

SOCIAL JUDGEMENT THEORY AND POLICY ANALYSIS: A COGNITIVE  
AID FOR EDUCATIONAL POLICYMAKERS

Ray W. Cooksey  
University of New England

ABSTRACT

*Applications of Social Judgement Theory (SJT) are discussed with respect to policy formation and decision making in educational contexts. SJT serves to externalize, quantitatively, policymakers' covert "quasi-rational" judgement processes. This gives policymakers a clearer understanding of their own judgements and helps to illuminate sources of conflict over policy parameters and outcomes. SJT procedures function equally well for policy analysis at the "micro" level (e.g., within a classroom) and at more "macro" levels (e.g., within schools or regions). Interactive computer technology is described which can execute judgement analyses, provide cognitive feedback to the policymaker on selected policy parameters, compare the policies of various policymakers, and incorporate desired policy revisions.*

In recent years, large strides have been taken in the study of human judgement, policy formation, and decision making (see Hammond et al., 1980, and Kaplan & Schwartz, 1975, for overviews of this progress). This paper will focus on advances made in a particular approach to modeling judgement and policies and on the applicability of this approach to educational policy-making at various levels. Educational policy formation and decision making permeates every facet of the educational context. The activities of policy formation and decision making are not just reserved for officials and committees specifically set up for such purposes, but are engaged in by virtually everyone involved in education. Policies and decisions vary widely in their scope, utility, and intent. Thus, for the purposes of this paper, it will be useful to distinguish between micro-policies and macro-policies. Micro-policies are those policies developed for very specific, situationally bound, purposes such as a teacher's student evaluation policy in a classroom. Macro-policies are those policies developed for more general administration purposes such as funding and resource allocation policies, promotion policies, and personnel selection policies which may apply across situations and contexts.

Regardless of the particular policy level of interest, the following remarks generally apply. Any policy or decision, if it is not made randomly, must be based on some sort of information. Generally speaking, this information can be quite varied and complex in nature, can arise from any of a number of sources (e.g., observations, assessments, other experts, reports), and may differ widely in reliability and validity (both in the classical measurement sense and in terms of its true bearing on the particular policy being considered). For discussion purposes, any piece of information will be termed a cue. In order to make decisions and formulate policies, it is necessary to somehow integrate and synthesize the available cues together. Such a synthesis is often rather difficult to achieve analytically because it is generally not possible to cognitively consider all of the possible cues with potential bearing on a policy. March and Simon (1958) have termed this limitation on policymakers' cognitive processes "bounded rationality". Rather than try to completely analyze a policy situation with all its ramifications, a policymaker will typically trade-off cues against each other, analyze only the most relevant subsets of cues, set cutoff limits for cues, select those cues of greatest salience and/or perceived importance, and so on to arrive at a final policy. These aspects of policymaking are done, in large part, intuitively - based on the policymaker's "considered" judgement. Hammond (1978) has shown that the majority of policymaking involves a mixture of analysis and intuition, giving rise to what he termed quasi-rational thought. In truly complex decision and policy formation tasks having multiple interdependent cues, quasi-rational thinking is the only feasible way in which a policymaker can cognitively manage the policy situation. However, these advantages of feasibility and cognitive management can only be obtained by accepting: (1) an increasing dependence upon largely covert judgement processes; (2) an

increasing likelihood of producing conflict with other policymakers due to this covertness; and (3) a decrease in the policymaker's ability to account for the process by which his/her policy was actually derived (Hammond, 1978). Given this trade-off situation, the main question then becomes is there some way in which the quasi-rational thinking processes of the educational policymaker can be aided so as to increase its power and accountability and reduce potential conflict?

Social Judgement Theory

Social Judgement Theory (SJT) is a specific theoretical approach to understanding policy formation and decision making that directly addresses the above question. SJT was initially derived and expanded by Hammond and his associates (see Hammond et al., 1975; and Hammond et al., 1977) based on fundamental principles first elucidated by the Austrian psychologist Egon Brunswik (Brunswik, 1943; 1955; see also Hammond, 1966). The theory emphasizes that elements of the task or judgement environment (termed the ecology) should receive equal consideration with the policymaker's cognitive processes. In fact, it is the interaction between the ecology and the policymaker which is of primary importance. The policymaker is intimately embedded within his/her policy formation task with all its myriad cues and interrelationships. Hence, in order to understand the policymaker's thinking, one must also understand the task ecology within which the policymaker is working.

SJT assumes that policymaking, at any level, is, at best, uncertain in terms of how the available cues relate to or are indicative of final policy outcomes. The decision context is ambiguous with respect to which cues should receive greater emphasis in the policy (issues of cue weighting or utilization), how the cues should best be integrated and synthesized (issues concerning organizing principles), and how valid the cues are for the particular policy under consideration (issues concerning ecological validity).

The basic tenets of SJT are embodied in the so-called lens model which indicates the important ecology-policy relationships necessary to understand a policymaker's thinking. Figure 1 illustrates the lens model situation for a single policymaker. As mentioned above, the cues consist of information available for policy considerations. These cues vary in how they actually correlate with the true policy criterion ( $Y_E$ ) of interest - thus cues differ in their ecological validity. The cues also vary in how they are weighted in importance by the policymaker when making judgements ( $Y_S$ ) about the policy criterion - thus cues differ in their utilization. The cues themselves are often intercorrelated ( $r_{ij}$ ) thus adding complexity to the task. Several indices of importance emerge from this depiction of policy formation which shed light on how well the policymaker is coping with the decision task. The correlation between the true policy criterion and the policymaker's judgements of that criterion represents his/her achievement in the task. Through multiple regression procedures, the indications of ecological validity (beta weights obtained by regressing the cues on  $Y_E$ ) and cue utilization (beta weights obtained by regressing the cues on  $Y_S$ ) are found. The extent to which the linear predictions ( $\hat{Y}_E$

and  $\hat{Y}_S$ ) from these two regression models correlate gives an indication of the degree of match between the optimal policy in the ecology and the judgement policy used by the policymaker. Finally, the multiple correlations from the ecology and policy regression equations, respectively, give an index of how linearly predictable the "true" criterion is from the cues and an index of how consistently the policymaker applied his/her weighting policy across judgements (which measures the policymaker's cognitive control over the policy formation task - see Hammond & Summers, 1971). All of these correlational indices help to

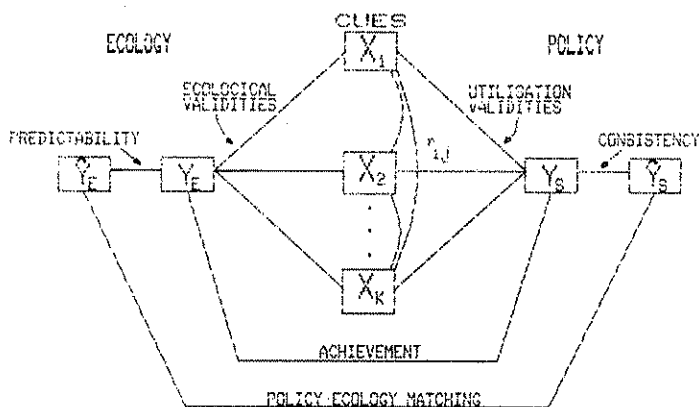


Figure 1. Lens model system for single policymaker in a particular task ecology.

explicitly represent the accuracy and appropriateness of the policymaker's judgemental processes in a particular task ecology. Additional information of interest can be obtained by examining the form of the functional relationship (e.g., linear, quadratic) between each individual cue and the policymaker's judgements in comparison to the function forms relating the cues to the criterion.

SJT and its lens model representation can readily be extended to consider two or more policymakers at the same time (as would be the case when boards, committees, or panels formulate policy). Figure 2 illustrates this lens model extension to the case of two policymakers. All of the standard lens model parameters (discussed above) can be easily derived for each policymaker separately. But, in addition, there are supplemental indices available which indicate the degree of agreement between the two policymakers and the degree to which they are applying similar policies in the task (in terms of cue utilization weights and cue-judgement function forms). The agreement index is obtained by correlating the actual judgements made by the two policymakers. The policy similarity index is obtained by correlating the predicted (from multiple regression) judgements of each policymaker.

The implementation procedures for an SJT analysis of policy formation generally involve the following stages. The policymaker sits down at a computer console (ideally, but the task can be done using paper-and-pencil judgement profiles) and enters a series of judgements based on a number of representative person or situation profiles which vary in their relative positions on selected cue variables. The profiles, ideally, should represent real persons or situations, but in certain instances, hypothetical profiles or scenarios may suffice if the nature of and interrelationships between the various cues is representative of what would be found in real cases. Figure 3 illustrates a sample judgement profile for a tenured lecturer rated on five characteristics thought to be important for promotion policy decisions (this policy task will be described in more detail below). The policymaker must give an indication of how likely (in a probability sense) it would be that he/she would recommend promotion for this particular person. A number of these lecturer promotion judgements would be made by the policymaker (for the most representative policy analysis, the profiles would be those of actual, but anonymous, tenured lecturers). The lens model analysis of the judgements and associated indices would then be computed using, as the criterion, an index of whether or not each lecturer represented in a profile was actually promoted.

The Role of Policy Feedback in SJT Analysis

A critical feature of SJT is the notion of providing feedback to the policymaker as a cognitive aid for understanding his/her own quasi-rational policy formation processes. Such feedback serves to externalize (see Hammond, 1975, for in-depth discussion of externalization) and quantify various aspects of policymaking and is a crucial step in moving toward policy improvement and change. Research has shown that policymakers are notoriously poor at being able

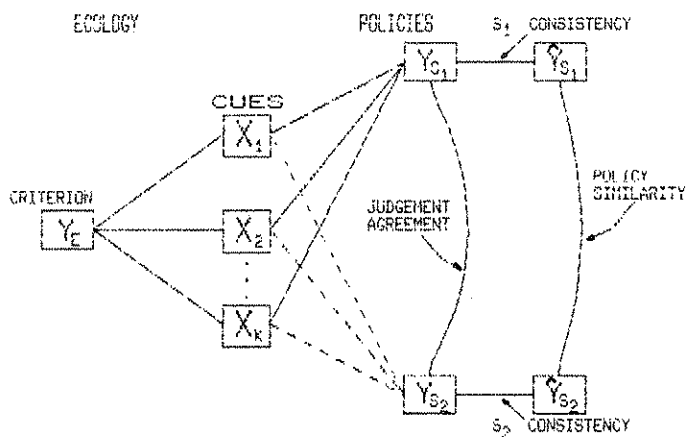


Figure 2. Lens model system for analysis of two policymakers.

TENURED LECTURER 1 HAS THE FOLLOWING QUALIFICATIONS:

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|                                  |    |
|----------------------------------|----|
| NUMBER OF PUBLICATIONS . . . . . | 17 |
| YEARS OF SERVICE . . . . .       | 6  |
| STUDENT EVALUATIONS . . . . .    | 7  |
| DEAN'S RECOMMENDATION . . . . .  | 4  |
| SEX OF CANDIDATE . . . . .       | F  |

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WHAT IS THE LIKELIHOOD (0 TO 1.0) THAT YOU WOULD RECOMMEND PROMOTION TO SENIOR LECTURER FOR THIS FACULTY MEMBER?

Figure 3. Sample person profile for judgement in an SJT task.

to understand and verbally report, with accuracy, how they weighted the various cues in forming a policy (see Summers et al., 1970; Nisbett & Wilson, 1977, for discussions). Thus, by providing explicit feedback on objectively derived policy weights and associated parameters, the policymaker can achieve a much clearer understanding of his/her own covert quasi-rational judgment processes (Brehmer, 1976; Hammond, 1975; Hammond & Brehmer, 1973).

When two or more policymakers are involved in a decision task, the notion of feedback assumes even greater importance since it not only explicitly presents the policy parameters for each individual policymaker, it presents indices which illuminate areas of conflict in cue weighting and cognitive control in the policy formation task. Externalizing these areas of conflict by providing feedback (to all policymakers at once) is the prerequisite for meaningful conflict resolution, compromise, and policy adjustment (Brehmer, 1976).

Illustrative Applications of SJT to Educational Policymaking

The following discussion will focus on two hypothetical examples illustrating the applicability of SJT to educational policymaking. In a micro-policy application, an important area for policy analysis through SJT procedures concerns teacher judgements (or estimates) of children's potential in a particular subject matter. Consider the situation where a teacher wants to understand and improve how he/she uses various types of information (cues) to estimate a child's potential in an early reading class (as a prelude, perhaps, to detecting, early on, those children needing remediation or special accelerated programs). Available cues might include the child's apparent socio-economic status (based on appearance, clothing, father's occupation, and so on), and scores on various tests of cognitive and reading ability (knowledge about books and printing conventions; knowledge of letter names and sounds; and oral language comprehension ability); all of which can be numerically represented. Potential is estimated by predicting what the child would score on a standardized reading achievement test at the end of the school year. The teacher would judge a number of profiles of children and a standard lens model analysis carried out. Feedback to the teacher about his/her policy for judging student potential might take the form shown in Figure 4 if the SJT procedures were conducted by computer. Note that heavy use is made of graphical presentation for easier understanding of the policy parameters. Hammond and his associates (Hammond, 1971; Hammond & Wascoe, 1980) have long advocated this approach to cognitive feedback from SJT. Policy parameters (Y) and optimal parameters from the ecology (T - available from knowledge of how each child represented in the profiles actually performed at the end of the school year) are presented side-by-side (or overlaid) for ease of comparison. The teacher can readily see where particular cues are being

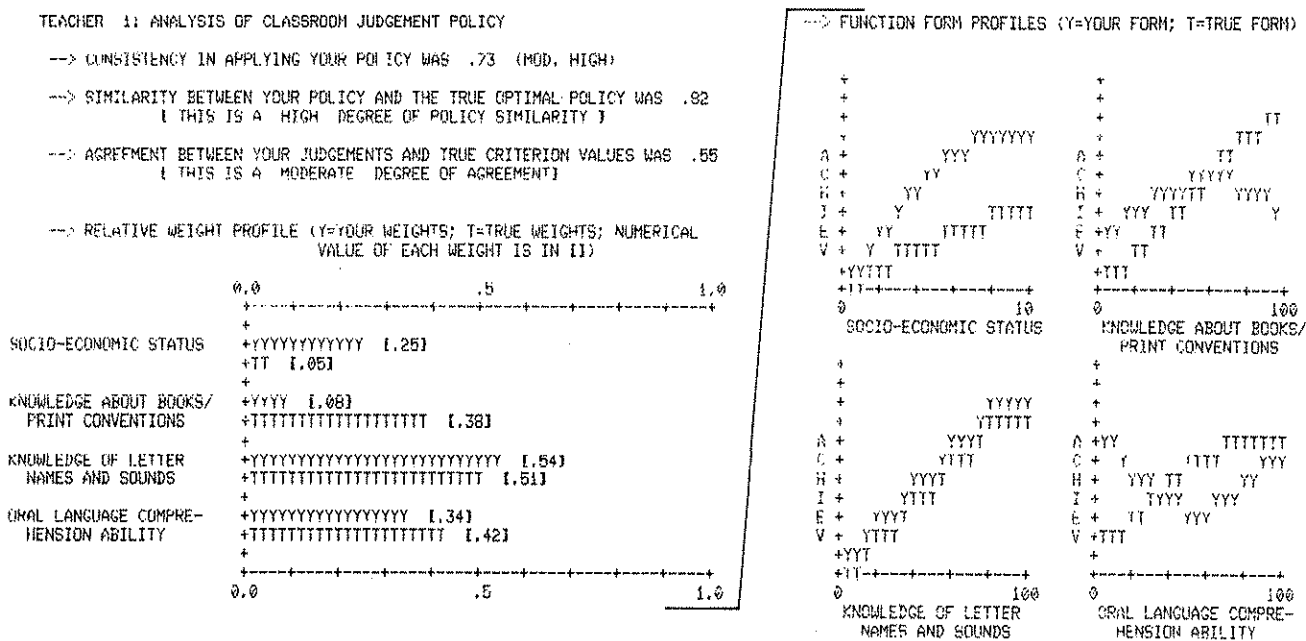


Figure 4. Example cognitive feedback from analysis of a teacher's micro-policy for predicting reading achievement in the classroom.



appropriately or inappropriately utilized. In this example, the teacher has substantially overemphasized the importance of a child's socio-economic status in judging potential, while underemphasizing the importance of knowledge about books and printing conventions (note the function form for this cue is quadratic in the teacher's policy but only linear in the actual ecology).

The second hypothetical example moves to the domain of macro-policies where the interest is in analyzing the promotion policies of two members of the promotions committee at a typical Australian university. Consider that there are five cues available for assessing the promotability of candidate tenured lecturers to senior lecturer rank: the candidate's sex, number of publications, student evaluation summary index, Dean's recommendation summary index, and number of years of service at that university. The policymakers are to judge each candidate's likelihood of promotion given the available information (recall Figure 3 for an illustration of how candidate profiles might be presented for judgement in this task ecology). Following analysis of each policymaker's individual policy characteristics, feedback summarizing both policies for side-by-side comparison might take the form shown in Figure 5. Note that indices of agreement and policy similarity between policymakers A and B are given along with cue utilization weights and function forms. Note also how readily this type of cognitive feedback clarifies areas of conflict in policy between two members of the same promotions committee. Member A is more consistent in applying his/her policy than member B, and policy similarity and agreement are relatively low (recall that all of these indices are correlations which range from 0 to 1 in absolute value). Member A emphasizes years of service whereas member B emphasizes number of publications. The two members differ in the emphasis to be given to all cues except the Dean's recommendation. Cue function forms also differ for several of these cues. The stage is now set for conflict resolution and compromise given that both members A and B are now aware of the

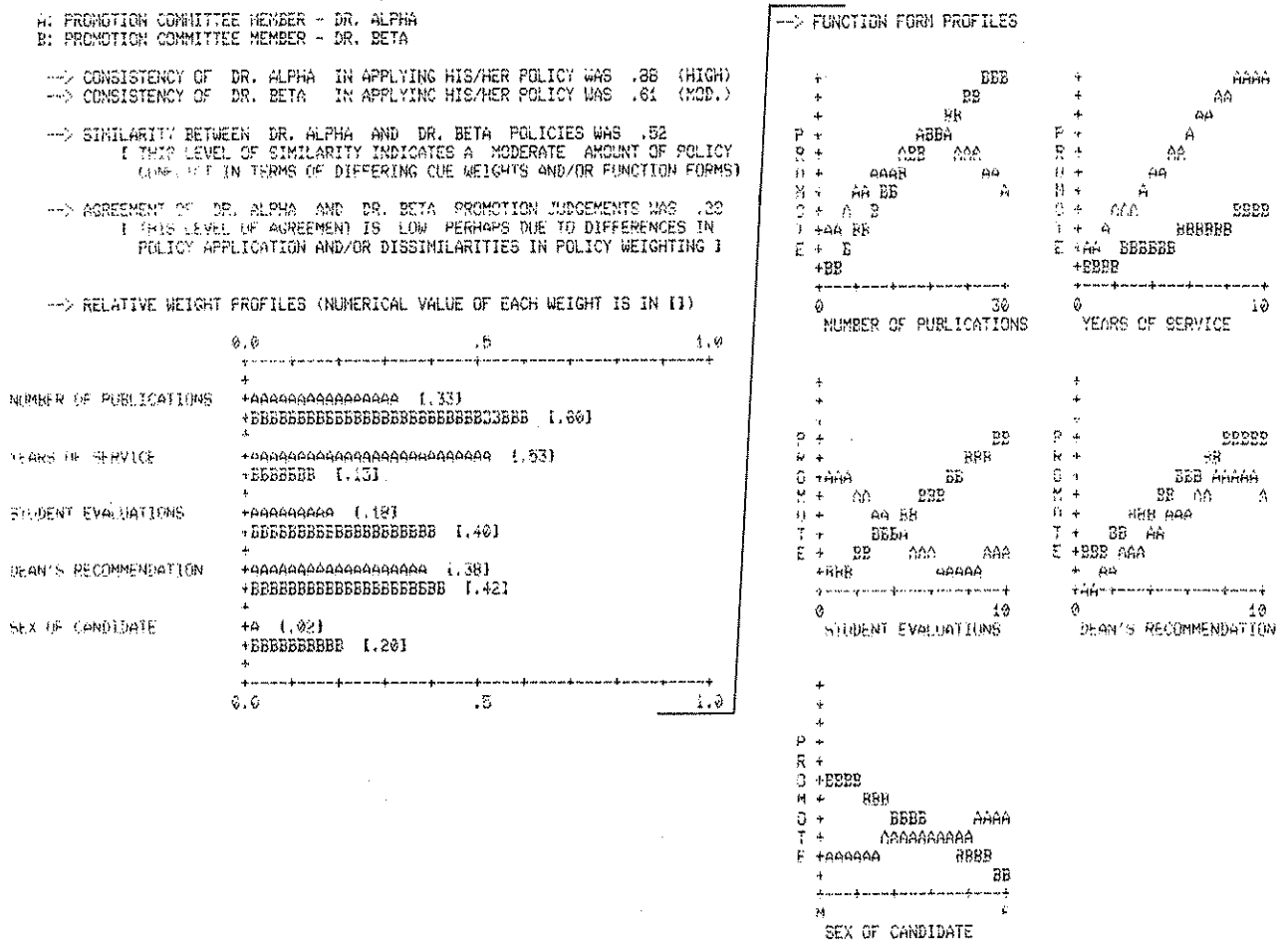


Figure 5. Example cognitive feedback comparing the promotion policies of two members of a university promotions committee.

the other's thinking processes as well as their own.

#### Published Educational Applications of Aspects of SJT

Until recently, not much at all had been done in applying SJT to educational decision making and policy formation. This picture is slowly changing. For example, in the area of micro-policies, Cooksey and Freebody (1983) and Cooksey et al. (Note 1) have analyzed the policies of student teachers in judging childrens' end-of-year reading achievement on two criteria (word knowledge and reading comprehension). Results showed the student teachers to be relatively good at making accurate predictions on the two criteria for kindergarten children but that their judgement policies often differed in fundamental ways from the optimal policy in the ecology (for example, overemphasizing the role of letter knowledge). However, these studies were only an initial step in micro-policy analysis since feedback was not provided - only policy analysis was done. The same was true of a study by Byers and Evans (1980) who applied the lens model in analyzing the policies teachers use in deciding what reading materials would be of interest to students in their reading classes and compared these policies to those used by the students themselves. Results indicated a relatively poor match between teachers' book choices and childrens' interests because of poor teacher understanding of childrens' "policies" for deciding what books interest them. Shavelson and Stern (1982) have compiled an extensive review of the cues teachers use in making decisions of various types in the classroom, but follow-up with SJT procedures, other than those cited above, has not yet occurred.

At the more macro-policy level, there have been several studies conducted. Hammond and Smith (1975) performed an SJT analysis of faculty and staff judgements of the future academic goals of a major American university. The study focused on how individuals judged the desirability of various levels of planning activity in major areas (such as resource allocation, service allocations, faculty characteristics, research emphasis) for ten years in the future. Results showed considerable disagreement between university personnel which was not accounted for by their status (faculty vs administration) - perceptions varied widely. The bulk of research on educational policy using multiple regression techniques has focused exclusively on the policy side of the lens model (the characteristics of the ecology being effectively ignored) with no cognitive feedback provided, i.e., policy capturing studies (e.g., Keeley & Doherty, 1972; Cristal, 1968; Permut, 1973). The deficiency in such studies lies in the fact that the policymaker is not informed of his/her resulting policy parameters, thus no cognitive aid is provided. Cognitive aid in the form of policy feedback is crucial if research on educational policymaking is to progress beyond the passive role of merely capturing policies using statistical models to a more active role where the researcher not only analyzes policies, but provides facilitative feedback to promote learning and compromise for policy improvement.

#### The Future of SJT in Educational Research

With the advent of computers, particularly microcomputers, SJT procedures have become fairly straightforward to implement. Using computer technology, a policymaker can sit down at a keyboard, view a series of judgement profiles displayed by the computer, enter a judgement for each profile, and receive immediate cognitive feedback (similar to that shown in Figures 4 and 5) on his/her policy to that point through on-line policy analysis. Further, the computer can be programmed to accept subsequent input from the policymaker regarding revised policy structures; the new policy can be implemented on a series of judgements and its structure analyzed and fed-back to the policymaker. This procedure is generally termed interactive judgement analysis (see Cook, 1980). In this way, particularly with two or more policymakers, conflict resolution, compromise, and policy revision can occur directly based upon cognitive feedback.

Computer programs for the SJT implementation described above are currently available for large mainframe computers. The primary program currently in use is POLICY developed by Hammond and his associates at the University of Colorado (see Cook, 1980, for a discussion of this program) and is available on an international computer network (General Electric MARK III time-sharing system). The program has already received some use here in Australia by Alexander Wearing at the University of Melbourne (Rohrbaugh, Cook, & Wearing, 1977).

Since, however, access to this mainframe time-sharing system may not be convenient or

economically feasible, SJT policy analysis/feedback programs are currently under development by the present author for use on microcomputers. With the growing availability of microcomputers in Australia (e.g., the OSBORNE 01 and the APPLE), SJT policy analysis/feedback will be more generally available and easy to implement. Considering the large number of potential applications of SJT to educational policymaking, the possibilities on this frontier are exciting. Only a few of the possibilities have been explored here. Other possibilities may include: analysis of the role of expectations and "cultural capital" considerations (see Ozolins, 1982) in teacher policies for evaluation of student potential and performance; analysis of community views on educational policy issues and goals; analysis of in-school policies for resource allocation and curriculum adoption; analysis of faculty promotion policies and procedures; and analysis of resource allocation and long-range planning policies within Australian universities. Research in all of these possibilities should be undertaken with the end goal of yielding not only more appropriate and efficient educational policy, but policies whose assumptions, quasi-rational structures, sources, and formative characteristics can be publicly presented, examined, and defended.

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