Analytic Teaching Using Rational Choice Theory

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The purpose of this article is to suggest what we consider to be a unique teaching and learning strategy. We have had some good results with this approach and believe it can be successfully employed in a wide variety of social science courses, both undergraduate and graduate. Equally important, however, is our unanticipated discovery that the analysis to be presented here is also capable of serving another function, namely as a method of synthesizing a wide diversity of topics within the field itself. We will return to this theme after our analysis and discuss it in more detail.

RATIONAL CHOICES

We have found that many sociological topics can become more relevant if students are given an opportunity to have some «hands on» experience with them. This pragmatic function in teaching sociology can be supplemented by both field observations and conventional library research. Specifically, we have found that students can think more critically about the utility of doing sociological analysis if they are called upon to make concrete decisions about genuine issues and justify making those decisions. One perspective that lends itself to this task is that of decision theory. By decision theory, we are basically using the analysis set forth. in Jeffrey's (1983) important work. We will present this model below and argue it is especially suited for (advanced) undergraduate courses in social issues, social problems, social change, sociology of education and other areas.

Of course, the decision theory model can be extended in a variety of ways and for graduate courses utilizing, for example, Coleman's (1990) rational choice analysis, as well as other perspectives.

The area of rational choice theory is large and growing, and as Little (1991) points out ranges from notions of utility and preference through game theory and differing models of rationality. For undergraduate classes useful introductions may be found in Little (1991) and Elster (1992, 1986). For those instructors wishing to delve further into this area, and especially, its foundations in the «Bayesian» statistical approaches and the issue of «subjective probabilities,» there is Howson and Urbach (1990).

For our purposes, however, we only wish to present those basic elements of decision theory that we have found useful in analyzing sociological topics, most particularly as an analytic tool that students can use and see its utility for grappling with complex issues. Our approach, then, is guided by Little's (1991: 38) definition: «If we can assume that individuals in a variety of social settings make calculating choices based on their beliefs and goals, we may be able to explain numerous social arrangements as the aggregate effect of such choices.» Among other things, what the decision-theory model does do is show students how their choices about social issues, problems and policies are intimately intertwined with their belief systems, and how these, in turn, are influenced by cultural factors. Put differently, decision theory «sharpens up» the notion for students that, indeed, the phrase «the social construction of reality» (Berger & Luckmann, 1966) is not just a sociological platitude.

Following Jeffrey (1983:1-20), we will now describe the basic elements of this version of decision theory and then present some concrete examples we have found to be useful in classroom applications. Three terms are first introduced; namely Acts, Conditions and Consequences. Acts can be broadly defined as the variety of social actions available to an actor (or actors) given a certain situation, or event, or circumstance. That is, if one is able to take a course of action, or *must* do so, what *beliefs* are appealed to so that a decision can be made, and, hopefully, a «good» or «rational» or «optimal» one. While the total number of social acts for any one individual over a lifetime is vast, what decision theory is asking is basically this: «Given this situation, at this time, if you must choose to do something on *this* issue, what would (1) you do and (2) why would you do it?

The possible acts are then constrained by time, place, circumstance and issue. The issue is what constitutes the next element, Conditions. The conditions are situations which are incompatible (but actual) and which may influence how the acts are decided upon. The conditions are the issues, or problems, or policies that *need* to be acted upon, given the choice of the acts.

At this stage, we sometimes make general comparisons to Acts and Conditions as being roughly equivalent to an independent and dependent variable respectively. That is, conditions are what we want «explained» by way of the acts we choose. The last term, Consequences, refers to the possible «outcomes» of the choices (acts-plus-conditions) we make.

The next thing we do is introduce the two terms, «Desirabilities» and «Probabilities». These are the crucial elements in understanding what decision theory is ultimately about. A «desirability» is a state of affairs that the agent believes is of worth to her. As Jeffrey points out (p. 2), a desirability is the expected consequence of the acts and conditions. Probabilities, on the other hand, are expectations that the actor *believes* will hold given the act and condition combination. In the literature on decision theory, these are known as «subjective probabilities» and remain rather controversial (Howson & Urbach, 1989). Briefly, the controversy centers around the issue of whether probabilities must be considered as «objective», in the sense that they are concerned about how the world really is, versus the possibility that individuals can meaningfully assign probabilities to their own actions as well as the consequences of these actions. We have found that this issue is not central to teaching decision theory to beginning students. What is important, however, is simply to introduce (for those who do not know) the concept of

«probability», especially, the idea that probabilities are additive, and for a given problem, must equal unity.

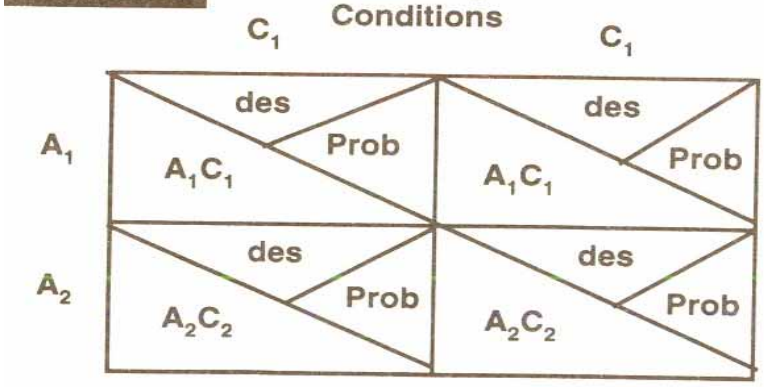
More importantly here is explaining to the students the distinction between desirability and probability. We do this by pointing out that any given social action (or, ultimately, any given social construction of reality) must involve a commitment to the action (desirability) and a belief in its occurrence (probability). Furthermore, it is important to point out that while desirabilities and probabilities are «interactive» in that they are both important in justifying the consequences of the act-condition dyad, they are not necessarily «causal». That is, even though I desire a certain consequence, its probability may or may not be «high»; and, conversely, my setting of a probability of a consequence does not automatically predict its desirability. Both, however, are needed in making decisions.

From a critical thinking perspective, we have found that one of the most valuable uses of the desirability-probability distinction is to direct students to begin to think more deeply about how both aspects are needed to *define* and give *meaning* to a social act. Moreover, once they are alerted to this fact, we can then «probe» them a bit more on why *they* believe a certain desirability/probability choice is correct. From this, we return to the theme of the cultural basis of belief systems, with special attention to the nature of the socialization process. Any insights, however, are related to the degree students can first «visualize» what it is decision theory attempts to do. We next describe how we accomplish this.

DECISION MATRIX

All of the elements mentioned above must now be brought together. We do this, expanding on Jeffrey, by first introducing students to a simple matrix (or you can refer to it as a «crosstabula-tion») which includes the basic terminology with the desirability factor. Figure 1 illustrates this matrix.

FIGURE 1 Decision Theory Matrix



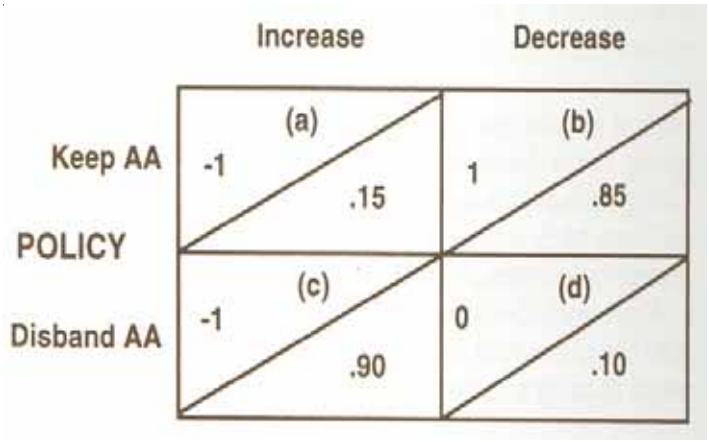
Each «cell» represents a possible act and a certain condition which sets the limits or constraints of an act. The conditions are situations, actually existing or highly plausible, which are «opposite» to one

another. The desirability factor is given a numerical representation which, by convention, for a simple matrix would have the values: 1, 0, and -1. For example, if A,C, were assigned a 1 in Figure 1, this would mean the particular act-condition dyad would be highly «desirable,» or the consequence would be valued. A value of -1 would indicate a consequence that is undesirable, while a 0 could indicate a consequence which either is impossible or neutral, or perhaps just «odd» or not very «feasible.» Again, different values might be assigned to the «desirability matrix» (e.g., «money» for the above but multiplied by a factor of ten), but the desirability must be expressed numerically. It is also interesting to note that how desirability values are assigned, and their meaning, can be enhanced by having the students think about «sociological types» or «ideal types». That is, we have found it useful to first have students think about how any act-condition dyad could be «labeled» or «typed». We would say, for instance, «with this particular act and condition create a `name' which might accurately characterize this combination.» This exercise stimulates creative and analytic thinking.

Once the desirability factors are estimated, we then ask students to think about the probability factor. Although one could start with the probability factor first, we have found doing the analysis in this order engages students in more dialogue and sharing of ideas. Figure 2 illustrates the probability estimate. Thus for each cell students are coming up with two estimates. To further illustrate how these estimates are combined, we will now illustrate an actual example.

FIGURE 2

Desirability and Probability Matrix University Segregation



Our Acts are defined as investigating policies that either favor or disfavor disbanding affirmative action programs. The Conditions are increasing or decreasing segregation by race or ethnicity in colleges and universities. What would then be the Consequences related to these acts and conditions and how «`desirable» would they be? The cell labeled (a) could be called Counterintuitive or Policy Failure and would be given a -1 in terms of desirability. Cell (b) would be the Intended Outcome or Policy Success and given a value of 1. Cell (c) would be the opposite of (b) and could also be labeled -1 in the sense that if affirmative action programs are disbanded segregation will surely increase. This cell could be labeled as Unwanted Policy Expectation, whereas cell (d) could be given a 0 value since it would be a

rather «odd» case and could be labeled Policy Indeterminant. Again, for instructional purposes, we want students to consider desirabilities as a function of their own belief systems and how these are culturally motivated or conditioned.

Next comes the assigning of probabilities to the matrix. The assignment of these «subjective» probabilities is often difficult for students to do, but can be facilitated through a question like: «what would you estimate the chances would be of this situation actually happening?» It is important to note the probabilities are based on the row totals. That is, one is asking that if a specific act were followed given the conditions, what would be the probability of each consequence? Thus, for (a), the probability of segregation increasing when affirmative actions are in place would most probably be quite low, say. 15. Cell (b) might be estimated at .85, (c) .90 and (d) .10. The computations would be: (a) (-1) (.15) + (b) (1) (.85) = .12 and (c) (-1) (.so) + (d) 0 (.10) = .09, indicating that keeping affirmative actions would be preferred to disbanding them, but not by much.

OTHER VARIATIONS

There are, of course, more complexities that can be introduced from this basic model. Many of these are concerned with extensions of the Bayesian model and are not appropriate for beginning students. However, we have also found that thinking about decision theory in terms of sociological examples can be facilitated by the introduction of the concept of Conditional Probability in terms of the Bayesian formula itself. For example, a basic version of the formula can be given such as follows (Blalock, 1972: 133):

$$P(B/A) = (P(A + B)) / P(A) = (P(B) P(A/B)) / P(A)$$

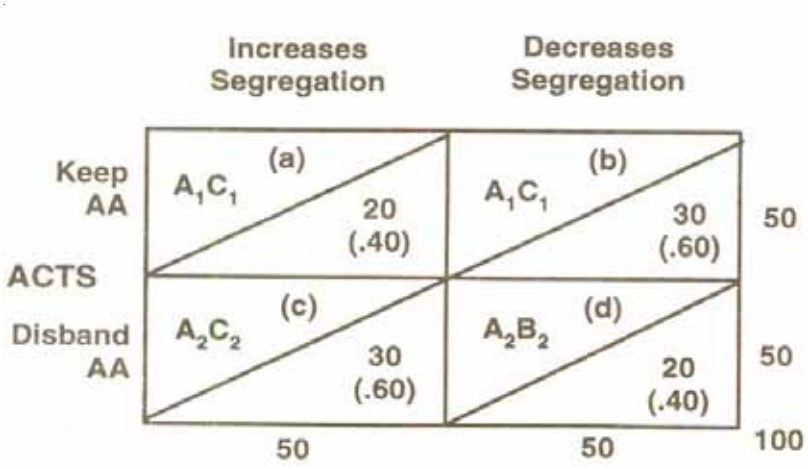
The level of explanation given to the students varies by their background in social statistics or their exposure to probability thinking in other courses, such as logic. Basically, a very simple explanation usually suffices; the important point being that it relates to the decision theory example being used in such a way that the students can see its relevance to choosing one alternative over the other. Here are a few variations that we have found to be useful.

To explain how conditional probability thinking applies to decision making, a matrix like the one in Figure 3 often proves useful since several related ideas can be considered simultaneously. For example, Act and Conditions can also be viewed as variables, with C = dependent and A = independent. Then, some basics of set/probability theory can be introduced, such as the formula

$$P(C/A) = (P(AC))/P(A)$$

FIGURE 3

Conditions



with a basic explanation of the logic behind conditional probability thinking. From Figure 3, we also have the students compute the conditional probabilities for each cell and attempt some interpretation in terms of decision making. However, to do this we need to show them that conditional probability thinking depends on having actual or hypothetical data. For instance, in Figure 3, we may say that there are hypothetically 100 congressmen and women who are to vote on whether to maintain or disband Affirmative Action programs (A, vs. A2). They are also distributed on their beliefs concerning whether University segregation is increasing or decreasing in the country (C, vs. C2). We then interpret the table in the direction of what in this case is considered the independent variable. That is, given 50 congresspersons who believe in keeping affirmative action programs, how many also believe segregation is also increasing (A, C, = .20)? Or to use the language of conditional probability, what is the probability of C, given A has occurred? The actual conditional probabilities are given for A,C, for example, by 20/100 and 50/100 = .20/.50 = .40. The remainders pre entered into Figure 3.

The important issue once the conditional probabilities have been determined is to see if they affect the assignment of desirabilities. For cell (a) the statement might be as follows: «The increase in university segregation given those who want to keep affirmative action programs is .40; how would you judge the desirability of this situation?» Now students realize that their decision for (a) in itself is dependent on how the existence of other probabilities is judged. If the decision for (a) is based on the probability in (C), the desirability for (a) may equal 1. If judged between (a) and (b), it still may be 1 but not necessarily, and if the comparison is between (a) and (d), the decision may be problematic. The purpose of using the conditional probabilities is threefold: (1) To get the students to think about the relation of their own original thinking about desirabilities and probabilities, (2) to see how these may have changed given the introduction of the conditional probability estimates, and (3) get them thinking about the possibility that probabilities can determine desirabilities.

CONCLUSIONS

Pedagogically, our use of the above strategies has been to make the sociological imagination more concrete and real for our students. In using the basic ideas of rational choice theory, we are trying to show them that the social actions of individuals and groups are complex (cultural) mixtures of beliefs, ideas, prejudices, biases and changing commitments to persons and settings. That is, «rational» choice, although overall desirable, is a function of many often elusive and ambiguous factors. However, it is this very fact that we are trying to convey, namely that the construction of social reality is, probably, the *central social fact* of the sociological enterprise. A seemingly mundane point, but one, we believe, is central for students to grasp - moreso than giving them definitions of key sociological terms. Using rational choice theory becomes a «hands on» approach that gives some meaning to much disembodied sociological jargon.

Moreover, decision theory can be integrated into the classroom in innovative ways that make it more than an empty or hypothetical gesture. For example, students can interview policy or decision makers of various sorts to determine how and why they make decisions. Or library research can be conducted examining how important policy decisions (e.g., school desegregation efforts, historically) have been formulated, implemented, and evaluated. Another possibility is creating and administering a small survey instrument to determine what decisions are made by instructors in choosing particular textbooks, for instance. One strategy that we have found especially interesting and useful is to have the students work in groups on a particular decision theory problem, tape their conversations, transcribe them as a data base, and then use this as a means of trying to figure out how the group constructed its own «reality» in arriving at a common decision - or why it could not. Lastly, rational choice theory can even lend itself to raising and investigating areas that are often not normally addressed in social science courses, nor thought of as being a part of decision theory itself; namely, questions of *ethics and moral decision making.* Thus, while all «rational» decision-making involves choice, all choices are not - and not to be treated as - equal. What is a «good» choice, and how can one tell? In this context, we have found it useful to introduce the «equality vs. equity» distinction: Is your decision to go with Act I over Act II, given the Conditions, a decision that looks at treating persons equally or equitably (i.e., fairly)?

Returning to our opening statement, we also believe that a future consideration for discussion within the pages of *Teaching Sociology* itself might include the claim that rational choice theory, pedagogically, is an overall *synthesizing* view for teaching sociology. Not the only one, but one that can bring together, as we have tried to illustrate here, such various themes as social constructivism, «rationality» itself, research methods and ethical decision making. It may be worth additional reflection.

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