to some Thing they believe they have observed, one is tempted to suppose that the Thing must exist; and not only exist, but exist in a form capable of being studied more or less systematically. The second and more cynical suspicion is that a Thing to which people attach many labels with subtly or grossly different meanings in many different cultures and times is probably not a Thing at all but many Things; there are students of the subject, although I do not recall any who have had the temerity to say so in print, who think that because of this the whole study of "power" is a bottomless swamp.

Paradoxical as it may sound, it is probably too early to know whether these critics are right. For, curiously enough, the systematic study of power is very recent, precisely because it is only lately that serious attempts have been made to formulate the concept rigorously enough for systematic study.[1] If we take as our criterion for the efficiency of a scientific concept its usability in a theoretical system that possesses a high degree

[1] By demonstrating the importance of concepts such as power and influence, particularly in political analysis, and by insisting upon rigorous conceptual clarity, Harold Lasswell has had a seminal influence. Cf. especially Reference 3. A similar approach will be found in References 6, 7, 8, 10. For the approach of the present article I owe a particularly heavy debt to March, with whom I had countless profitable discussions during a year we both spent as fellows at the Center for Advanced Study in the Behavioral Sciences. I have drawn freely not only on our joint work but on his own published and unpublished writings on the

of systematic and empirical import, then we simply cannot say whether rigorous definitions of the concept of power are likely to be useful in theoretical systems with a relatively large pay-off in the hard coin of scientific understanding. The evidence is not yet in.

I think it can be shown, however, that to define the concept "power" in a way that seems to catch the central intuitively understood meaning of the word must inevitably result in a formal definition that is not easy to apply in concrete research problems; and therefore, operational equivalents of the formal definition, designed to meet the needs of a particular research problem, are likely to diverge from one another in important ways. Thus we are not likely to produce—certainly not for some considerable time to come—anything like a single, consistent, coherent "Theory of Power." We are much more likely to produce a variety of theories of limited scope, each of which employs some definition of power that is useful in the context of the particular piece of research or theory but different in important respects from the definitions of other studies. Thus we may never get through the swamp. But it looks as if we might someday get around it.

With this in mind, I propose first to essay a formal definition of power that will, I hope, catch something of one's intuitive notions as to what the Thing is. By "formal" I mean that the definition will presuppose the existence of observations of a kind that may not always or even frequently be possible. Second, I should like to indicate how operational definitions have been or might be modelled on the formal one for some specific purposes, and the actual or possible results of these operational definitions.

I should like to be permitted one liberty. There is a long and honorable history attached to such words as power, influence, control, and authority. For a great many purposes, it is highly important that a distinction should be made among them; thus to Max Weber, "*Herrschaft ist. . . ein Sonderfall von Macht*," Authority is a special case of the first, and Legitimate Authority a subtype of cardinal significance (11). In this essay I am seeking to explicate the primitive notion that seems to lie behind *all* of these concepts. Some of my readers would doubtless prefer the term "influence," while others may insist that I am talking about control. I should like to be permitted to use these terms interchangeably when it is convenient to do so, without denying or seeming to deny that for many other purposes distinctions are necessary and useful. Unfortunately, in the English language power is an awkward word, for unlike "influence" and "control" it has no convenient verb form, nor can the subject and object of the relation be supplied with noun forms without resort to barbaric neologisms.

POWER AS A RELATION AMONG PEOPLE

What is the intuitive idea we are trying to capture? Suppose I stand on a street corner and say to myself, "I command all automobile drivers on this street to drive on the right side of the road"; suppose further that all the drivers actually do as I "command" them to do; still, most people will regard me as mentally ill if I insist that I have enough power over automobile drivers to compel them to use the right side of the road. On the other hand, suppose a policeman is standing in the middle of an intersection at which most traffic ordinarily moves ahead; he orders all traffic to turn right or left; the traffic moves as he orders it to do. Then it accords with what I conceive to be the bedrock idea of power to say that the policeman acting in this particular role evidently has the power to make automobile drivers turn right or left rather than go ahead. My intuitive idea of power, then, is something like this: *A* has power

subject. The comments of Jacob Marschak on this paper have also been most helpful. There are, of course, approaches radically different from the one employed here and in the works mentioned above. John R. P. French, Jr. (2), has developed a model that assumes "a unidimensional continuum of opinion which can be measured with a ratio scale," and he defines "the power of *A* over *B* (with respect to a given opinion) [to be] equal to the maximum force which *A* can induce on *B* minus the maximum resisting force which *B* can mobilize in the opposite direction." Game theory provides still another approach. Cf. References 4, 5, 9.

over B to the extent that he can get B to do something that B would not otherwise do.

If Hume and his intellectual successors had never existed, the distinction between the two events above might be firmer than it is. But anyone who sees in the two cases the need to distinguish mere "association" from "cause" will realize that the attempt to define power could push us into some messy epistemological problems that do not seem to have any generally accepted solutions at the moment. I shall therefore quite deliberately steer clear of the possible identity of "power" with "cause," and the host of problems this identity might give rise to.

Let us proceed in a different way. First, let us agree that power is a relation, and that it is a relation among people. Although in common speech the term encompasses relations among people and other animate or inanimate objects, we shall have our hands full if we confine the relationship to human beings. All of the social theory I mentioned earlier is interesting only when it deals with this limited kind of relationship. Let us call the objects in the relationship of power, actors. Actors may be individuals, groups, roles, offices, governments, nation-states, or other human aggregates.

To specify the actors in a power relation—A has power over B—is not very interesting, informative, or even accurate. Although the statement that the President has (some) power over Congress is not empty, neither is it very useful. A much more complete statement would include references to (*a*) the source, domain, or *base* of the President's power over Congress; (*b*) the *means* or instruments used by the President to exert power over Congress; (*c*) the *amount* or extent of his power over Congress; and (*d*) the range or *scope* of his power over Congress. The base of an actor's power consists of all the resources—opportunities, acts, objects, etc.—that he can exploit in order to effect the behavior of another. Much of the best writing on power—Bertrand Russell is a good example—consists of an examination of the possible bases of power. A study of the war potential of nations is also a study of the bases of power. Some of the possible bases of a President's power over a Senator are his patronage, his constitutional veto, the possibility of calling White House conferences, his influence with the national electorate, his charisma, his charm, and the like.

In a sense, the base is inert, passive. It must be exploited in some fashion if the behavior of others is to be altered. The *means* or instruments of such exploitation are numerous; often they involve threats or promises to employ the base in some way and they may involve actual use of the base. In the case of the President, the means would include the *promise* of patronage, the *threat* of veto, the *holding* of a conference, the *threat* of appeal to the electorate, the *exercise* of charm and charisma, etc.

Thus the means is a mediating activity by A between A's base and B's response. The *scope* consists of B's responses. The scope of the President's power might therefore include such Congressional actions as passing or killing a bill, failing to override a veto, holding hearings, etc.

The *amount* of an actor's power can be represented by a probability statement: e.g., "the chances are 9 out of 10 that if the President promises a judgeship to five key Senators, the Senate will not override his veto," etc. Clearly the amount can only be specified in conjunction with the means and scope.

Suppose now we should wish to make a relatively complete and concise statement about the power of individual A over individual a (whom I shall call the respondent) with respect to some given scope of responses. In order to introduce the basic ideas involved, let us restrict ourselves to the 2 by 2 case, where the actor A does or does not perform some act and the respondent a does or does not "respond." Let us employ the following symbols:

(A, w) = A does w. For example, the President makes a nationwide television appeal for tax increases.
$(A, \bar{w})$ = A does not do w.
(a, x) = a, the respondent, does x. For example, the Senate votes to increase taxes.
$(a, \bar{x})$ = a does not do x.

$P\ (u|v)$ = Probability that u happens when v happens.

Then a relatively complete and concise statement would be symbolized:

$$P(a, x|A, w) = p_1$$

$$P(a, x|A, \overline{w}) = p_2$$

Suppose now, that $p_1 = 0.4$ and $p_2 = 0.1$. Then one interpretation might be: "The probability that the Senate will vote to increase taxes if the President makes a nationwide television appeal for a tax increase is 0.4. The probability that the Senate will vote to increase taxes if the President does not make such an appeal is 0.1."

PROPERTIES OF THE POWER RELATION

Now let us specify some properties of the power relation.

1. A necessary condition for the power relation is that there exists a time lag, however small, from the actions of the actor who is said to exert power to the responses of the respondent. This requirement merely accords with one's intuitive belief that A can hardly be said to have power over a unless A's power attempts precede a's responses. The condition, obvious as it is, is critically important in the actual study of power relations. Who runs the XYZ Corporation? Whenever the president announces a new policy, he immediately secures the compliance of the top officials. But upon investigation it turns out that every new policy he announces has first been put to him by the head of the sales department. Or again, suppose we had a full record of the times at which each one of the top Soviet leaders revealed his positions on various issues; we could then deduce a great deal about who is running the show and who is not. A good bit of the mystery surrounding the role of White House figures like Sherman Adams and Harry Hopkins would also be clarified by a record of this kind.

2. A second necessary condition is, like the first, obvious and nonetheless important in research: there is no "action at a distance." Unless there is some "connection" between A and a, then no power relation can be said to exist. I shall leave the concept of "connection" undefined, for I wish only to call attention to the practical significance of this second condition. In looking for a flow of influence, control, or power from A to a, one must always find out whether there is a connection, or an opportunity for a connection, and if there is not, then one need proceed no further. The condition, obvious as it is, thus has considerable practical importance for it enables one to screen out many possible relations quite early in an inquiry.

3. In examining the intuitive view of the power relation, I suggested that it seemed to involve a successful attempt by A to get a to do something he would not otherwise do. This hints at a way of stating a third necessary condition for the power relation. Suppose the chances are about one out of a hundred that one of my students, Jones, will read *The Great Transformation* during the holidays even if I do not mention the book to him. Suppose that if I mention the book to him and ask him to read it, the chances that he will do so are still only one out of a hundred. Then it accords with my intuitive notions of power to say that evidently I have no power over Jones with respect to his reading *The Great Transformation* during the holidays—at least not if I restrict the basis of my action to mentioning the book and asking him (politely) to read it. Guessing this to be the case, I tell Jones that if he does not read the book over the holidays I shall fail him in my course. Suppose now that the chances he will read the book are about 99 out of 100. Assume further that nothing else in Jones's environment has changed, at least nothing relevant to his reading or not reading the book. Then it fully accords with my intuitive notions of power to say that I have some power over Jones's holiday reading habits. The basis of my power is the right to fail him in his course with me, and the means I employ is to invoke this threat.

Let me now set down symbolically what I have just said. Let

(D, w) = my threat to fail Jones if he does not read *The Great Transformation* during the holidays.

$(D, \bar{w})$ = no action on my part.
(J, x) = Jones reads *The Great Transformation* during the holidays.

Further, let

$p_1 = P(J, x|D, w)$ the probability that Jones will read *The Great Transformation* if I threaten to fail him.

$p_2 = P(J, x|D, \bar{w})$ the probability that Jones will read the book if I do not threaten to fail him.

Now let us define the *amount of power*. To avoid the confusion that might arise from the letter p, let us use the symbol M (from *Macht*) to designate the amount of power. Then, in accordance with the ideas set out in the illustration above, we define A's power over a, with respect to the response x, by means of w, as M, or, more fully:

$$M\left(\frac{A}{a}: w, x\right) = P(a, x \mid A, w) - P(a, x \mid A, \bar{w}) = p_1 - p_2$$

Thus in the case of myself and Jones, M, my power over Jones, with respect to reading a book during the holidays, is 0.98.

We can now specify some additional properties of the power relation in terms of M:

a. If $p_1 = p_2$, then $M = 0$ and no power relation exists. The absence of power is thus equivalent to statistical independence.

b. M is at a maximum when $p_1 = 1$ and $p_2 = 0$. This is roughly equivalent to saying that A unfailingly gets B to do something B would never do otherwise.

c. M is at a minimum when $p_1 = 0$ and $p_2 = 1$. If negative values of M are to be included in the power relation at all—and some readers might object to the idea—then we shall have a concept of "negative power." This is not as foolish as it may seem, although one must admit that negative control of this kind is not ordinarily conceived of as power. If, whenever I ask my son to stay home on Saturday morning to mow the lawn, my request has the inevitable effect of inducing him to go swimming, when he would otherwise have stayed home, I do have a curious kind of negative power over him. The Legion of Decency sometimes seems to have this kind of power over moviegoers. Stalin was often said to wield negative power over the actions on appropriations for foreign aid by the American Congress. A study of the Senate that will be discussed later suggested that at least one Senator had this kind of effect on the Senate on some kinds of issues.

Note that the concept of negative power, and M as a measure, are both independent of the *intent* of A. The measure does, to be sure, require one to assign a positive and negative *direction* to the responses of the respondent; what one chooses as a criterion of direction will depend upon his research purposes and doubtless these will often include some idea as to the intent of the actors in a power relation. To take a specific case, p_1 *could* mean "the probability that Congress will defeat a bill if it is contained in the President's legislative program," and p_2 could mean "the probability that Congress will defeat such a bill if it is not contained in the President's legislative program." By assigning direction in this way, positive values of M would be associated with what ordinarily would be interpreted as meaning a "negative" influence of the President over Congress. The point of the example is to show that while the measure does require that direction be specified, the intent of A is not the only criterion for assigning direction.

POWER COMPARABILITY

The main problem, however, is not to determine the existence of power but to make comparisons. Doubtless we are all agreed that Stalin was more powerful than Roosevelt in a great many ways, that McCarthy was less powerful after his censure by the Senate than before, etc. But what, precisely, do we mean? Evidently we need to define the concepts "more power than," "less power than," and "equal power."

Suppose we wish to compare the power of two different individuals. We have at least five factors that might be included in a comparison: (1) differences in the basis of their power, (2) differences in means of employing the basis, (3) differences in the

scope of their power, i.e., in type of response evoked, (4) differences in the number of comparable respondents, and (5) differences in the change in probabilities, or *M*.

The first two of these may be conveniently thought of as differences in properties of the actors exercising power, and the last three may be thought of as differences in the responses of the respondents. Now it is clear that the pay-off lies in the last three—the responses. When we examine the first two in order to compare the power of individuals, rulers, or states, we do so on the supposition that differences in bases and means of actors are very likely to produce differences in the responses of those they seek to control.

As I have already indicated, much of the most important and useful research and analysis on the subject of power concerns the first two items, the properties of the actors exercising power, and there is good reason to suppose that studies of this kind will be as indispensable in the future as they have been in the past. But since we are concerned at the moment with a formal explication of the concept of power, and not with an investigation of research problems, (some of these will be taken up later on) it is important to make clear that analysis of the first two items does not, strictly speaking, provide us with a comparison of the power of two or more actors, except insofar as it permits us to make inferences about the last three items. If we could make these inferences more directly, we should not be particularly interested in the first two items—at least not for purposes of making comparisons of power. On the other hand, given information about the responses, we may be interested in comparing the efficiency of different bases or means; in this case, evidently, we can make a comparison only by holding one or both of the first two factors constant, so to speak. In general, the properties of the power wielder that we bring into the problem are determined by the goals of one's specific research. For example, one might be interested in the relative power of different state governors to secure favorable legislative action on their proposals by means of patronage; or alternatively, one might be interested in the relative effectiveness of the threat of veto employed by different governors.

In whatever fashion one chooses to define the relevant properties of the actors whose power he wishes to compare, strictly speaking one must compare them with respect to the responses they are capable of evoking. Ideally, it would be desirable to have a single measure combining differences in scope, number of comparable respondents controlled, and change in probabilities. But there seems to exist no intuitively satisfying method for doing so. With an average probability approaching one, I can induce each of 10 students to come to class for an examination on a Friday afternoon when they would otherwise prefer to make off for New York or Northampton. With its existing resources and techniques, the New Haven Police Department can prevent about half the students who park along the streets near my office from staying beyond the legal time limit. Which of us has the more power? The question is, I believe, incapable of being answered unless we are ready to treat my relationships with my students as in some sense comparable with the relations of the Police Department to another group of students. Otherwise any answer would be arbitrary, because there is no valid way of combining the three variables—scope, number of respondents, and change in probabilities—into a single scale.

Let us suppose, for a moment, that with respect to two of the three variables the responses associated with the actions of two (or more) actors we wish to compare are identical. Then it is reasonable to define the power of *A* as greater than the power of *B* if, with respect to the remaining variable, the responses associated with *A*'s acts are greater than the responses associated with *B*'s acts. It will be readily seen, however, that we may have jumped from the frying pan into the fire, for the term "greater than" is still to be defined. Let us take up our variables one by one.

To begin with, we may suppose that the probability of evoking the response being the same for two actors and the numbers of comparable persons in whom they can evoke the response also being the same, then if the

scope of responses evoked by A is greater than that evoked by B, A's power is greater than B's. But how can we decide whether one scope is larger than another? Suppose that I could induce my son to bathe every evening and to brush his teeth before going to bed and that my neighbor could induce his son to serve him breakfast in bed every morning. Are the two responses I can control to be counted as greater than the one response my neighbor can control? Evidently what we are willing to regard as a "greater" or "lesser" scope of responses will be dictated by the particular piece of research at hand; it seems fruitless to attempt to devise any single scale. At one extreme we may wish to say that A's scope is greater than B's only if A's scope contains in it every response in B's and at least one more; this would appear to be the narrowest definition. At the other extreme, we may be prepared to treat a broad category of responses as comparable, and A's scope is then said to be greater than B's if the number of comparable responses in his scope is larger than the number in B's. There are other possible definitions. The important point is that the particular definition one chooses will evidently have to merge from considerations of the substance and objectives of a specific piece of research, and not from general theoretical considerations.

Much the same argument applies to the second variable. It is clear, I think, that we cannot compare A's power with respect to the respondents $a_1, a_2 \ldots a_n$ and B's power with respect to the respondents $b_1, b_2 \ldots b_n$ unless we are prepared to regard the two sets of individuals as comparable. This is a disagreeable requirement, but obviously a sensible one. If I can induce 49 undergraduates to support or oppose federal aid to education, you will scarcely regard this as equivalent to the power I would have if I could induce 49 Senators to support or oppose federal aid. Again, whether or not we wish to treat Senators as comparable to students, rich men as comparable to poor men, soldiers as comparable to civilians, enlisted men as comparable to officers, military officers as comparable to civil servants, etc., is a matter that can be determined only in view of the nature and aims of the research at hand.

The third variable is the only one of the three without this inherent limitation. If scope and numbers are identical, then there can be no doubt, I think, that it fully accords with our intuitive and common-sense notions of the meaning of power to say that the actor with the highest probability of securing the response is the more powerful. Take the set of Democratic Senators in the United States Senate. Suppose that the chance that at least two-thirds of them will support the President's proposals on federal aid to education is 0.6. It is fair to say that no matter what I may do in behalf of federal aid to education, if there are no other changes in the situation except those brought about by my efforts the probability that two-thirds of them will support federal aid will remain virtually at 0.6. If, on the other hand, Senator Johnson, as majority leader, lends his full support and all his skill of maneuver to the measure the probability may rise, let us say, to 0.8. We may then conclude (what we already virtually know is the case, of course) that Senator Johnson has more power over Democratic Senators with respect to federal aid to education than I have.

Earlier in defining the amount of power by the measure, M, I had already anticipated this conclusion. What I have just said is precisely equivalent to saying that the power of A with respect to some set of respondents and responses is greater than the power of B with respect to an equivalent set if and only if the measure M associated with A is greater than the measure M associated with B. To recapitulate:

$$M\left(\frac{A}{a} : w, x\right) = p_1 - p_2, \text{ where}$$

$$p_1 = P(a, x|A, w)$$

the probability that a will do x, given action w by A

$$p_2 = P(a, x|A, \bar{w})$$

the probability that a will do x, given no action w by A.

$$M\left(\frac{B}{b}:y, z\right) = p_1^* - p_2^*, \text{ where}$$

$$p_1^* = P(b, z/B, y)$$

$$p_2^* = P(b, z/B, \bar{y}).$$

Now if these two situations are *power comparable* (a notion we shall examine in a moment) then A's power is greater than B's if and only if

$$M\left(\frac{A}{a}:w, x\right) > M\left(\frac{B}{b}:y, z\right).$$

In principle, then, whenever there are two actors, A and B, provided only that they are power comparable, they can be ranked according to the amount of power they possess, or M. But if it is possible to rank A and B, it is possible to rank any number of pairs. And it is obvious from the nature of M that this ranking must be transitive, i.e.,

$$\text{if } M\left(\frac{A}{a}:w, x\right) > M\left(\frac{B}{b}:y, z\right), \text{ and}$$

$$M\left(\frac{B}{b}:y, z\right) > M\left(\frac{C}{c}:u, v\right), \text{ then}$$

$$M\left(\frac{A}{a}:w, x\right) > M\left(\frac{C}{c}:u, v\right).$$

In principle, then, where any number of actors are in some relation to any number of equivalent subjects, and these relations are regarded as power comparable, then all the actors can be unambiguously ranked according to their power with respect to these subjects.

There is, as everyone knows, many a slip 'twixt principle and practice. How can one convert the theoretical measure, M, into a measure usable in practical research? Specifically, suppose one wishes to examine the power relations among some group of people—a city council, legislature, community, faculty, trade union. One wants to rank the individuals in the group according to their power. How can one do so?

The first problem to be faced is whether given the aims, substance, and possible theoretical import of his study, one does in fact have *power comparability*. One of the most important existing studies of the power structure of a community has been criticized because of what appears to have been a failure to observe this requirement. A number of leaders in a large Southern city were asked, "If a project were before the community that required *decision* by a group of leaders—leaders that nearly everyone would accept—which *ten* on the list of forty would you choose?" On the basis of the answers, individuals were ranked in such a way that a "pyramidal" power structure was inferred to exist in the city, i.e., one consisting of a small number of top leaders who made the key decisions, which were then executed by a larger middle-group of subordinate leaders. The significance of this conclusion is considerably weakened, however, if we consider whether the question did in fact discriminate among different kinds of responses. Specifically, suppose the leaders had been asked to distinguish between decisions over local taxes, decisions on schools, and efforts to bring a new industry to the community: would there be significant differences in the rankings according to these three different kinds of issues? Because the study does not provide an answer to this question, we do not know how to interpret the significance of the "pyramidal" power structure that assertedly exists. Are we to conclude that in "Regional City" there is a small determinate group of leaders whose power significantly exceeds that of all other members of the community on all or nearly all key issues that arise? Or are we to conclude, at the other extreme, that some leaders are relatively powerful on some issues and not on others, and that no leaders are relatively powerful on all issues? We have no way of choosing between these two interpretations or indeed among many others that might be formulated.

Let us define A and B as formally power comparable (in the sense that the relative magnitudes of the measure M are held to order the power of A and B correctly) if and only if the actors, the means, the respondents and the responses or scopes are comparable. That is,

the actor	A	is comparable to		the actor	B;
A's respondent,	a,	"	"	B's respondent,	b;
A's means,	w	"	"	B's means,	y; and
a's response,	x	"	"	b's reponse,	z.

But this is not a very helpful definition. For the important question is whether we can specify some properties that will insure comparability among actors, respondents, means, and scopes. The answer, alas, is no. So far as an explication of the term "power" is concerned, power comparability must be taken as an undefined term. That is, power comparability will have to be interpreted in the light of the specific requirements of research and theory, in the same way that the decision as to whether to regard any two objects—animals, plants, atoms, or whatnot—as comparable depends upon general considerations of classification and theoretical import. To this extent, and to this extent only, the decision is "arbitrary"; but it is not more "arbitrary" than other decisions that establish the criteria for a class of objects.

To political scientists it might seem farfetched to compare the power of a British prime minister over tax legislation in the House of Commons with the power of the President of the United States over foreign policy decisions in the Senate. It would seem farfetched because the theoretical advantages of such a comparison are not at all clear. On the other hand, it would not seem quite so farfetched to compare the two institutional positions with respect to the "same" kind of policy—say tax legislation or foreign policy; indeed, political scientists do make comparisons of this kind. Yet the decision to regard tax legislation in the House of Commons as comparable in some sense to tax legislation in the Senate is "arbitrary." Even the decision to treat as comparable two revenue measures passed at different times in the United States Senate is "arbitrary." What saves a comparison from being genuinely arbitrary is, in the end, its scientific utility. Some kinds of comparisons will seem more artificial than others; some will be theoretically more interesting and more productive than others. But these are criteria derived from theoretical and empirical considerations independent of the fundamental meaning of the term power.

On what grounds, then, can one criticize the study mentioned a moment ago? Because the use of undiscriminating questions produced results of very limited theoretical significance. By choosing a relatively weak criterion of power comparability, the author inevitably robbed his inquiry of much of its potential richness. Considerations of comparability are, therefore, critical. But the criteria employed depend upon the problem at hand and the general state of relevant theory. The only way to avoid an arbitrary and useless definition of "power comparability" is to consider carefully the goals and substance of a particular piece of research in view of the theoretical constructs one has in mind. Thus in the case of the Senate, it may be satisfactory for one piece of research to define all Senate roll-call votes on all issues as comparable; for another, only votes on foreign policy issues will be comparable; and for still another, only votes on foreign policy issues involving large appropriations; etc. In a word, the researcher himself must define what he means by comparability and he must do so in view of the purpose of the ranking he is seeking to arrive at, the information available, and the relevant theoretical constructs governing the research.

APPLICATIONS OF THE CONCEPT OF POWER COMPARABILITY

Assuming that one has power comparability, the next problem is to rank every actor whose rank is relevant to the research. Here we run into practical problems of great magnitude.

Suppose we wish to rank a number of Senators with respect to their influence over the Senate on questions of foreign affairs. Specifically, the respondent and response are defined as "all Senate roll-call votes on measures that have been referred to the Foreign Relations Committee." To begin with, let us take two Senators. What we wish to find out is the relative influence on the Senate vote of the activities of the two Senators for or against a measure prior to the roll call. "For" and "against" must be defined by reference to some standard "direction." Passage of the measure is one possible "direction" in the sense that a Senator can be for passing the measure,

against it, or without a position for or against passage. This is not, however, a particularly significant or meaningful direction, and one might wish to determine the direction of a measure by reference to the President's position, or by content, or by some other standard. For this discussion, I shall assume that "for" and "against" are defined by reference to the first standard, i.e., passing the measure.

Let us now assume that a Senator does one of three things prior to a roll-call vote. He works for the measure, he works against it, or he does nothing. (The assumption, although a simplification of reality, is by no means an unreasonable simplification). Let us further assume (what is generally true) that the Senate either passes the measure or defeats it. With respect to a particular Senator, we have the following conditional probabilities:

	The Senator		
	Works For	Works Against	Does Nothing
The Senate Passes	p_1	p_2	p_3
The Senate Defeats	$1 - p_1$	$1 - p_2$	$1 - p_3$

Since the bottom row provides no additional information we shall, in future, ignore it. Following the earlier discussion of the concept M, the measure of power, it is reasonable to define

$$M_1 = p_1 - p_3.$$

$$M_2 = p_3 - p_2.$$

M_1 is a measure of the Senator's power when he works for a measure and M_2 a measure of his power when he works against a measure; in both cases a comparison is made with how the Senate will act if the Senator does nothing. There are various ways in which we might combine M_1 and M_2 into a single measure, but the most useful would appear to be simply the sum of M_1 and M_2. To avoid confusion with the earlier and slightly different measure which we are now approximating, let us call the sum of M_1 and M_2, M^*. Like M, it is at a maximum of 1 when the Senate always passes the bills a given Senator works for and always defeats the bills he works against; it is at a minimum of -1 when the Senate always defeats the bills he works for and always passes the bills he works against; and it is at 0 when there is no change in the outcome, no matter what he does.

In addition, there is one clear advantage to M^*. It is easily shown that it reduces to

$$M^* = p_1 - p_2.$$

In a moment we shall see how advantageous such a simple measure is.

The theoretical problem, then, is clear-cut and a solution seems reasonably well defined. It is at this point, however, that practical research procedures begin to alter the significance of a solution, for the particular operational means selected to breathe life into the relatively simple formal concepts outlined so far can produce rather different and even conflicting results.

Let me illustrate this point by drawing on a paper by Dahl, March, and Nasatir (1) on influence ranking in the United States Senate. The aim of the authors was to rank thirty-four Senators according to their influence on the Senate with respect to two different areas, foreign policy and tax and economic policy. The 34 Senators were all those who had held office continuously from early 1946 through late 1954, a long enough period, it was thought, to insure a reasonably large number of roll-call votes. The classification of measures to the two areas was taken from the *Congressional Quarterly Almanac*, as were the votes themselves. Thus the subject was well defined and the necessary data were available.

No such systematic record is maintained of course, for the positions or activities of Senators prior to a roll-call vote, and what is more it would be exceptionally difficult to reconstruct the historical record even over one session, not to say over an eight-year period. Faced with this apparently insuperable obstacle, it was necessary to adopt a rather drastic alternative, namely to take the recorded roll-call vote of a Senator as an indication of his position and activities *prior to* the roll-call. While this is not unreasonable, it does pose one major difficulty: a vote is necessarily cast either for or against a measure and hence the roll-

call provides no way of determining when a Senator does nothing prior to the roll-call. But the very essence of the formal concept of power outlined earlier hinges on a comparison of the difference between what the Senate will do when a Senator takes a given position and what it does when he takes no position.

It is at this point that the advantages of the measure M^* reveal themselves. For provided only that one is prepared to take the Senator's recorded vote as a fair indication of his prior position and activities, the data permit us to estimate the following probabilities, and hence M^*

		The Senator	
		Works For	Works Against
The Senate	Passes	p_1	p_2

One could, therefore, estimate M^* for each of the 34 Senators and rank all of them.

The validity of this method ranking would appear to be greatest, however, when all Senators are ranked on precisely the same set of bills before the Senate. To the extent that they vote on different (although mostly overlapping) sets of bills, the comparability of M^* from one Senator to another will be reduced, conceivably to the vanishing point.

For a number of reasons, including a slightly different interpretation of the characteristics of an ideal measure, the authors chose a rather different approach. They decided to pair every Senator against every other Senator in the following way. The number in each cell is an estimate of the probability that the Senate will pass a proposal, given the positions of the two Senators as indicated; the number is in fact the proportion of times that the Senate passed a foreign policy (or tax) measure in the period 1946–54, given the recorded votes of the two Senators as indicated.

		S_1	
		Favors the motion	Opposes the motion
S_2	Favors the motion	p_{11}	p_{12}
	Opposes the motion	p_{21}	p_{22}

With 34 Senators, 561 possible pairs of this kind exist; but only 158 pairs were tabulated for foreign policy and 206 for tax and economic policy over the whole period. The measure used to enable comparisons to be made between the two Senators in each pair might be regarded as an alternative to M^*. This measure—let us call it M''—rests upon the same basic assumption, namely that we can measure a Senator's influence by the difference between the probability that the Senate will pass a measure the Senator opposes and the probability that it will pass a measure he supports. However, there are two important differences. First, the authors decided not to distinguish between "negative" and "positive" power; consequently they used absolute values only. Second, in estimating the probability of a measure passing the Senate, the positions of two Senators were simultaneously compared in the manner shown in the table. Thus the influence of S_1 over the Senate was measured as the difference between the probability that a bill will pass the Senate when S_1 favors it and the probability that it will pass when S_1 opposes it. However, this difference in probabilities was measured twice: (1) when S_2 favors the motions before the Senate; and (2) when S_2 opposes the motions. In the same way, S_2's influence was measured twice. Thus:

$$M_1''(S_1) = |p_{11} - p_{12}|,$$

that is, the change in probabilities, given S_2 in favor of the bill.

$$M_2''(S_1) = |p_{21} - p_{22}|,$$

that is, the change in probabilities, given S_2 in opposition to the bill. Likewise,

$$M_1''(S_2) = |p_{11} - p_{21}|$$

$$M_2''(S_2) = |p_{12} - p_{22}|.$$

The influence of S_1 was said to be greater than the influence of S_2 only if $M_1''(S_1) > M_1''(S_2)$ *and* $M_2''(S_1) > M_2''(S_2)$. That is, if

$$|p_{11} - p_{12}| > |p_{11} - p_{21}| \text{ and}$$

$$|p_{21} - p_{22}| > |p_{12} - p_{22}|.$$

Except for the rare case of what would ordinarily be regarded as "negative"

power—which, as I have already said, this particular measure was not intended to distinguish from "positive" power—the absolute values are the same as the algebraic ones. Where the algebraic differences can be taken, and this will normally be the case, both inequalities reduce to

$$p_{21} > p_{12}.$$

In the ordinary case, then, using the measure M' we can say that the power of Senator George is greater than that of Senator Knowland if the probability that the Senate will pass a measure is greater when Senator George favors a bill and Senator Knowland opposes it than when Senator Knowland favors a bill and Senator George opposes it.

TABLE 1

THIRTY-FOUR U. S. SENATORS RANKED ACCORDING TO "POWER" OVER SENATE DECISIONS ON FOREIGN POLICY, 1946–54

HIGH

Hayden	(tie) Magnuson
	Chavez
	Smith (N. J.)**
	George**
	Maybank
	Green**
	Hill*
Aiken	(tie) Wiley**
	Hoey
	Kilgore
	Ferguson*
	Murray*
	Knowland*
	Morse
Fulbright**	(tie) Saltonstall
	Johnston
	Cordon
	Hickenlooper**
	Ellender
Millikin	(tie) McClellan
	Eastland
	Russell
	Bridges*
	Johnson (Colo.)
	Byrd
	Butler (Nebr.)
	Langer*
	Young
	Capehart*
	McCarran

LOW

** member of Foreign Relations Committee five or more years

* member of Foreign Relatins Committee one to four years

The results, some of which are shown in Tables 1 to 3, are roughly consistent with expectations based on general knowledge.

Note how the formal concept of power has been subtly altered in the process of research; it has been altered, moreover, not arbitrarily or accidentally but because of the limitations of the data available, limitations that appear to be well-nigh inescapable even in the case of the United States Senate, a body whose operations are relatively visible and well recorded over a long period of time.

The most important and at first glance the most innocent change has been to accept the roll-call position of a Senator as an indication of his position prior to the roll-call vote. This change is for most practical purposes unavoidable, and yet it generates a serious consequence which I propose to call the problem of the chameleon. Suppose a Senator takes no prior position on any

TABLE 2

THIRTY-FOUR U. S. SENATORS RANKED ACCORDING TO "POWER" OVER SENATE DECISIONS ON TAX AND ECONOMIC POLICY, 1946–54

HIGH

	George††
	Millikin††
	Ellender
	Byrd††
	Saltonstall†
	Cordon
	McCarran
	Young
	Hoey††
	Maybank
Johnson (Colo.)	†† (tie) McClellan
	Hickenlooper
	Eastland
	Russell
	Smith (N. J.)
	Knowland
	Aiken
	Capehart
	Johnston
	Bridges
Hayden	(tie) Chavez
Butler (Nebr.)††	(tie) Wiley (tie) Ferguson
Langer	(tie) Hill (tie) Murray (tie) Magnuson
	(tie) Fulbright (tie) Green
	Morse (tie) Kilgore

LOW

†† member of Finance Committee five or more years

† member of Finance Committee one to four years

TABLE 3

THIRTY-FOUR U. S. SENATORS CLASSIFIED ACCORDING TO 'POWER" OVER SENATE DECISIONS ON FOREIGN POLICY AND TAX POLICY, 1946–54

		Foreign Policy		
		High influence	Medium influence	Low influence
Tax and Economic Policy	High influence	George**††	Ellender	Millikin††
		Hoey††	Saltonstall†	Byrd††
		Maybank	Cordon	McCarran
				Young
				Johnson (Colo.)††
				McClellan
	Medium influence	Smith (N. J.)**	Hickenlooper**	Eastland
		Aiken*	Knowland*	Russell
		Hayden	Johnston	Capehart*
		Chavez		Bridges*
	Low influence		Ferguson*	
		Wiley**	Murray*	
		Hill*	Fulbright**	Butler (Nebr.)††
		Magnuson	Morse	Langer*
		Green**	Kilgore	

** member of Foreign Relations Committee five or more years
* member of Foreign Relations Committee one to four years
†† member of Finance Committee five or more years
† member of Finance Committee one to four years

bill and always decides how to vote by guessing how the Senate majority will vote; then, if he is a perfect guesser, according to the ranking method used he will be placed in the highest rank. Our common sense tells us, however, that in this case it is the Senate that has power over the Senator, whereas the Senator has no influence on the votes of other Senators.

If the reader will tolerate an unnatural compounding of biological and celestial metaphors, a special case of the chameleon might be called the satellite. Although I have no evidence that this was so, let us suppose that Senator Hoey took no prior positions on issues and always followed the lead of Senator George (Table 3). Let us assume that on foreign policy and tax policy, Senator George was the most powerful man in the Senate—as indeed nearly every seasoned observer of the Senate does believe. By following George, Hoey would rank as high as George; yet, according to our hypothetical assumptions, he had no influence at all on George or any other Senator.

The problem of the chameleon (and the satellite) is not simply an artifact created by the method of paired comparisons employed. It is easy to see that ranking according to the measure M^* would be subject to the same difficulties *given the same data.* The formal concept of power, that is to say, presupposes the existence of data that in this case do not seem to be available—certainly not readily available. If one had the kinds of observations that permitted him to identify the behavior of the chameleon or satellite then no serious problem would arise. One could treat chameleon activity as equivalent to "doing nothing" to influence the passage or defeat of a measure. Since, as we have seen, under the measure M^* the column "does nothing" is superfluous, the effect would be to ignore all cases of chameleon or satellite behavior and make estimates only from the instances where a Senator actually works for or works against various bills.

Thus the conceptual problem is easily solved. But the research problem remains. In order to identify chameleon behavior and separate it from actual attempts at influence, one cannot rely on roll-calls. One

needs observations of the behavior of Senators prior to the roll-calls. But if it is true, as I have been arguing, that observations of this kind are available only with great difficulty, rarely for past sessions, and probably never in large numbers, then in fact the data needed are not likely to exist. But if they do not exist for the Senate, for what institutions are they likely to exist?

CONCLUSIONS: A DIALOGUE BETWEEN A "CONCEPTUAL" THEORETICIAN AND AN "OPERATIONALIST"

The conclusions can perhaps best be stated in the form of a dialogue between a "conceptual" theoretician and a strict "operationalist." I shall call them *C* and *O*.

C. The power of an actor, *A*, would seem to be adequately defined by the measure *M* which is the difference in the probability of an event, given certain action by *A*, and the probability of the event given no such action by *A*. Because the power of any actor may be estimated in this way, at least in principle, then different actors can be ranked according to power, provided only that there exists a set of comparable subjects for the actors who are to be ranked.

O. What you say may be true in principle, but that phrase "in principle" covers up a host of practical difficulties. In fact, of course, the necessary data may not exist.

C. That is, of course, quite possible. When I say "in principle" I mean only that no data are demanded by the definition that we cannot imagine securing with combinations of known techniques of observation and measurement. The observations may be exceedingly difficult but they are not inherently impossible: they don't defy the laws of nature as we understand them.

O. True. But the probability that we can actually make these observations on, say, the U. S. Senate is so low as to be negligible, at least if we want relatively large numbers of decisions. It seems to me that from a strict operational point of view, your concept of power is not a single concept, as you have implied; operationally, power would appear to be many different concepts, depending on the kinds of data available. The way in which the researcher must adapt to the almost inevitable limitations of his data means that we shall have to make do with a great many different and not strictly comparable concepts of power.

C. I agree with all you have said. In practice, the concept of power will have to be defined by operational criteria that will undoubtedly modify its pure meaning.

O. In that case, it seems wiser to dispense with the concept entirely. Why pretend that power, in the social sense, is a concept that is conceptually clear-cut and capable of relatively unambiguous operational definitions—like mass, say, in physics? Indeed, why not abandon the concept of power altogether, and admit that all we have or can have is a great variety of operational concepts, no one of which is strictly comparable with another? Perhaps we should label them: Power 1, Power 2, etc.; or better, let's abandon single, simple, misleading words like "power" and "influence", except when these are clearly understood to be a part of a special operational definition explicitly defined in the particular piece of research.

C. I'm afraid that I must disagree with your conclusion. You have not shown that the concept of power as defined by the measure *M* is inherently defective or that it is never capable of being used. It is true, of course, that we cannot always make the observations we need in order to measure power; perhaps we can do so only infrequently. But the concept provides us with a standard against which to compare the operational alternatives we actually employ. In this way it helps us to specify the defects of the operational definitions as measures of power. To be sure, we may have to use defective measures; but at least we shall know that they are defective and in what ways. More than that, to explicate the concept of power and to pin-point the deficiencies of the operational concepts actually employed may often help us to invent alternative concepts and research methods that produce a much closer approximation in practice to the theoretical concept itself.

REFERENCES

1. Dahl, R. A., March, J., & Nasatir, D. Influence ranking in the United States Senate.

Read at the annual meeting of the American Political Science Association, Washington, D. C. September 1956 (mimeo).
2. French, J. R. P. Jr. A formal theory of social power. *Psychol. Rev.*, 1956, 63, 181–194.
3. Lasswell, H. D., & Kaplan, A. *Power and society*. New Haven: Yale Univ. Press, 1950.
4. Luce, R. D. Further comments on power distribution for a stable two-party Congress. 1956 (September) (mimeo).
5. Luce, R. D., & Rogow, A. A. A game theoretic analysis of Congressional power distributions for a stable two-party system. *Behav. Sci.*, 1956, 1, 83-95.
6. March, J. G. An introduction to the theory and measurement of influence. *Amer. pol. Sci. Rev.*, 1955, 59, 431–451.
7. March, J. G. Measurement concepts in the theory of influence. *J. Politics*. (In press).
8. March, J. G. Influence measurement in experimental and semi-experimental groups. *Sociometry*. 1956, 19, 260–271.
9. Shapley, L. S. & Shubik, M. A method for evaluating the distribution of power in a committee system. *Amer. pol. Sci. Rev.*, 1954, 48, 787–792.
10. Simon, H. Notes on the observation and measurement of political power. *J. Politics*, 1953, 15, 500–516.
11. Weber, M. *Wirtschaft und Gesellschaft*. Tubingen: J. C. B. Mohr, 1925, 2 vols. (*Grundriss der Sozialekonomik*, Vol. 3).

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Get rid of the old liberals, then; get rid of the soldier in politics; and put the world into the hands of the scientists, the industrial captains and the artists. For the new society was to be organized, not, like Babeuf's, on the principle of equality, but according to a hierarchy of merit. Saint-Simon divided mankind into three classes: the *savants*, the propertied, and the unpropertied. The *savants* were to exercise the "spiritual power" and to supply the personnel of the supreme body, which was to be known as the Council of Newton—since it had been revealed to Saint-Simon in a vision that it was Newton and not the Pope whom God had elected to sit beside Him and to transmit to humanity His purposes. This council, according to one of Saint-Simon's prospectuses, was to be made up of three mathematicians, three physicians, three chemists, three physiologists, three *littérateurs*, three painters and three musicians; and it was to occupy itself with devising new inventions and works of art for the general improvement of humanity, and in especial with discovering a new law of gravitation applicable to the behavior of social bodies which would keep people in equilibrium with one another. (So the eighteenth-century communist philosopher Morellet, in a book called *The Code of Nature*, had asserted that the law of self-love was to play the same role in the moral sphere as the law of gravitation in the physical.) The salaries of the Council of Newton were to be paid by general subscription, because it was obviously to everybody's advantage that human destinies should be controlled by men of genius; the subscription would be international, because it would of course be to the advantage of all peoples to prevent international wars.

—EDMUND WILSON, *To The Finland Station*