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ABSTRACT

This paper considers techniques, games and simulations, to deal with the broad area of decision-making in a variety of problem situation. Since violence is a learned behavior, there are alternative ways to handle conflict situations. Simulation games have been utilized primarily in research. The purpose of this paper is to correct this imbalance, and hopefully to generate some of the enthusiasm for gaming that all simulators seem to acquire. The design of the paper is as follows: (1) to introduce the family life educator to simulation games with a few concepts and a rationale for their utilization; (2) to deal with classroom use of the technique with several illustrations of simulation games; (3) to discuss how to design a simulation game which is illustrated by a game being developed by the writer explicitly for use in family education; (4) to examine evaluation research on the effectiveness of educational gaming; and (5) to consider implications of the method in terms of the goals of family life education and some of the unresolved problems of the field. (Author/KJ)

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Friday
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THE METHOD OF SIMULATION GAMES IN FAMILY LIFE EDUCATION

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A paper prepared for presentation at the Annual Meeting of the National Council on Family Relations, October 6 - October 10, 1970

INTRODUCTION

Behavioral alternatives to conflict situations range from violence and conflict elimination at the one extreme to negotiation and conflict management at the other. This paper considers techniques--games and simulations--that were initially set forth by economists as models of conflict at the elimination or zero-sum end of the continuum; that were subsequently developed by political scientists to include conflict management and multiple-sum outcomes; and that now have been expanded, throughout the social sciences, to deal with the much broader area of decision-making in a variety of problem situations.

The theme of this 1970 meeting of the National Council on Family Relations concerns violence and the family, and the implication is that violence is a learned behavior. The argument of this paper is that alternative ways to handle conflict situations are likewise learned, and that a very useful method to teach such "strategies" is by games, which involve the participant's interest and motivation, and by simulated environments, which present real-life situations in which he experiences various conditions, including that of conflict.

In sociology of the family, simulation games have been promoted and utilized primarily in research (see Haley, 1962; Straus, 1965 and 1966; Rollins, 1969) rather than in teaching. This is truly surprising since the technique appears more uniquely adaptable to family life education than to many other content areas where it has been incorporated. The purpose of the present paper is to correct this imbalance and, hopefully, to generate some of the enthusiasm for gaming that all simulators seem to acquire. The design is as follows: to introduce the family life educator to simulation games with a few concepts and a rationale for their utilization; to deal with classroom use of the technique with several illustrations of simulation games developed at Johns Hopkins University, and with a more detailed

outline of how to design a simulation game which is illustrated by a game being developed by the writer explicitly for use in family education; to examine evaluation research on the effectiveness of educational gaming; and to consider implications of the method in terms of the goals of family life education and some of the unresolved problems of the field. In short, the paper addresses the questions: What are simulation games?; Why use them?; How are they constructed?; How do they compare with other classroom exercises?; and What do they offer the family life educator?.

SIMULATION AND GAMES: WHY AND WHAT

To stress the technique of simulation games as an innovation for educators requires a quick explanation. Certainly, games are about as old as evolution and simulation is every bit as old as the first stone carving or the first verbal analogy. In contemporary America we are all familiar with a number of popular meanings of the terms simulation and games. Television viewers have been exposed to simulations ranging from the elaborate props used on the fictional "Mission Impossible" series to the intricate ground training rockets used by the astronauts to simulate a moon flight. Games, also, are part of our lives since early childhood. Huizinga (1950) goes so far as to claim that the most basic characteristic of man is not in terms of his economic, psychological, or sociological attributes, but as homo ludens--a playing animal. Piaget has emphasized that the simple games children play serve vital functions as an introduction to social life. Eric Berne and his followers have characterized much of social interaction in terms of strategies in the Games People Play. Simulation and games, therefore, are quite everyday terms. The problem in using such concepts--a problem repeatedly encountered in the social sciences--involves obtaining a sharp focus on the technical meaning of simulation and games while preserving the intrinsic interest of their popular connotations.

In the technical sense, the utilization of simulation and gaming in the social sciences is related to the development of system analysis, small group experimentation, decision theory, the use of mathematical and other formal models, and the availability of high-speed computers (Guetzkow, 1962:1; Raser, 1969:49-54). The type of thinking involved in these developments is not only innovative, but is fast becoming a social force that appears likely to change the basic characteristics of the rather static sociology that has prevailed during the last twenty years. A new action-oriented sociology is emerging with: increased emphasis

on decision making processes; reevaluation of the positive functions of conflict; explicit recognition that analysis of sociological phenomena requires examination of complex systems rather than isolated entities; greater acceptance of a multi-disciplinary approach; a growing reliance on multi-variate analysis; and increased popularity of dynamic, process type theories.

Likewise, there are indications of a new action-orientation in education. In 1892 William James, in his Talks to Teachers, stressed the need to make learning more activity-oriented: "No reception without reaction, no impression without expression." It has taken, however, more than a half-century of time, a growing disillusionment with traditional teaching methods, plus the availability of simulation games as an intriguing teaching possibility for James' exhortation to become effective. In 1960 Coleman, explicitly advocating simulation and gaming in education, asserted that students need an opportunity to act on what they are being taught, to "take the role of the other," and to participate in intergroup situations (Guetzkow, et. al., 1963:11). The contemporary student demand for "relevancy" in course work specifically echoes this need.

As mentioned earlier, simulation and games are familiar concepts, but their employment as social science research and teaching techniques requires more precise definition. A simulation is a specific kind of model, and a model is simply a technique to express a theory. Now there are at least four types of models used in sociology today: pictorial or diagramatic; verbal or conceptual; mathematical; and simulational (Guetzkow, et. al., 1963:192-196). Modern researchers and theorists are increasingly utilizing models as invaluable tools for discovery. James Watson's account (The Double Helix) of how he and Francis Crick discovered the structure of the DNA molecule is a delightful narrative of "fiddling" with tinker-toy-like models and asking "which atoms like to sit next to each other." The DNA molecule constitutes a "system," and it is this system quality that models purport

to represent. Let us define a system as some part of reality that interests us and that is composed of certain units and the relationship among them. All models of such systems are simplifications of the reality we are investigating. There is a considerable difference, however, in the tinker toy model mentioned above, which can represent only static structure, and the simulational model which is intriguing social scientists. Verba (see Raser, 1969:10) describes this difference as follows:

> The simulation model differs in that it is an operating model . . . It may operate through the interaction of people who play roles within the model; or it may operate on a computer. The rules given to the human participants in the simulation or the computer program represent the premises of the model. Its operation produces the implications.

Verba's description also leads us to the relationship between simulation and "games" or "gaming." In the context of this paper, simulation and games are not considered as two separate techniques. Rather, simulation is taken as the more inclusive term and games are seen as a certain type of simulation in which human actors participate within the simulated system (Guetzkow, 1962:9). Raser (1969:30) adds to this, that in simulation gaming the operations for translating real life variables into simulated variables are less demanding and not necessarily governed by strict mathematical rules. Obviously, therefore, in the general area of sociology and in our particular area of family sociology, where there remain gaps in the knowledge of important variables as well as ill-defined relationships between variables, simulation games will be our more appropriate technique. A further reason for not making a strict distinction between simulation and games is that our goal is, in fact accurate simulation, and a gaming approach to simulation building appears to be the most promising way to reach that goal.[1]

[1]Distinctions that should be made are with regard both to role play and to the mathematical theory of games: 1) role play is noncompetitive and requires the player to empathize with the role; simulation games involve competition and require the player to learn relationship structure and strategies; 2) Von Neumann and Morgenstein's theory of games provides a set of mathematical tools for dealing with explicit types of conflict situations; simulation games are an attempt to construct operating models applicable to a variety of social processes.

In sum, a simulation involves human participants in the operation of a dynamic model of an actual or a hypothetical social system. In 1961, Coleman recommended, in The Adolescent Society, the development of academic games. Bringing such games into the classroom, Coleman predicted, could motivate students into intellectual areas analogous to athletic competition motivating their physical development. Coleman, utilizing a grant awarded by the Carnegie Corporation, started putting his idea into practice in 1962 by developing and field testing several educational games. The goal of Coleman and his colleagues at Johns Hopkins University was to construct environments in which students could act in roles they would only later occupy in real life. Their assumption was that students would thus learn about the structure of complex institutions in society through game structures which mirrored them in simplified form (Simulation Games, 1969). From this beginning, the Hopkins group has organized to become Academic Games Associates and have made available seven simulation games for learning.

A verbal model of Coleman's definition of a simulation game (Boocock and Schild, 1968:30-38) is presented in Figure 1. Coleman asserts that a social simulation game always consists of a player or players acting in a social environment. It incorporates that environment into its structure in one or both of two ways: 1) by the interaction of the players with each other within the role obligations of the game; 2) by the rules themselves which may contain contingent responses of the environment. Most games use a combination of these solutions. The environmental situation that is simulated in these games generally demands the development and choice of strategies, or decisions, and some type of payoff outcomes dictated either by chance but more often by the choice of strategies. Both strategies and payoffs are restricted by the rules of the game.

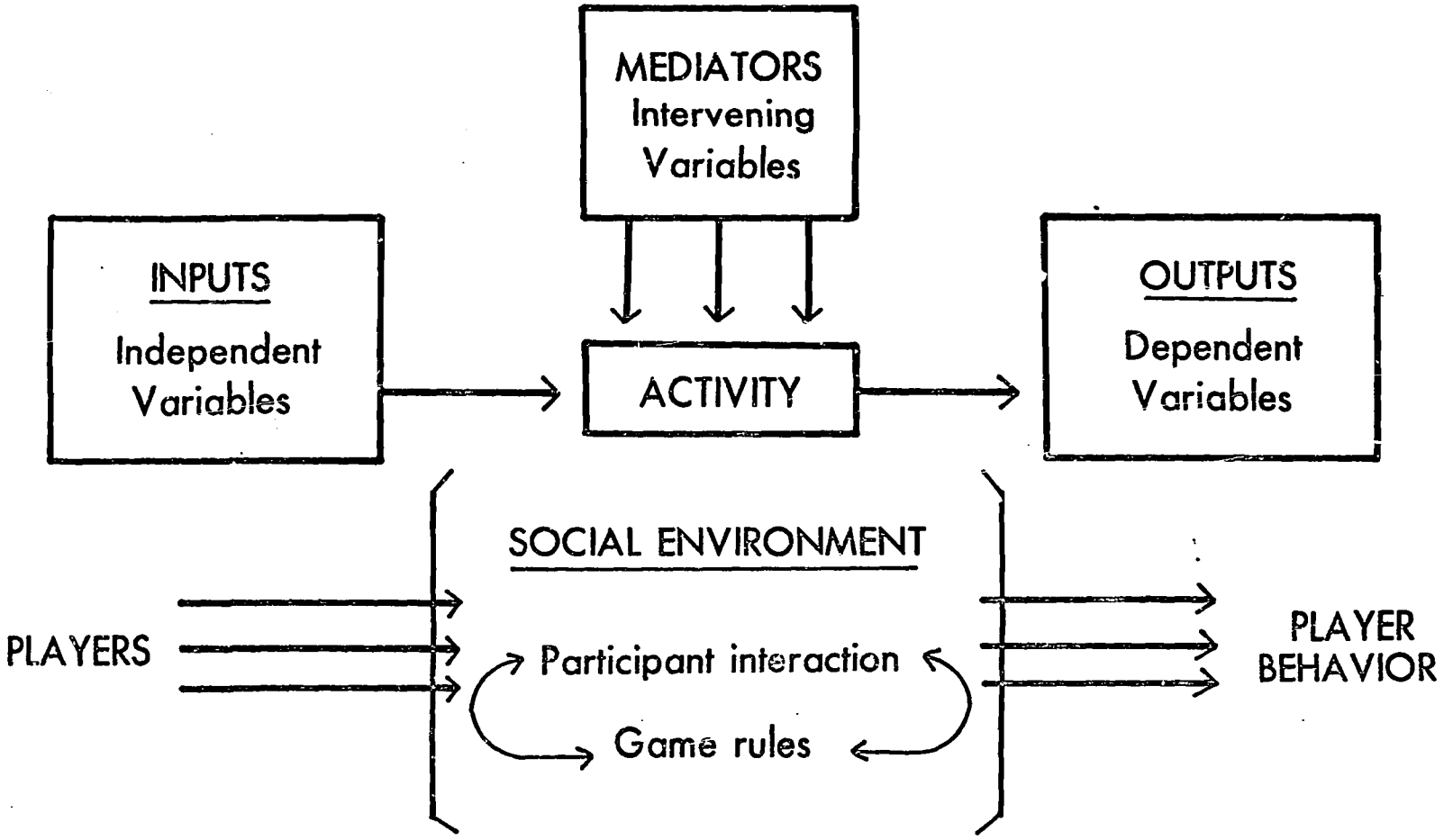

FIGURE 1. CONCEPTUAL MODEL OF A SOCIAL STIMULATION GAME FROM JAMES S. COLEMAN

Aside from the games generated by the Hopkins group, the most notable educational game in sociology is SIMSOC, Simulation of Society, developed by Gamson at the University of Michigan (Gamson, 1966). The feedback that has resulted from actual classroom use of such games is creating excitement and interest in all of the social sciences. Simulation games appear to provide a technique not only uniquely adaptable to the current action-oriented educational policies, but also completely amenable to the theoretical content developing in sociology. This very timely appropriateness should become more apparent as we examine the practical application of simulation games in the classroom.

TEACHING WITH SIMULATION GAMES

Mark Twain put it this way: "A fellow who takes a bull by the tail once gets as much as sixty or seventy times the information as one who doesn't." Without the exact risks involved in actually grabbing that bull's tail, simulation games attempt to deliver the type of information you might well need when strategy is the best policy. Consider Inbar's Community Disaster game which simulates a community hit by crisis such as large fire, hurricane, flood or earthquake (Simulation Games, 1969). Each player is given a role in the simulated community. He is given information which includes his location at the time of the disaster, the location of the members of his family, and his job in the community. During the disaster, each player has two concerns: to make sure his family members are safe and to help the community. Now while playing this game, students are not simply talking about collective behavior and the conflict between personal concerns and social responsibility. Neither are they taking the risk of an actual panic-producing situation. What they are doing, however, is developing strategies and making decisions that such a situation would involve. The design of the game places the student in a problem-solving situation. He must react also to the

actions of others and the hindrance or help that this factor creates, just as it does in a real-life community. On the real-life side, students get a "feel" for a potentially realistic process; on the learning side, they obtain immediate feedback as to the consequences of their strategies and decisions. Simulation games, in this way, are more kind than real-life: one can do it again and do it better next time. One student, after playing the Community Disaster game, asserted: "In case of a disaster I would do some things that I wouldn't have thought of or done if I hadn't played this game."

As stated earlier, there are no published simulation games, to this writer's knowledge, aimed directly at teaching marriage and family living. Several of the Hopkins' games, however, should be considered by family life educators not only as possible models for their own game construction but also because of their indirect incorporation of a number of basic family life concepts. Sarane Boocock's Life Career Game, one of the first games developed under the Hopkins program, is a most conspicuous example of this point. The game is organized into rounds or decision periods, each of which represents one year in the life of a fictitious person whose case history is given to the players. Fifteen such rounds (representing fifteen years) is an optimal game session.

During each decision period, players plan their person's schedule of activities for a typical week--allocating his time among school, job, family and leisure. Students' responses, after playing the game, revealed that they gained greater understanding of certain of the very concepts that we try to communicate in family sociology. An appreciation of the complexities and the interrelatedness of real-life problem situations is one example. As one girl wrote:

> Most students would have had impractical views of their future lives before they played this game, just as I did. After playing the game, they would learn that a twenty-four hour day is not long enough to allow a girl to hold a job, be a wife, raise a family and get an education. Something must be left out (Boocock and Coleman, 1966:231).

But students also gain greater confidence in their ability to act effectively in such situations. Girls were more likely to endorse an expanded feminine role after playing the Life Career game (Boocock and Coleman, 1966:232). This is not to say that all students, when presented with a simulation game, docilely accept it, absorbedly play it, and emerge with a significantly increased know-how of real-life decision making. It is to claim that an intrinsically interesting and relevant game can and does prick a student's interest and put him in a speculative as well as receptive state of mind that any teacher worth his bread can capitalize upon immediately. And this is what we are after with simulation games. As Jerome Bruner (Man: A Course of Study, 1969) says:

> The best way to create interest in a subject is to render it worth knowing, which means to make the knowledge gained usable in one's thinking beyond the situation in which the learning has occurred.

DEVELOPMENT OF A SIMULATION GAME

A considerable amount has been written very recently describing a number of simulation games in learning such as those mentioned above. Little, however, has been published on the actual nitty-gritty-how-to of developing a simulation game.[2] In a sense, this writer sees the rather unstructured aspect of game creation as fortuitous. Any strict rules and procedures for game construction could only reduce the most fun (and the most thought provoking) aspect of the process. This paper will repeatedly emphasize that a simulation game should be "your own thing"--yours and your students. Without some guidelines, however, the novice game designer may produce something like the croquet game in Alice in Wonderland. In that game, the balls were live hedgehogs, the goals were doubled-up soldiers, and the mallets were live flamingoes. The hedgehogs would crawl, the soldiers would stretch, and the flamingoes would squirm at every play of the game. The

[2]This process of development may well be the major thesis of Inbar and Stoll's forthcoming book, Developing Social Simulations, now in press.

game was certainly dynamic, but, as we recall, it frustrated the players rather drastically.

Here, garnered from several sources (Boocock and Schild, 1968; Garvey, 1965; Twelker, 1969; Youngers and Aceti, 1969) are a few suggestions for game development that may prevent such an outcome. These are illustrated subsequently by the writer's own experience in constructing a game for family life education.

1. Determine the appropriateness of a simulation game. Identify your teaching objectives with this in mind, i.e., that you will be constructing a system in which the learner must interact; that the learner must be able to discover the effects of alternative decisions, etc. Decide whether you want to teach a specific concept such as "social role," or whether you want to illustrate the complexity of role obligations, or the interdependence of role relationships in the family.

2. Define the context within which the game is to be used: i.e., what type and number of students; at what age levels; with what requisite capabilities; using what available equipment; in what type of school system or administrative milieu?

3. Designate some initial criterion measures that will give feedback as to whether teaching objectives were actualized.

4. Design a simplified model of the situation or social process to be simulated. Include those elements which are essential to meeting your objectives without including so much that the simulation becomes unwieldly. Stay loose here--many of these variables later may be deleted or altered.

5. Review the literature on the variables and variable relationships contained in the model. Obtain attitudinal as well as statistical data so as to make the model more realistic. Become as familiar as possible with the real-life alternatives in the situation simulated.

6. Place the simulation model within the context of a game. This step involves both the challenge and the fun of simulation gaming. From the writer's experience, drawing up a rough type of flow-chart was invaluable in defining the operations the students would perform. Some of the requisites of a game are as follows:

   a) identification of players or teams

   b) provision to players of some resources (verbal or token) with which to interact or exchange

   c) stating objectives in clear instructions--that is, decision-making tasks, consequent payoffs from alternative choices, and means of evaluation during and after the game

   d) establishing rules of the game

e) Specification of length of the game--that is, number of rounds, time per round, etc.

f) post-game discussion or, especially with even a fairly complex simulation, discussion after several rounds of the game.

7. Pre-test the simulation game with a small group, not your closest friends but somewhat representative of the target group. Try not to be dismayed at their intellectual denseness in appreciating your efforts, and retreat to modify your model, instructions, or whatever seems the most crucial problem. The usual trouble is that the simulation is either too simple or too complex, or that the game materials need to be made more manageable or more attractive.

8. Field test the simulation to determine if it can be used under operational conditions by members of the target population. At this point, initiate some criterion measures of effectiveness. Unstructured interviews appear to give the most needed information initially, and these subsequently can be replaced with structured questionnaires and actual statistical tests of the students' learning development.

9. Analyze the data (actual scores, attitude scales, or whatever) as to the game's effectiveness as a learning device.

10. Iron out any too obvious "bugs" in the system. Polish the game only where it is unsightly--do leave it open to variation and change. Remember that the very nature of dynamic models, and this seems true especially in marriage and family processes, requires that their analyst constantly reassess and revise his theoretical formulations.

THE MIXED-MOTIVE DATING GAME

If these steps sound sequentially logical or have the note of "all in a day's work," it is most likely because they were written ex post facto. The present writer, in her development and testing of a simulation game for family life education, started somewhere in the middle of the above guideline and proceeded backward as well as forward. The Mixed-Motive Dating Game, as it is now labeled, was initially prompted by the writer's interest in mathematical game theory (Osmond, 1969a.) and the game appeal of Peter Blau's (1964) intriguing use of pay-off matrices to illustrate such social processes as social attraction, love, leadership, etc. (Osmond, 1969b.). A serendipitous exposure to articles by Coleman (Boocock and Schild, 1968:29-51) and by Schild (Boocock and Schild,

1968:143-154) served to demonstrate the relatively greater appropriateness of the simulation game technique for an exchange theory such as Blau's. Perhaps the major attraction of the simulation game method, to this writer, is in the fact that sociological, more than psychological, variables are put into operation.[3] This is an important consideration in the utilization of a theory from Blau who explicitly rejects psychological reductionism.

The Mixed-Motive Dating Game is an adaptation--to the realm of dating behavior--of the Parent-Child Game developed by Schild and Boocock.[4] Schild's initial presentation of this game impressed the writer with the broad potential of his basic game model for simulating social processes ranging from two-person love relationships to international opposition situations. The scoring system, materials and content of The Dating Game were developed independently of the Schild-Boocock simulation.

The social process of dating simulated in this game is based directly on Peter Blau's theoretical model of courtship.[5] Blau (1964:313) contends that there are four types of association between persons as illustrated in the following matrix:

SOCIAL TRANS-ACTIONS	REWARDS: Intrinsic (e.g.: Love Relations	REWARDS: Extrinsic (e.g.: Instrumental Cooperation)
Reciprocal	mutual attraction	exchange
Unilateral	one-sided attachment	power

[3]As stated earlier in this paper, as well as by Schild and by Clayton and Rosenbloom (Boocock and Schild, 1968:91 and 96), simulation games are particularly suited to teach strategy and system structure and may not be so appropriate as some other techniques for the direct acquisition of such psychological variables as attitudes, motivation, and emotions.

[4]This is now called the Generation Gap Game, Western Publishing Company.

[5]A number of other writers have explicitly invoked the exchange concept in family sociology (see Edwards, 1969).

From Blau's point of view, the Schild-Boocock game, with its emphasis on conflict and power relationships, is concerned primarily with the "extrinsic" portion of this matrix. Blau, however, argues that exchange processes occur in love relations as well as in social associations of mainly extrinsic significance (1964:76). But with intrinsic love relationships, each individual furnishes rewards to the other "not to receive proportionate extrinsic benefits in return but to express and confirm his own commitment and to promote the other's growing commitment to the association." Blau views courtship as a "mixed game," just as is the establishment of other social relations. For a love relationship to develop into a lasting mutual attachment, Blau insists that commitments must be kept more or less equal--that is, that the partners practice "fair-exchange." Figure 2 presents the writer's flow-diagram of Peter Blau's exchange model of courtship.

The simulation dating game was developed for an anticipated audience of participants ranging in school level from early high school through college. To be noted shortly, the game can be varied in complexity to meet the particular needs of different classes. The basic intent of the game in classroom application is to provide some insights into dating and mate selection processes. This area has been considerably researched and its content is often presented as an introduction to courses in family life education and sociology of marriage and the family. The fact that several noted studies on dating (Waller and Hill, 1951; Kirkendall, 1961) have emphasized the prevalence of exploitative relationships, reveals a need for a counter-emphasis on the possibilities of fair-exchange relationships. The fact that many youth have reported, in national surveys, considerable anxiety and unhappiness about their dating relationships (Burchinal, 1964:625), calls for some practical assistance in developing interpersonal skills. The more general social trend of demanding (using violent as well as non-violent

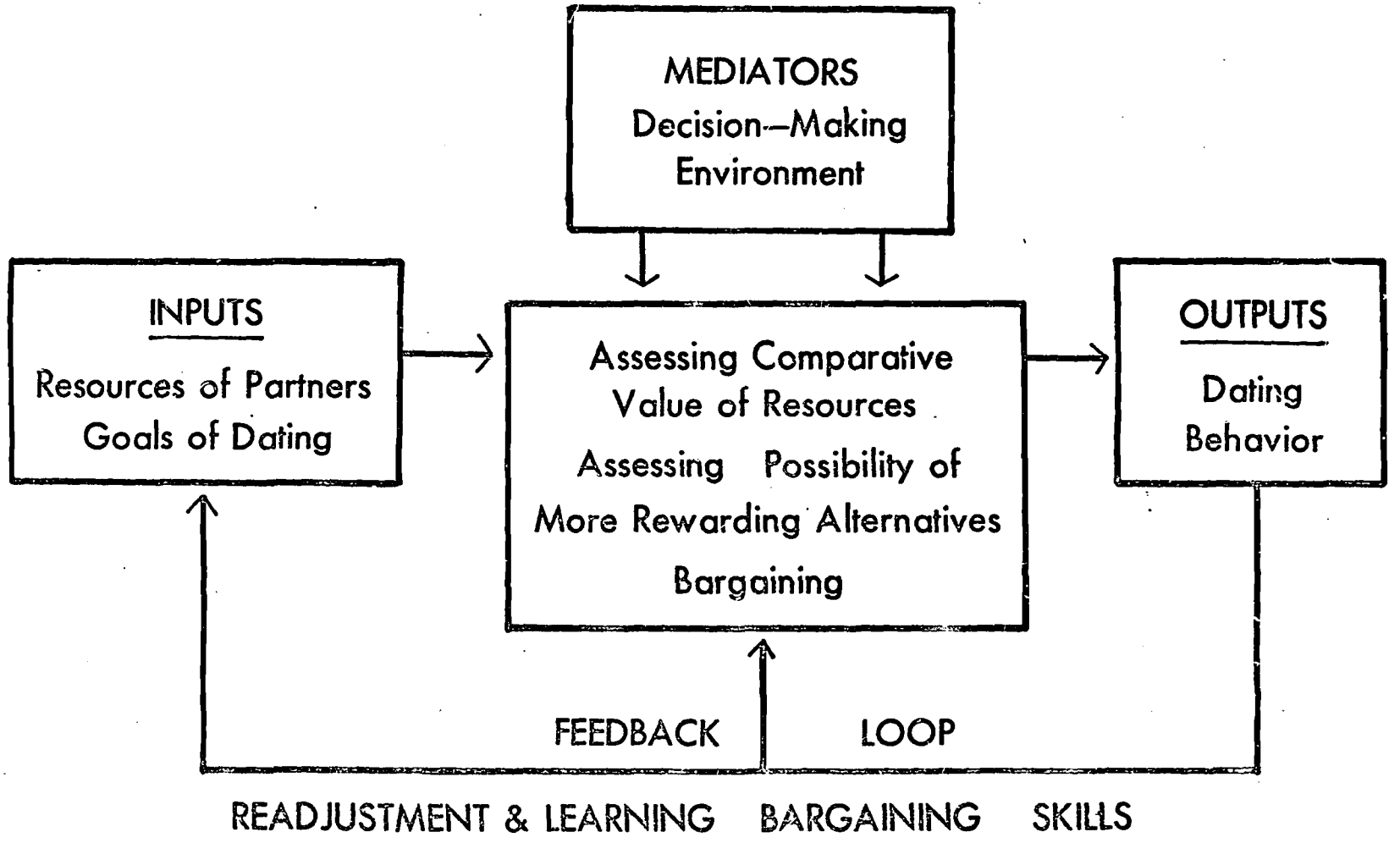

FIGURE 2. CONCEPTUAL MODEL OF EXCHANGE IN COURTSHIP FROM PETER M. BLAU

techniques) "equal rights" for all people is an urgent indication that this " "equality" concept be explicated in terms of fair-exchange rather than with regard to a divisive split down the middle. Thomas A. Harris (1969:135) offers an excellent illustration of this last point:

> One morning my daughter Heidi, then four, was about to have a treat with her playmate, Stacey. They were both preoccupied with who was to get the bigger piece, even though they had been reminded many times that this kind of contest only led to problems. Mother then gave them each an Oreo. It was obvious, even to the girls, that the Oreos were identical cookies. Yet in the face of this sameness, Heidi still could not resist the protest she had begun and persisted, "Ha, ha--I get the same as you, and you don't!"

According to Harris, this is the sort of hidden oneupmanship held in reserve by one or both partners in the so-called "fifty-fifty" marriage. The incorporation of exchange strategies, on the other hand, leads to collaborative efforts for mutual gain. The Dating Game, in this sense, aims to be a "multiple-sum" rather than a "zero-sum" experience for its participants.

One last point should be stressed. The game is <u>not</u> intended to offer the answer to "correct" dating behavior, nor is it intended as a finished product of any sort. The major value of the game is its service as a springboard for discussion and as a foundation on which to build the participants' own ideas as to what resources are important in the prevailing dating market and what bargaining skills are necessary. The present writer's bias is toward unfinished but workable simulation games for all classroom-type presentations of this technique. This, as mentioned earlier, is important with such dynamic processes as are typical of the marriage and family area. Any game simulating these processes, including dating and mate selection, must remain open to continuing manipulation, to shifting variables, and to introducing new concepts. And such manipulation is performed most validly with the aid of the participants themselves.

The game design of the dating simulation can be observed in the flow-chart

presented in Figure 3. Steps 1, 2 and 3 correspond to the Inputs in the conceptual model from Blau (the resources of partners and goals of dating). Steps 4, 5 and 6 represent the decision-making environment (assessing comparative value of resources and bargaining). Steps 7 and 8 are Outputs in which the boy behaves. Steps 9 and 10 are Outputs by which the girl has an opportunity to react to the decision-making process. Scores recorded at the end of every round allow feedback to each couple in order that they may readjust their bargaining strategies. The final evaluation period allows feedback to teacher as well as students with regard to the strategies required by the game and the appropriateness of the conceptual model to the players' own real-life experiences.

In essence, the basic game proceeds as diagrammed in the flow-chart:

1. The students draw cards (yellow for girls and green for boys) at random which contain information on the boy or gil each will play in the game. These cards indicate such things as name, race, religion, personal characteristics, and status (father's education and occupation).

2. Taking the role of the person on the profile card, each student then selects a dating partner. The boy writes his fictitious name and his date's name on the blackboard, and the students seat themselves by couples in the classroom.

3. Each boy and girl then ranks five issues (for example, going steady, physical affection, etc.) with regard to importance in his or her dating behavior. Dating partners and issue rankings do not change throughout all three rounds of the game.

4. At the beginning of each round of play, the couple discusses four alternative behaviors on each issue (for example, the issue of going steady has alternatives ranging from exclusion of all other dating partners to complete freedom to date others). They are allowed three minutes per issue to reach an agreement on how the boy will behave (that is, which alternative he will select) in their dating relationship.

5. If the couple cannot agree on an alternative within the three minutes, the girl insists on which alternative the boy must choose.

6. The boy chooses a behavior on each issue without letting the girl see his choices, and puts the cards representing his choices face-down in front of the girl.

7. The girl decides whether to "check on" the boy's behavior (his choices). She is allowed to check, with regard to two issues only, by turning two cards face-up.

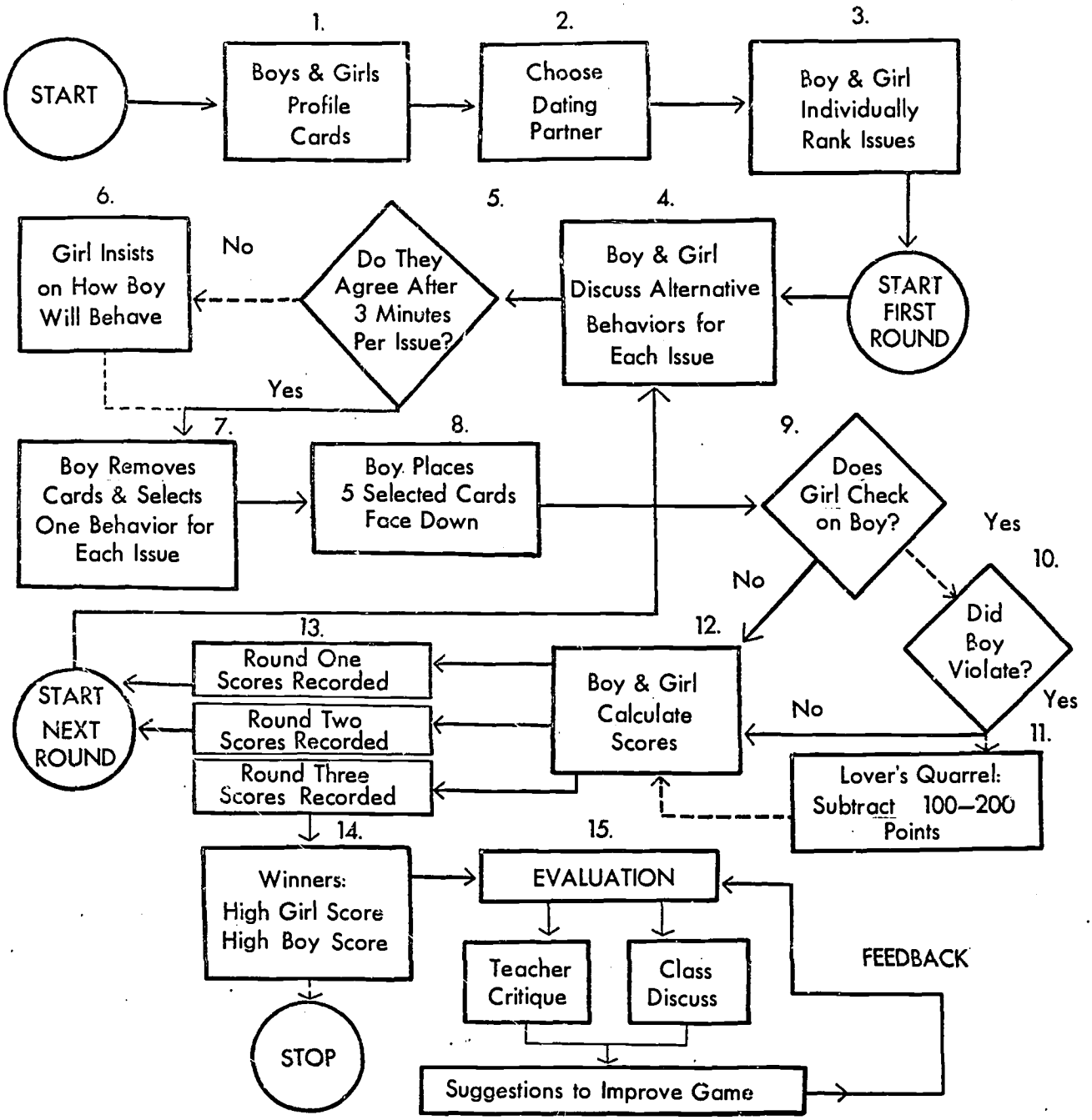

FIGURE 3. FLOW—CHART OF DATING GAME PROTOTYPE

8. If the girl does check, and the boy did "cheat" on her (that is, violate an agreement or her insistence), a "lover's quarrel" results. This is represented by subtracting 100 points from the boy's score for each issue on which he was caught.

9. Using the individual score sheets provided, each student then calculates his or her own score for the round and writes this on the blackboard by the name previously recorded.

The students are instructed at the start that competition in the game is among the girls and among the boys. It is not between dating partners. The couple's goal is for each partner to get the greatest number of points possible for each issue. The girl's score is determined by how the boy behaves, that is, by which issue alternative he chooses. The boy's score is likewise determined by how he behaves, but with the additional possibility of penalties that he may receive from being caught cheating. Note that in another playing of the game, the girl's and boy's roles can be exchanged so that it is the girl who "behaves" and the boy who "checks."

Developing a scoring system for the game presented an interesting challenge. This is actually the only aspect of simulation game design in which any mathematics may be required (unless, of course, certain statistics are part of the game). For the learning purposes of The Dating Game, it was necessary that scores reflect a maximizing effect of rational exchange strategies (i.e., that the maximum number of points shared be achieved largely by compromise). As is the case with similar simulation games, The Dating Game scores (points awarded) differ from issue to issue depending upon their assigned importance. There are, however, some unique features of The Dating Game:

1. Each player evaluates the issues according to personal preference rather than having the relative importance of these issues given or assigned by lot (this adds considerable to the realism and interest of the game).

2. The scoring system (point spectrum) for each player on each issue depends on the rank in importance in which it was placed (this leads to great variety in the game strategies--there are 25 possible combinations of rankings by the two players on each issue).

3. For issues ranked lower in importance by a player the mean of possible scores is greater and the variance of possible scores is smaller (thus, a player who compromises on an issue unimportant to him is losing fewer points than his partner, who ranked the issue higher, would lose if he--the partner--gave in).

The result of this scoring system, therefore, is that a player who concedes on an unimportant issue loses less relative to the reward of his partner who ranked the same issue higher in importance. In practice both players of a "couple" can maximize their scores by agreeing on alternatives for each issue which are extreme or moderate depending upon the degree of disparity of their two rankings.

The writer was totally unprepared, albeit gratified, with how quickly and with what enthusiasm students caught on to this game. The pre-test was performed on eight couples who were attending a high school science camp session at Florida State University. Granted that these were high ability students, their responses were unusually penetrating, and their post-game discussion would have warmed the heart of Peter Blau by their very real insights into his theory. The first round of the game appeared to be taken up with simply learning the instructions and techniques of game play. In the second round, the initial feedback scores often resulted in players' attempts at different strategies (some causing increased conflict and others, mutual profit). By the end of the third round, the majority of the players had learned winning strategies.

From the pre-test, the writer learned that the game could fairly easily be made self-scoring where initially it was planned that the teacher and/or several students be assigned the rather dreary job of scorekeepers. Furthermore, the consensus on suggestions with regard to improving the game was invaluable in pointing out just what parts of the game should remain rough-edged (so that students would indeed "jump on them" and thus open a discussion area), plus what parts were simply annoying or actually incorrect in the students' experiences and thus required polish or simply omission.

A much more manageable version of the game was next presented to a graduate class composed primarily of teachers enrolled in a summer seminar on curriculum development. Feedback from this game session resulted in ironing out further wrinkles of the system from a more sophisticated instructor perspective. The game was field-tested subsequently on an actual target population: thirty-two students enrolled in an undergraduate sociology course in marriage and the family. Evaluation results of this first field-test, to be noted in the following section, were highly encouraging. Students not only displayed a great deal of overt interest in the game technique itself but also a considerable amount of inquiry behavior into the content subject which, prior to the game, had evoked little discussion.

At this point the simulation game designer can only say "I've tried it out, and it seemed to work well on the particular students who've played." Any substantive validity, of course, would depend on rigorous experimental analysis. One final suggestion with regard to first attempts at a simulation game development: generally it is helpful to read through and/or play with your students some of the published simulation games. Even though the polish of such games may give the novice game designer some self-doubts, today's students are not easily overimpressed and, given any encouragement, can and will offer some sound criticisms and improvements of game and model. As Garvey noted ". . . it is unlikely that a model is ever completely satisfactory" (1965:17). It is also good practice, in first developing a simulation game, to begin with a relatively simple process for simulation which can be elaborated after some experience is gained. Once any teacher has gone through these steps with a social process--has designed a workable game--it is a sure guarantee that this teacher will understand the most intrinsic features of its structure and operation. It is equally predictable that the developer of any such game will, in the process of design and testing,

think of a number of possible variations on the basic game model.

With regard to The Dating Game, for example, teachers may modify the simulation both in complexity and in content. The basic exchange strategy, however, should remain constant. Simplification can be achieved by structuring the matching process and elaborating the scoring principles: for example, one variation of the game, developed by the writer in terms of a Teacher-Student Game, was played by first-graders using tokens and picture designated issues. Numerous variations have been suggested as to content: the boys and girls can exchange roles; they can play "blind date" or "pick-up" with randomly drawn profile cards; they can play with extremely mis-matched profile cards; they can play according to dating standards of 100 years in the past or of 100 years in the future; similarly, they can play as members of other cultures where dating and mate selection standards differ from those in the United States. A more sophisticated version of the game could be played as a "compatibility" exercise in which players actually fill in their own alternative behaviors to the issues. There appear to be numerous possibilities, and teachers and students certainly will be able to devise more.

A question, always uppermost in the minds of educators, still has not been answered: how can learning in simulation games be evaluated?; or how do these games compare, in learning effectiveness, with more conventional classroom exercises?

EFFECTIVENESS OF EDUCATIONAL SIMULATIONS

Repeatedly it has been asserted in this paper that simulation games generate in players a high level of motivation, interest, attention, excitement, curiosity, and--it should be added--noise. But the proof of the pudding is, of course, what and how much students actually learn from playing these games. Here we

can look first at ongoing research efforts to determine the answers to these questions, and then at the evaluation techniques utilized with the writer's Dating Game.

Evaluations of learning in simulation games were reported as early as 1959. The collection of articles edited by Boocock and Schild (1968) as well as the book by Raser (1969) do quite adequate jobs in reviewing such research to date. It is easily possible to select from these findings (which contain hundreds of plaudits of the simulation technique) convincing evidence that simulation games are "the" answer to modern educational needs. The truth is--as Boocock and Raser also point out--that, thus far, evaluation research reports are inconclusive and somewhat contradictory. The following excerpts, taken from the many available, should illustrate this point.

Boocock (see Boocock and Schild, 1968:122, 130), reporting on the findings of her doctoral dissertation, concludes that " . . . a good deal of learning--and several different kinds of learning--can occur in simulation games of this sort." Playing the Life Career Game, for example, " . . . produced a clear increase in the amount of specific career information these students possessed," and "The kind of intellectual learning that occurred in the legislative game was in the form of a tendency toward a more realistic view of the pressures on legislators which prevent their acting solely on 'principle'." Baker (Boocock and Schild, 1968:142), comparing eighth grade students taught history by a simulation game with other students taught by conventional techniques, likewise concludes: "The simulation technique, which represents a break from currently accepted classroom procedures, is a potentially more efficient means of communicating historical facts, concepts, and attitudes to children at this age level."

On the other hand, evidence gathered by the Project SIMILE team at the Western Behavioral Sciences Institute showed that even though student involvement and

learning-motivation increasing during the play of a game, they dropped to pre-game levels a few days later (Raser, 1969:136n). Then there is Cherryholmes' report which reviews the findings of six major educational simulation studies, involving five different games (see Raser, 1969:136n). According to Cherryholmes, comparing simulation with more conventional classroom activities, the only "hard" evidence in favor of simulation games is with regard to the subject "interest" they arouse. Finally, the results from a relatively sophisticated experiment at Northwestern University, comparing the "case study" method and the Inter-Nation Simulation (INS), revealed that, with respect to learning, there was no significant difference between the two methods (see Raser, 1969:64n).

The most fascinating fact is that despite the somewhat meager empirical evidence as to the comparative learning value of simulation games, there is, as Raser notes (1969:131), almost universal enthusiasm for them. There are several solid reasons for this undiminished enthusiasm. First, the evaluatory research itself is questionable. Some of the hypotheses are notably unrealistic; for example, why should one technique teach more than the sum of "conventional classroom exercises?" Pedagogical methods have traditionally been difficult to evaluate; and simulation games, probably because of their research interest, have at least generated more investigative activity than such methods as role-play and sociodrama. Also, most of the evaluation evidence begins and ends with the playing of a simulation game as given rather than, as stressed here, with the learning that takes place through the construction and/or re-design of a simulation. The work of any number of writers (Raser, 1969:131; Cherryholmes, 1966:7; Boocock and Schild, 1968:259; Garvey, 1965:18) suggests that building games is a more powerful learning experience than merely participating in them. Furthermore, along the same line, there is the distinct possibility that evaluators have not

been asking the right questions. If, as has been suggested earlier, the main purposes of social simulation games are to help students understand social structure and to conceptualize system relationships, this is a quite different slice of pie than the usual memorization of concrete "facts." As Raser (1969:133) declares: "No wonder we have not been able to measure what gaming teaches . . . the tools do not exist!"

Finally, it cannot be ignored that simulation games indisputably do increase students' interest and generate motivation. Current educational theorists are questioning present instructional techniques on this very score--interest, relevance, and motivation. As mentioned earlier, simulation games are singularly appropriate for the new action-orientation in education: the "inquiry technique" and "depth study plan." Jerome Bruner, the most eloquent spokesman for these techniques, believes that "The development of an understanding of the heuristics of discovery, that is learning how to learn, comes only through the learner's being allowed to interact with problems in actual problem-solving situations" (Frost and Rowland, 1969:171). Such is truly the essence of gaming--a process of "learning to learn," of developing skills that increase ability to learn new facts and skills (Raser, 1969:115).

Evaluations of the writer's Dating Game certainly corroborate the above discussion. Evidence from classroom feedback, several personal interviews, an open-ended student questionnaire, and a teacher evaluation questionnaire was convincing (albeit subjective) that the players were interested in learning the subject matter and that they had indeed garnered the major points of the simulation. A number of students, in both the high school and the college test groups, came close to quoting Peter Blau's theory (without any previous exposure to it) when asked to compare the game with real-life dating. For example, one high school student stated:

> In real life dating, if one partner always insists on having his way, the relationship either
>
> a. falls apart, if neither can be dominated;
>
> b. if one can be dominated, he will be;
>
> c. nothing happens--it might not matter enough.
>
> The game shows it works better to find out what you each need and then give in some.

A college male, in answer to the question, "What do you see as the purpose of this game?" wrote:

> To try and evaluate the give-and-take considerations involved in a relationship. More specifically to note the amount of decisions that are made by the male after a decision has been arrived at in which both partners come to a mutual agreement.

One high school boy simply said he was glad " . . . to talk about things like this with a girl that'd never really be talked out on a real date."

With regard to statistical evidence of learning, score improvement over the three rounds of play was observed in all game trials. Because of the way that The Dating Game scoring scales were constructed, one measure of the extent of good strategy is simply the sum of the scores of the two partners for a given round of play.

Following Schild (Boocock and Schild, 1968:147-149), the development of rational exchange also can be measured by means of a statistical test. Good strategy (resulting in optimum scores by both partners) requires, it is recalled, that the behavior chosen for a given issue be more or less favorable to the girl depending upon the difference between her ranking of the importance of the issue and that of her partner. The extent of good strategy--that is, rational exchange--can be measured by the statistical association of these two ordinal scales: (1) behavior choices and (2) girl-boy rank differences. Schild used gamma as the measure of association. Reporting gammas which increased over each round and

which showed relatively high positive associations between his two orderings at the end of the third round, he concluded that the data demonstrated the emergence of rational exchange. Change in strategies, with regard to adaptation to a partner's behavior, was likewise tested and demonstrated that

> . . . not only did the players tend to adapt to the partner's behavior but also that when such mutual adjustment took place it was mainly in the direction indicated by the general structure of the game--towards a mutually satisfactory arrangement, with reciprocal concessions (Boocock and Schild, 1968:149).

Such data as these offer empirical evidence that players have learned the game--that is, that their behavior had changed in the game process. Additional testing methods could be developed in the form of before-after subject content tests and/or before-after attitude scales.

The writer, in teaching a marriage and family relationships course, plans to incorporate a pre- and post-game test to measure transfer of strategy learning from one game to another. Early in the course, the students will play the Academic Game Associates' (AGA) Ghetto Game. Three other simulation games will be played during the course. At the end of the course, during a final evaluation period, the students will play a post-test game, Economic System (also an AGA game). The Ghetto Game and the Economic System Game include quite different contents, but involve very similar playing strategies ("maximizing satisfaction points"). A comparison of relative outputs from the pre- to the post-test should give a concrete indication of whether the student has learned, by means of the course, some decision-making strategies which he can generalize over several content areas. Of course, it is still another question, as Schild points out (Boocock and Schild, 1968:151), as to whether such strategies are further generalized to real-life situations. Indications of cross-game generalization, however, should lead one step in that direction.

Numerical scores, as discussed above, offer perhaps the most straightforward way to communicate a student's learning progress. Most teachers, however, can be well aware of their students' grasp of the material in post-game class discussions even without the aid of such scores. The importance of this discussion reinforcement subsequent to a game session cannot be overly stressed; this is a time for student learning as well as for teacher evaluation.

This section on simulation game evaluation has been concerned essentially with the general question of validity and, more specifically, of the validity of games as a method of teaching. Raser (1969:144) takes the position that it is meaningless to speak of validity except in terms of particular goals; that is, that a simulation or game which is highly valid for one purpose may be quite invalid for another (1969:144). In the concluding section of this paper, it will be emphasized that the technique of games, adapted to simulations of the social processes of marriage and family relationships, possesses a unique potential in terms of the goals of family life education.

CONCLUSION: IMPLICATIONS FOR FAMILY LIFE EDUCATION

British humorist Stephen Potter asserts that the most devastating all-purpose rejoinder to any long argument is the phrase: "Yes, but not in the South." This comment "with slight adjustments," according to Potter, will do for any argument about any place, any person, or any idea. "It is an impossible comment to answer." Being somewhat familiar with Potter's type of "Gamesmanship," this writer would like to take the initiative before there can be any comment with regard to simulation games such as: "Yes, but not in family life education." Actually the use of simulation game techniques in family life education has permeated this entire paper, but the method can also be related explicitly to the stated goals of the family life field.

G. A. Christensen (1958), in a study of school and college family life teachers, listed 15 possible goals for family education and found that his respondents most frequently chose: first, "to assist the student in developing an understanding of the relationships in modern marriage, and to help him understand himself in relationship to the other members of his family;" second, "self-understanding in general;" and third, "scientific knowledge about the family." As has been underlined in this paper, writers on simulation games note that one of the major values of scientific gaming is in enabling students to gain insights into complex relationships.[6] With respect to self-understanding, Boocock has presented evidence that simulation games have a measurable effect on role image, on empathy, and on feelings of efficacy.[7] Simulation games, as reviewed in the previous section on evaluation, also can be a useful aid in the third of the goals listed above: content knowledge about the family. There is considerable evidence that in the process of playing a game a student learns not only the rules of the game, but, in the further process of discussing and evaluating, he learns also how the game model works and, thus, a considerable amount of content information about the real-life phenomena simulated in the game.

This paper does not intend to give the impression that all aspects of the simulation game technique are positive. Some strong proponents of the method are very quick to point out several disadvantages of simulation. Most frequently men-

[6]This, in essence, is the systems approach which the game designer attempts to simulate. Simulation games particularly highlight causal relationships (Boocock and Schild, 1968:62)--the way in which Y's responses are contingent upon X's actions--and it is an understanding of this type of relationship that is so crucial for the student of modern marriage.

[7]Efficacy has been stressed by several writers who hypothesize that by participating in certain simulation games a student's "belief in his control of the environment" can be increased (see for example, Schild, in Boocock and Schild, 1968:99-102). Coleman and Campbell et. al. (1966) have shown such belief to be a major predictor of achievement in school.

tioned, in this respect, is the amount of time required for developing and/or playing a classroom simulation game. Twelker (1969:5), for example, asserts that "more information can be presented in less time by more traditional means of instruction." (Note, however, that he did not say that more learning would take place.) Garvey (1965:12), likewise states: "Simulation demands a great expenditure of energy by both teachers and students." It is also argued that educational games introduce certain changes in the classroom physical format and noise level which would not be approved by some instructors. Teachers might also be suspect of the change in teacher-student relationship involved in the technique. Boocock (Boocock and Schild, 1968:262) states it this way:

> Because the rules are in the game itself, rather than being imposed by the teacher's authority, and because the outcome of the game, not the teacher, decides the winner, control of the class shifts from the teacher to the learning materials themselves--and in a sense ultimately to the students. While this shift in control could lead to a more productive exchange between students and teachers, it could also be very threatening to those (both teachers and students) accustomed to more authoritarian methods of teaching.

This last point--that games are self-judging--appears to be especially important for family life education. The "question of values" heads the list in Richard Kerckhoff's (1964) discussion of issues and problems in need of resolution in family life education. There have been numerous discussions as to the appropriate position a family life teacher should take when value conflicts arise in the classroom. The technique of simulation games obviously offers one answer to what has been a dilemma in the field. In gaming, values are caught, not taught--from the game rules, playing consequences, and peer interaction. The game rules themselves imply structure more than values, just as winning or losing is a function of strategy rather than teacher judgment. When valuations emerge during game play, as inevitably they do with human participants, there is generally a wide range of such values to be considered rather than a particular value stance to be taken by the teacher. In simulation games, just as in the more general

"discovery technique" of education, there is no single "correct answer"--rather, there is a spectrum of possibilities and often more than one winning strategy.[8]

Perhaps the major impetus to this paper is the number of problems in the family life field (including the value issue) to which the technique of simulation games appears applicable. Four of these problems can be stated as follows (Kerckhoff, 1964:903-908): (1) Secondary and undergraduate level courses in marriage and the family attempt to impart information that conceivably will be most useful in the student's future--how can this information be made relevant in the present?; (2) Classroom material in marriage and family courses is more often based on theory than on research--how can this "uneasy relationship of family life education to research" be improved?; (3) Family life educators are often divided between those who are "subject-oriented" and those who are "student-oriented"--Can the approaches be combined?; (4) Critics continue to ask "what is family life education for?"--can better means of evaluation be devised? From the discussion throughout this paper, it can be observed that the simulation game method has something to say to each of these issues.

1. Relevancy: Simulation games can be structured so that time is compressed or expanded. Students can play a marriage and family game that simulates processes taking one year or thirty years of their life cycles. Moreover, in practicing strategies, making decisions, confronting consequences, and obtaining immediate feedback, students can experience <u>future</u> role activities more effectively than from a book or lecture. Simulations afford the student a laboratory experience in the social scientific realm akin to that traditionally supported in the physical sciences.

2. Theoretical versus research-based content: The close linkage of theory-research-teaching with simulation games has been remarked on several times

[8]Some critics may resist the fact that "games present the world as it <u>is</u>, rather than as it ought to be" (Boocock and Schild, 1968:262). Family life educators, who have long attempted to give their students a more realistic as well as broadened perspective on marriage and the family, however, predictably will not be in that number. Furthermore, the critique period after a game session presents an excellent opportunity for students to discuss alternatives (including utopian) to existing marriage and family structures and/or processes.

in this paper. Such experimental games as Jay Haley's (1962) "Coalition Experiment" and Murray Straus' (1965) "SIMFAM" attest to the linkage of games and family research. The writer's "Dating Game" is an example of the linkage between theory and family life teaching. Utilizing this technique, with all its implications, the content of family life courses not only could be based both on theory and on research, but also students and teachers alike (through improving an existing model, designing a game, making observations on player interaction) could experience the reciprocal relationship of research and theory. As Richard Snyder (Guetzkow, et. al., 1963:4) observes: "Teaching and research simulation activities ought to feed each other."

3. Subject versus student orientation: This issue revolves around the different approaches, to the family course, taken by teachers who see their main purpose as presenting specific categories of information from teachers who base their course primarily on the needs and interests of their current students. Simulation games seem to offer one possible rapprochement of these viewpoints. In the same sense that such games are one answer to the students demands for greater relevancy in coursework, so they provide one teaching technique that gives primary consideration to student involvement in this course work. On the other side of the issue, educational games also convey specific information and can be utilized profitably in teaching the complex structure of marriage and family relationships. Few family life educators will choose to teach their entire course by means of simulation games--neither would they teach solely by role play, or case studies, or films. A number of teachers, however, irrespective of their educational emphases, may find this to be one of the most powerful resources or tools to add to their professional kits.

4. Evaluation: This is an issue that has always plagued the family life educator. The general problems of educational evaluation have been discussed in a previous section of this paper. The very structured nature of simulation games, plus the very active interest of researchers in their development and validity, gives the technique greater empirical support than the majority of teaching devices currently employed in family life education. One further point should be stressed here--simulation game participation can be observed to alter behavior and not simply verbal intentions or attitudes. The majority of evaluation reports in the family life field have utilized evidence from the attitude changes achieved in the marriage and family course. Yet the most basic question of such evaluation studies is "Does family life education improve family life?"--not attitudes about family life but behavior in family life roles.

A number of comparative studies (Olson, 1969; Rollins, 1969) raise serious questions as to the interchangeability of data from self-report and from behavioral measures.[9] In brief, course evaluations made on the basis of the simulation

[9]In an empirical study of marital interaction, for example, Rollins compared self report retrospective accounts of marital power and SIMFAM behavioral observation measures of marital power. Rollins (1969:5) concludes: "We found very few circumstances in which a relationship existed between self report and behavioral

game technique offer the family life educator an urgently needed alternative or supplement to the traditional attitude scale. Educators should certainly investigate the evaluation potential of the technique if only because gaming has been observed to lessen the social desirability effect. As Straus (1966:33) remarks, "the motivation to present oneself in a favorable light is channeled into task performance" when subjects play the SIMFAM game.

In conclusion, it is emphasized that the technique of simulation games appears highly appropriate to the goals of family life education and shows unique potential in resolving some of the problems that have long beset the family life field. In presenting a case for this method of teaching/learning in family life education, the writer, nonetheless, hopes to avoid the predicament of the early physicist who believed so strongly in Boyle's law that he could never accept Charles' law. Simulation gaming is simply one classroom technique--a technique particularly focused on teaching/learning strategies. The method is not intended as a substitute for, but as a complement of, traditional as well as innovative educational materials. The game sessions themselves need to be reinforced by teacher and by text. The latter, however, can now be utilized, and more appropriately so, as teaching/learning sources. One final warning--an acceptance and use of simulation games involves far more than merely an adaptation to a new classroom gimmick. To become involved in simulation gaming plunges one directly into the most dynamic currents of contemporary educational and sociological theory. It is a very real challenge as well as an exciting activity.

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observational measures of marital power." Especially interesting, is that the only statistically significant correlations in the analysis were all negative: e.g., when wives are high on observed power acceptance (by husband) they report themselves as having lower power and vice versa. One immediate guess as to the reason for this negative correlation is the factor of social desirability. A further guess, with respect to the limited number of significant correlations, is that the two measures were not tapping the same underlying variables.

REFERENCES

Bernard, Jessie. 1965. "Some Current Conceptualizations in the Field of Conflict." American Journal of Sociology 70 (January): 442-454.

Blau, Peter M. 1964. Exchange and Power in Social Life. New York: Wiley.

Boocock, Sarane and J. S. Coleman. 1961 "Games with Simulated Environments in Learning." Sociology of Education 39 (Summer): 215-236.

Boocock, Sarane and E. O. Schild, eds. 1968. Simulation Games in Learning. Beverly Hills, California: Sage.

Burchinal, L. G. 1964. "The Premarital Dyad and Love Involvement." In Handbook of Marriage and the Family, edited by H. T. Christensen. Chicago: Rand McNally.

Cherryholmes, Cleo H. 1966. "Some Current Research on Effectiveness of Educational Simulations: Implications for Alternative Strategies." American Behavioral Scientist 10 (October): 4-7.

Christensen, G. A. 1958. An Analysis of Selected Issues in Family Life Education. Unpublished doctoral dissertation, Michigan State University.

Coleman, James S. 1961. The Adolescent Society. New York: Free Press.

Coleman, J. S. and E. Q. Campbell, et. al. 1966. Equality of Educational Opportunity. Washington, D. C.: U. S. Government Printing Office.

Edwards, John N. 1969. "Familial Behavior as Social Exchange." Journal of Marriage and the Family 31 (August): 518-526.

Frost, J. L. and G. T. Rowland. 1969. Curricula for the Seventies. Boston: Houghton Mifflin.

Gamson, W. A. 1966. SIMSOC: A Manual for Participants. Ann Arbor: Campus Publishers.

Garvey, Dale M. 1965. "Simulation, Role-Playing, and Sociodrama in the Social Studies." The Emporia State Research Studies. The Graduate Publication of the Kansas State Teachers College, Emporia.

Guetzkow, Harold, ed. 1962. Simulation in Social Science. Englewood Cliffs: Prentice-Hall.

Guetzkow, Harold et. al. 1963. Simulation in International Relations: Developments for Research and Teaching. Englewood Cliffs: Prentice-Hall.

Haley, Jay. 1962. "Family Experiments: A New Type of Experimentation." Family Process 1:265-293.

Harris, T. A. 1969. I'm OK--You're OK: A Practical Guide to Transactional Analysis. New York: Harper and Row.

Huizinga, Johan. 1950. Homo Ludens. Boston: Beacon Press.

Kerckhoff, Richard K. 1964. "Family Life Education in America." In Handbook of Marriage and the Family, edited by H. T. Christensen. Chicago: Rand McNally.

Kirkendall, L. A. 1961. Premarital Intercourse and Interpersonal Relationships. New York: Matrix House.

Man: A Course of Study. 1969. Cambridge, Massachusetts: Education Development Center, Inc.

Olson, D. H. 1969. "The Measurement of Power Using Self-Report and Behavioral Methods." Journal of Marriage and the Family 31 (August): 545-550.

Osmond, Marie W. 1969a "COM-PAC: A Two-Person Communication Game." Mimeographed paper.

_____. 1969b. "The Exchange Model: A Transactional Approach to Social Organization." Mimeographed paper.

Raser, John R. 1969. Simulation and Society. Boston: Allyn and Bacon.

Rollins, B. C. 1969. "The Integration of Laboratory and Field Methods in the Study of Marital Interaction." Paper presented at the annual meeting of the National Council on Family Relations, Washington, D. C. (October).

Shubik, Martin. 1954. Readings in Game Theory and Political Behavior. New York: Doubleday.

Simulation Games. 1969. Wayne, New Jersey: Western Publishing Company.

Straus, M. A. 1965. "SIMFAM: A Technique for Direct Observational Measurement of Family Behavior." Mimeographed paper.

_____. 1966. "Laboratory Experimental Studies of Family Roles." Indian Journal of Social Research 7 (April): 25-36.

Twelker, Paul A. 1969. "Designing Simulation Systems." Paper presented at the annual meeting of the American Education Research Association, Los Angeles, California.

Waller, W. and R. Hill. 1951. The Family: A Dynamic Interpretation. New York: Holt, Rinehart and Winston.

Youngers, J. C. and J. F. Aceti. 1969. Simulation Games and Activities for Social Studies. Dansville, New York: Instructor Publications.