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ABSTRACT

Student interaction patterns in eight elementary school classrooms were examined to investigate (1) the relationship between interaction patterns and sociometric indicators of friends, (2) the process by which children become stratified, and (3) the structure of peer relationships in classrooms. Chapter 1, the introduction, briefly discusses the central concerns of the study. Chapter 2 presents a model of the stratification process and discusses a variety of factors which must be taken into account for understanding this process. Chapter 3 describes the methods employed in the study and contains descriptions of the children and the classrooms studied. Chapters 4 through 7 present the results of the study. Chapter 4 concerns the relationship between sociometric choices and actual interaction patterns; chapter 5 looks at the structure of peer groups; chapter 6 examines the relationship of reading groups to interaction patterns; and chapter 7 examines the cross-sex interaction patterns. Each of these four chapters starts with a review of the relevant literature. Variations among the classrooms along certain relevant dimensions are then described. These variations are related to critical factors which lead to the variation and explain the particular pattern found in each classroom. The final chapter, chapter 8, presents a summation of the findings, an elaboration of the model proposed in chapter 2, implications for classroom practice, and suggestions for further research. (Author/RH)

CLASSROOM ACTIVITY STRUCTURES AND PATTERNS OF PEER ASSOCIATIONS

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Chapter I

INTRODUCTION

Imagine two elementary school classrooms. In one, students interact primarily with others of the same sex, social class, racial or ethnic background, and ability level. There is a clear hierarchy of status among the students, one which parallels the ability levels to which children are assigned by the school. A number of rigid cliques form early in the school year and change infrequently. A relatively large number of students are isolated, or at least peripheral to the student peer group. Thus the basic social structure of the classroom reflects the combination of students' external group membership (sex, social class, and race) and school designated group membership (ability level and grade level in multi-graded classrooms). These characteristics become the basis of status, interaction patterns, and, indeed, social identity in the classroom.

Students' experiences in the classroom vary depending on their group memberships. Part of this variation stems from those with whom they interact, that is, primarily with others of their own "kind." Some of the variation stems from the different types of activities students of different ability levels engage in or are assigned to do. Some of the variation flows from differential treatment by the teacher. The teacher tends to favor the higher status students, bestowing upon them the greatest share of tangible rewards

(highly valued privileges), symbolic rewards (grades), and intrinsic rewards (a positive affective relationship and trust). Students are rewarded only for individual achievements and primarily in areas defined as important by the teacher or the school system--usually for academic achievement and compliant behavior. Children learn to work independently (non-cooperatively) while remaining dependent on the teacher for direction and rewards.

In the second classroom students develop several close friendships while continuing to interact with a broad range of others. There are no isolated cliques and few isolated students in this classroom. Characteristics such as sex, race, ethnic background, social class, and ability level do not impede interaction. This situation contrasts sharply with the first classroom where such characteristics are the basis of a caste system whose boundaries can be crossed only with difficulty.

Each student in the second classroom is seen by other students, by the teacher, and by themselves, as a unique individual with valued qualities. Each student has his or her own set of needs and desires. All children are encouraged to become independent, self-directed individuals who know how to cooperate with others to achieve their own goals as well as group goals.

Of course these classrooms are ideal types and no classrooms will ever look exactly like either one. Yet, the extent to which a classroom resembles one or the other type

can have important consequences for the students. It can affect students' acquisition of academic skills, the degree to which they are independent, self-directed individuals, and their self-concepts. Furthermore, it can affect the development of various social skills including cooperative behavior, interaction with adults, and modes of interaction with others different from themselves. Finally it can have an impact on students' future educational careers and hence possibly have major implications for the direction of students' lives.

This report focuses on the peer network. Friendship groups and patterns of interaction within peer groups can have important consequences for various school and classroom outcomes. The character of this network may have considerable impact on students' values, attitudes, and behavior, and it can affect a student's adjustment to the formal learning demands in a school by mediating teacher expectations and creating norms concerning appropriate classroom behavior and academic performance (Glidewell et al., 1966; Hallinan, 1978; Schmuck, 1962; Schmuck and Schmuck, 1975). McCandless (1969), in a review of socialization literature, claims that "the peer group is, second only to the parents (including the siblings) in socializing the child. It is probably more powerful in socialization than teachers."

The informal peer networks which develop in classrooms can be quite important in transmitting many types of

information. For example, information regarding what academic work is supposed to be done, how to do it, and its "proper" format often is supplied by peer networks. Access to a variety of resources in the classroom depends on the child's position in the network, or indeed, if a child is connected to a network at all.

Summary of the Study

This study examines student interaction patterns in eight elementary school classrooms. Three major goals guide this research. The first goal is a methodological one. Most previous research on peer networks have used sociometric techniques to measure the social structure of the peer group. Friendship choices may indicate patterns of status but may not accurately reflect interaction patterns in the classroom. A comparison of friendship choices, as indicated on a sociometric instrument, with actual interaction patterns should disclose the reciprocal relationship between daily attachments and the status system that develops in a classroom.

The second goal is to analyze the classroom factors which perpetuate external group divisions as well as those which create new division based on achievement. To explore these issues I focus on a single external characteristic, sex, and a single classroom created characteristic, reading group membership.

The third goal is to use student interactions as a basis for describing patterns of peer networks and then to

examine the classroom factors which affect, or possibly create, those patterns.

Achieving these goals requires a descriptive phase in which the relevant patterns of interaction and friendship choices are examined, and an analytic phase in which variations in patterns are related to various classroom characteristics. The structure of this report will parallel these two phases. In the following chapters I will describe:

1) The relationship between friendship choices as indicated on a sociometric instrument and the actual interaction patterns observed in everyday classroom sessions.

2) The extent to which students interact with others of different sex, different reading group, and, in multi-graded classrooms, different grade levels; and,

3) The degree to which the peer group, as indicated by interaction patterns, are either centrally structured with several tightknit cliques and relatively high numbers of peripheral students or diffusely structured in which students interact with many others.

Variations in these dimensions of peer networks will be related to variations in the following classroom factors:

a) the types of activities students engage in (activity structure)

b) other classroom characteristics (seating arrangement, grade level, single or multi-graded, fixed or open seating, teacher qualities, etc.); and,

c) school factors (the use of cross-classroom reading groups).

The rest of this chapter briefly discusses the central concerns of this study--the relationship between interaction patterns to sociometric indicators of friends, the process by which children become stratified, and the structure of peer relationships in classrooms. Chapter II presents a model of the stratification process and discusses a variety of factors which must be taken into account for understanding this process. Chapter III describes the methods employed in the study and contains descriptions of the children and the classrooms studied. Chapters IV-VII present the results of the study. Chapter IV concerns the relationship between sociometric choices and actual interaction patterns; Chapter V looks at the structure of peer group; Chapter VI examines the relationship of reading groups to interaction patterns; and Chapter VII examines the cross-sex interaction patterns. The format of each of these four chapters is basically identical. Each starts with a review of the relevant literature. Variations among the classrooms along certain relevant dimensions are then described. These variations are related to critical factors which lead to the variation and explain the particular pattern found in each classroom.

The final chapter, Chapter VIII, presents a summation of the findings, an elaboration of the model proposed in

Chapter II, implications for classroom practice, and suggestions for further research.

The Relationship of Interaction Patterns and Friendship Choices

The foregoing discussion clearly indicates that the peer group plays an important role in the life of children in classrooms. To study that role, accurate descriptions of the structure of peer groups in classrooms and an understanding of the factors that create various structures are needed. Most studies have relied on sociometric instruments as a means of obtaining descriptions of the social structure of the peer group. Typically, children are asked to indicate two classmates they preferred to have sit near them,[1] five friends with whom they would like to study (Gronlund, 1959), who their best friends are, or any number of other such questions ascertaining who is liked, not liked, and who are seen as good work partners. The pattern of responses to these choices are used to describe the sociometric structure of classroom. Some children receive many choices by other children while some receive few or no choices. Status hierarchies can be discerned and cliques found. The responses are often correlated with other questions, attributes of the children, and, more rarely, with various student behaviors. Few studies have compared choices with actual interaction patterns. Yet the difference between the two is critical. The interactions

[1] This is the question asked by the originator of the sociometric test, Jacob L. Moreno (1934).

that students have are an important part of the process by which the peer group affects its members. The responses of others provides direct feedback about an individuals' behavior and ideas. These responses can promote feelings of acceptance or rejection. Indeed, the symbolic interaction perspective of Cooley (1902) and Mead (1934) emphasizes the importance of interaction in the formation and maintenance of one's self-concept. Furthermore, access to information and other resources often requires interaction among peers. Sociometric instruments may be good indicators of status, but they may not be particularly good indicators of peer networks. In this study I compare children's sociometric choices with their actual interaction patterns. I use these interaction patterns as the measure of social structure and as a basis for examining the central concerns of this study--the process of stratification and the patterns of peer networks.

Stratification in the Classroom

To the extent that students' interactions in the classroom are restricted to others of their own sex, race and social class, societal patterns of social divisions are reinforced. Most children spend six hours a day, 180 days a year for twelve years in classrooms. The classroom reinforcement of external status characteristics therefore is not trivial.

Schools may do more than simply reinforce external patterns by passively allowing them to continue. They may

actively (though perhaps nonconsciously) encourage such patterns and, furthermore, provide students with different levels of resources based on their group membership. Bowles and Gintis (1976) see such differentiation of students along class and race lines as one of the primary functions of schooling in America.

Early in their school careers most children are grouped by some measure of ability. In most schools children in primary grades are grouped for reading instruction. In some schools this is accomplished by creating homogeneous classes--the best readers in one class and the worst in another. In classrooms with heterogeneous populations, children are usually divided into reading achievement groups within each classroom. (In many of the "homogeneously" grouped classes children also are internally grouped for reading instruction.) The teacher takes turns working with each group and assigns different work depending on the reading groups level. Grouping for math instruction also occurs in many schools and classrooms, though less frequently than for reading.

Actual ability is often less important for these groupings than are such factors as behavioral styles and reputation (see Rist, 1970, and Eder, 1981, for example). Social class, race, and ethnic identity may have as much, if not more, to do with the actual groupings than does ability. Upward mobility is difficult and rare for children

placed in low ranked groups (Rist, 1970; Grant and Rothenberg, 1981).

This grouping procedure is the first step in a process of stratification which eventually leads to children being tracked for different careers and different positions in society. Children begin to learn different ways of learning, behaving, and interacting in these groups (Grant and Rothenberg, 1981). To the extent that peer interaction patterns reflect the relevant norms for each of these groups, children are learning the roles appropriate to their track and the "proper" relationship among individuals of differing levels. When peer interaction patterns are unrelated to levels of academic achievement and the sex, race, and social class backgrounds of the children, students have an opportunity to learn to interact with others different from themselves. To paraphrase John Dewey's comment about the relationship between democracy and classroom life, if we want children to learn to live in a pluralistic society in which members of different groups interact with mutual respect, children must live such a life in their classrooms.

Peer Network Structure

Based on studies of the sociometric structure of classrooms, several types of structures have been described (Schmuck and Schmuck, 1975). In centrally structured classrooms several children, the "stars," receive high numbers of sociometric choices, while other children, the

"isolates," receive few if any choices. Typically such classrooms contain several tightknit cliques. Diffusely structured classrooms have a more equal distribution of sociometric choices and few, if any, distinct subgroups.

In this study, I use interaction patterns as a basis for describing peer networks. I examine the relationship of various classroom characteristics, particularly activity structures, to variations in the types of peer networks which occurred in the classrooms.

The type of network which exists in a classroom, and the particular children who fit in the network, is quite important for the experiences that children have. One area where this may be critical is in the flow of information. Teachers often give instructions, assign work, and explain material to the class as a whole. My experience and observations in classrooms indicate that usually only some in the group hears or understands the teacher. Much of this information is transmitted by some students to others. In a classroom with a diffuse pattern of interaction, most children are likely to eventually get the information. In centrally structured classrooms some children will inevitably, and frequently, be left out of the chain of information transmission. Furthermore, certain children tend to act as mediators between the teacher and other children (Grant, 1981). In centrally structured classrooms some children are disconnected from these mediators, while

other children have access to them whenever they want or need it.

Clearly, the characteristics of peer networks and the stratification process are related to each other. To the extent that the social structure of the classroom is based on cliques of students who are the same sex and reading group, differences among children based on their group memberships are reinforced. To the extent that students interact with many others and with others of the opposite sex and from different ability groups, the stratification process is weakened. Indeed, the form that a peer network takes may be one of the central ways in which the stratification process operates. A centrally structured peer network lends itself to the development, or perpetuation, of a status hierarchy. Certain subgroups and individuals are likely to become elites with more status, prestige and power than other subgroups and individuals. These elites and non-elites begin to learn the roles appropriate to their positions. This includes learning the proper norms of behavior between different status groups. One of the more important such norms is that interaction between status levels should be limited.[2]

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[2].For the rest of this report the term "stratification pattern" refers to the degree to which interaction occurs among children of the same sex and reading group. "Network patterns" and "pattern of peer networks" will refer to the patterns of cliques, isolates, stars, or diffuseness that exist in classrooms as determined by who children interact with. The terms "social structure" and "interaction patterns" will be used interchangeably and will refer to the combination of stratification patterns and network patterns.

The primary foci of this study are student interaction patterns and the classroom characteristics which affect those patterns. The exploration of these issues serves two purposes. First, it meets methodological and theoretical concerns. The social structure of classroom peer groups is usually studied by means of sociometric questionnaires. Behavior patterns are examined less frequently. The relationship between these two methods is unclear. This study will compare the two. The process by which various classroom characteristics affect the social structure of the peer group is of theoretical interest. The literature on attraction and friendship suggests that there are several key variables which affect the establishment of relationships between people. These process variables are examined here and reformulated based on the findings of this study.

The second purpose of this research is a practical one. The findings presented here hopefully will provide useful information for teachers and other educational planners. The social ramifications of various classroom practices are examined. The specific effects on student relationships of classroom grouping procedures, types of activities, seating arrangements, and certain classroom rules are described. The use of this information should help educators make plans for classrooms which will promote the social growth for all students.

Chapter II

INTERACTION PATTERNS

Given a room full of strangers, what are the factors which influence who is likely to interact with whom? What factors make continued interaction likely? What factors make for a continuing relationship based on trust and respect, or on ignorance and fear? The exploration of these issues is the focus of this chapter. A general discussion of these issues will set the stage for a model linking certain variables, such as opportunities for interaction and common interests on which interactions are based, which affect the interaction patterns of students in their classrooms. Then, various classroom characteristics, such as activity structures, seating arrangement, and rules, which affect these variables will be discussed.

If our room full of strangers is made up of individuals from two or more groups who are visibly different from each other in ways socially defined as important (race and sex differences for example), we can expect similar types of people to seek each other out for interaction. This will be even more likely if: 1) there are major status differences between the groups, or 2) there is hostility between members of the groups. If one or both of the above conditions are met and if members of one group are in a clear minority in the room, those in the minority are extremely likely to seek each other out for interaction. Picture the situation in which, somehow, two pin-strip suited businessmen (each

holding a scotch and soda) find themselves in a room full of pot smoking young people. I can see the two businessmen making a beeline for each other even though they may be complete strangers. Why? Partly for comfort and protection. They are in a situation where the norms of interaction with the young people are probably unknown to them or little practiced, while they have had much practice in interaction with other pin-stripe suited businessmen. They also have learned from experience that other businessmen are likely to share a set of common interests with them, at least in business if nothing else. Their experience tells them that, in fact, they are likely to share many other interests as well. Their lack of previous interaction with the young people combined with their stereotypes of young people, tells them that they are unlikely to have any common interests with the young people. Not only do the business types think it likely that they will have things to talk about with each other, but they also know the appropriate form such a conversation should take. They know <u>how</u> to talk to one another. The perceptions of the young people are likely to mirror that of the businessmen and they, in turn, are likely to avoid contact with the businessmen.

The first phase of interaction, then, is likely to see people who are visibly similar to one another along dimensions socially defined as important, drawn to each other. This initial phase is based on perceived

similarity.[3] People are likely to seek a feeling of comfort, possible protection, or simply the desire to find someone else who shares some common interests (or least complementary interests--someone you can talk with). Having frequently interacted with people similar to us along these dimensions in the past, the norms of interaction with them are well known, while the norms of interaction with those who are "different" may not be known, and fears of acting inappropriately may be high.

As two people continue to interact with each other they may discover one or more bases of common interest, things which are not immediately apparent from visual cues. This is true whether or not they are similar along the dimensions of visible similarity. However, to the extent that similar people are more likely to initiate interactions with each other, they are more likely to discover other common grounds for continued interaction (for a continuing relationship).

During this second phase of interaction, people may discover common interests along a variety of dimensions--hobbies, business interests, people they know in common, an interest in sports, and so forth. People may discover that their personalities are complementary--that they like each other and enjoy interacting with one another. Of course

[3]Cross-sex interaction is a bit more complicated. Cross-sex interaction among strangers may be common in many situations, particularly those designated situations which are part of the mating dating game-parties, singles bars, etc. Even here, we might expect the more comfortable interactions would be same-sex, while cross-sex interaction would take the form of a foray into alien territory.

they may discover that they do not like each other or that they have nothing in common. The important point is that in order for people who do have mutual interests to discover that fact, they have to spend at least some time interacting. No doubt some people require less time for this than others, but the point still stands.

As individuals continue to interact over a period of time, their relationship may reach a third phase. They may discover that they have deeper, underlying commonalities that go beyond visible similarities or shared interests, or even just liking each other. They may find that they share certain basic values or ideals. These are intangible but form the basis of trust and respect. This does not require that two individuals believe exactly the same things or have an identical set of values, only that some values are at least complementary. If nothing else, each must come to feel that the other is trustworthy, this in itself being the shared value. It is the notion that trust is important and that it exists that becomes a shared value and belief. Note that this phase of a relationship does not require that individuals necessarily share common interests as in phase two, or even that they particularly like one another. It only requires that they reach a state where they trust and respect one another. Repeated interaction in a variety of situations is probably necessary for people to discover, confirm (and continually reaffirm) that they share some common values and to establish trust and respect. To the

extent that people do share interests and like each other, they are likely to seek one another out for interaction in a variety of settings and thus more likely to reach phase three.

So far I have been discussing situations in which people have free choice as to who they interact with and how much interaction they have with others. I have also described phase two and phase three of relationships as if they occurred only as people discover mutual interests or common values that already exist. I have argued that people who are similar along certain socially defined dimensions are more likely to initiate interaction with each other and thus are more likely to reach phases two and three of a relationship. But situations exist in which people who may be dissimilar along visible dimensions come together and have continuing interactions with one another. A work group formed to achieve one or more tasks is such a situation. As these people interact it becomes possible for them to discover common interests that they do have. Since they will continue to interact, possibly over a considerable length of time, perhaps years, some in the group may discover that they do share common values and ideals. Since these people continue to interact with each other because of the common task, they may discover that they share common values and develop trust even if they do not share common interests such as hobbies.

In situations where people continue to interact over a period of time, relationships may progress by those involved going beyond simply discovering already existing commonalities. If nothing else, the common task creates a similarity of interest. Moreover, as people work together they may begin to construct a set of common values, at least around the task at hand, and they may begin to build trust.

I do not mean to imply that simply throwing different types of people together for a period of time is sufficient for the development of common interests and trust. That assumption has been one part of a form of contact theory. But the broader contact theory, in its original formulation and in some current reformulations, holds in addition that other factors are required for contact to lead to positive relationships among different types of people. If these factors are not present, contact may lead to an increase in distrust and disharmony. My point is that sustained interaction is a necessary condition if people are to discover mutual interests and values and/or build relationships based on trust and respect.

The central concern of this research project may be restated in light of the preceding discussion: What factors tend to influence children in classrooms to only interact with other children of the same sex and ability group? What factors are responsible for the development of tightknit cliques from which many children are excluded and in which children practice exclusive forms of behavior? What factors

encourage children in classrooms to begin to interact with others of the opposite sex and different ability groups and which allow them the possibility of developing mutual respect and trust? What factors create classrooms in which all (or most all) the children are part of the interaction network thus making it possible for all (or most) of the children to develop healthy relationships with other children? Under what circumstances will the interactions that children have with each other be positive and cooperative rather than hostile and competitive?

The observed behavior of children in their classrooms are the data in this study. The amount and patterns of cross-sex, cross-reading group, and, where appropriate, cross-grade level non-negative interaction will be described for each classroom. The key factors influencing those patterns will be explored. The major findings of this study are a description and analysis of those factors as well as an understanding of the process by which they affect the classroom interaction patterns.

A MODEL OF FACTORS WHICH INFLUENCE FRIENDSHIP AND INTERACTION PATTERNS

Three general factors are usually linked to friendship: opportunity for interaction, similarity of the actors, and, in an organizational setting, the reward structure. These are treated in the literature as relatively independent components. The implicit model which emerges from past research is shown in Figure II-1. I will briefly look at

each component, describing their links to friendship theories as well as their possible effects on interaction patterns. I will then present a revised model which will be useful in exploring the areas of interest in this report.

Opportunity

Much of my earlier discussion on interaction is based on the premise that proximity and opportunity for interaction are necessary conditions for interaction (also see Hartup, 1970). An argument somewhat similar to the one I used linking interaction to respect and trust can be made for this link. From a social exchange perspective, increased interaction is likely to lead to an increase in liking because of the opportunities for the individuals involved to find common interests. This interaction becomes mutually rewarding and the ensuing friendship is more profitable than one in which obstacles to interaction must be overcome (Homans, 1961). Hallinan (1976) compared traditional classrooms, which provide limited opportunities for interaction, and open classrooms, where children have greater opportunities to interact. She found a hierarchical friendship pattern based on popularity in the traditional classrooms and a more uniform distribution of popularity in the open classrooms. Hallinan and Tuma (1978) also speculate that the more opportunity students had to interact, the greater their tendency to become friendlier and to maintain close friendships. However, their data do not measure actual patterns of interaction. They only infer

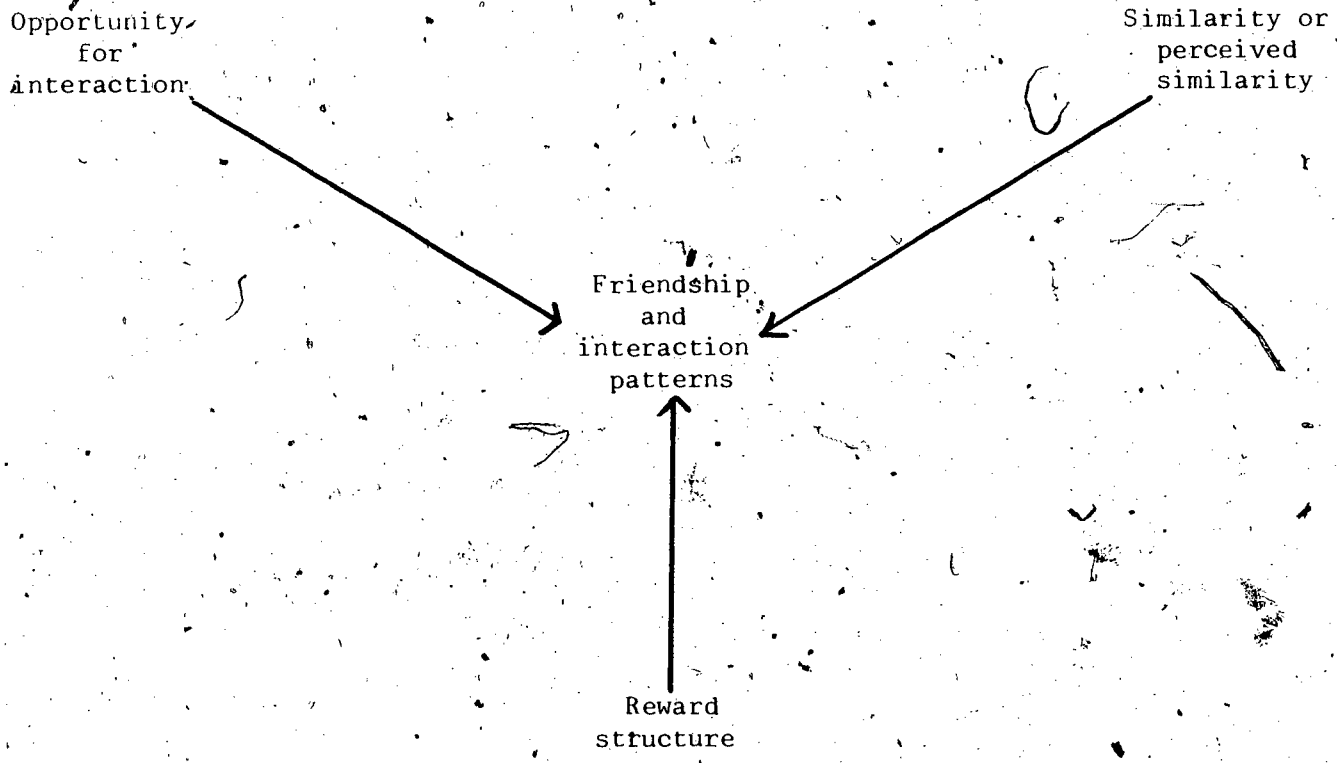
Opportunity for interaction
Similarity or perceived similarity
Friendship and interaction patterns
Reward structure

Figure II-1

interactional differences from their structural index. No one has tested this hypothesis directly.

Similarity

I argued earlier in this chapter that perceived similarity on criteria socially defined as important is likely to lead to at least the initial phase of interaction, if not friendship. The idea that similarity is an important predictor of friendship and liking is well supported by the literature (Hallinan, 1978). Similarity of race and sociometric status of students has been found to be good predictors of friendship choices (e.g., Singleton and Asher, 1977; Shaw, 1973). Hartup (1970), in his review of the literature, reports that virtually all studies find cleavages in interaction based on sex and race for children of all ages.

Perceived similarity may be as important, if not more so, than actual similarity in friendship choices (Davitz, 1955). This is an important point to keep in mind for later discussions in this report. I will be examining factors which are likely to create the perception of similarity and which make such similarities particularly salient as a basis for interaction and friendship.

I already have noted that people often choose to interact with others who are similar to themselves for reasons such as comfort, protection, and the probability of sharing common interests. In a similar vein, Lambert and Taguchi (1956) suggest that for minority children who are in

a majority-dominated classroom, minority status is in itself a threatening situation, and they are likely to seek others of the same minority because these others provide cues which have been associated previously with nurturance and support.

Reward Structures

A characteristic of classrooms which may affect peer interaction and friendship choices is the reward structure. Reward structures which are comparative--those in which rewards are based on a student's performance relative to other students' performances--tend to create a competitive climate and a hierarchical social structure based on achievement (Hallinan, 1978). This is even more likely when rewards in such a system are public. In this way, the reward structure of a classroom may be quite influential in determining the relative status of individuals in the classroom. Status in itself can affect friendship and interaction patterns. High status individuals are likely to attract the esteem and affection of others (Hallinan, 1978). Moreover, a hierarchical social structure may influence friendship choices and interaction patterns by providing a basis for perceived similarity. When students are aware of their position within the social structure of a classroom (and according to Schmuck, 1962, they usually are), perceived status level may rule out friendships with those too far above or below one in the status hierarchy.

Classrooms with non-competitive reward structures tend to have fewer "very popular" students and fewer isolates

than classrooms with competitive reward structures. These groups are less exclusive and have more overlapping members (Hallinan, 1978; King, 1953).

Stendter, et. al. (1951), working with seven year olds, found that a more consolidated, friendly pattern of peer interactions occurred when individual were rewarded for the group product rather than individual products. Phillips and D'Amico (1956) found that fourth graders were more cohesive in experimental groups which were rewarded for cooperation than in the groups rewarded for individual achievement.

Deutsch (1953) tested a set of hypotheses concerning the effects of cooperative and competitive group structures on interaction and the feelings group members are likely to develop toward each other. In cooperative groups, because each person is contributing to a joint outcome, positive feelings among group members are likely to arise. In competitive groups, one person advancing or achieving creates negative feelings in other group members. Similar effects might be expected to occur in classrooms depending on whether the reward structure encourages cooperative or competitive group norms. Recent works by Cohen et.al. (1976), Aronson, et.al. (1975), and Slavin (1978) indicate that cooperative learning situations are necessary for the development and maintenance of equal status relationships and friendships in interracial classroom groups.

A Revised Model

Each component of the model presented in Figure II-1 is seen as relatively independent of the others. Furthermore, this model, and indeed most of the evidence for the relationship of these factors and interaction/friendship, is correlational in nature. This is particularly true for similarity and reward structure. Similarity of individuals is described as being "predictive" of a relationship between those individuals. The quality and pattern of interaction of a particular group is associated with the reward structure. Of course there are theories about the causes of the correlations and associations found. As a model, however, this picture does little more than inform us that these factors are related to interaction patterns and friendship formation. A revised model is presented in Figure II-2. The components of this model are conceptualized differently than in the more traditional model. Furthermore, the relationship among the various elements which affect friendship and interaction patterns is taken into account.

The revised model is based partly on relevant studies reported in the literature, partly on a critique of those studies and a reformulation of their findings, and partly on the research presented in this report. In addition, I have used my "verstehen," my understanding of peer group processes as that understanding has evolved through eight

years as an elementary level classroom teacher in a variety of settings.

I will present only the bones of the model here. It is the skeleton on which the findings of the rest of this report will be draped. The final chapter of this report contains a full elaboration and discussion of this model. The model as it is presented here is intended to be heuristic, pointing the way for this and future research. But the fully elaborated model also can serve as an important guide for classroom practice. However, the model is not a blueprint of changes or how to make changes. Rather it is a model of the factors and their relationships to one another which affect peer interaction patterns. Application of this model will vary depending on a host of situational factors. My intent is to clarify the factors which must be taken into account when constructing programs that do not perpetuate or create social differences and which will provide a healthy environment in which children can grow.

The peer interaction model presented in Figure II-2 is comprised of several process variables. The two primary components--"opportunities for interaction" and "interests"--directly affect the interaction patterns. Both variables are modified by the other factors shown in Figure II-2.

Opportunity for interaction has two elements, "proximity" and "freedom of movement". There are several

levels of proximity that apply here. The fact that schools group children by age means that classrooms contain children of about the same age. Students therefore have little opportunity to interact with older or younger children simply because there are none around them for most of the school day. In schools where classes are tracked by achievement of some measure of ability, children are limited to interaction with others who are similar to them on this measure. Within the classroom, proximity refers to such things as seating arrangements and use of space. A wide variety of seating arrangements can be found in classrooms. Seating arrangements which group children around tables may be particularly powerful in insuring high rates of interaction among those seated together and relatively lower rates with children at other tables. If nothing else, children seated around a table are in constant face to face contact with each other. In addition they form a clearly definable group and one which is often labelled as such by teachers. To the extent that children are seated near others who are similar to them on characteristics such as sex, achievement, and, in multi-graded classrooms, grade level, they will be more likely to interact with those others. Decisions made at a school and classroom level, decisions which children have no part in making, determine which children are spacially close to one another, hence making interaction among certain children possible and likely while limiting interaction among others. In this

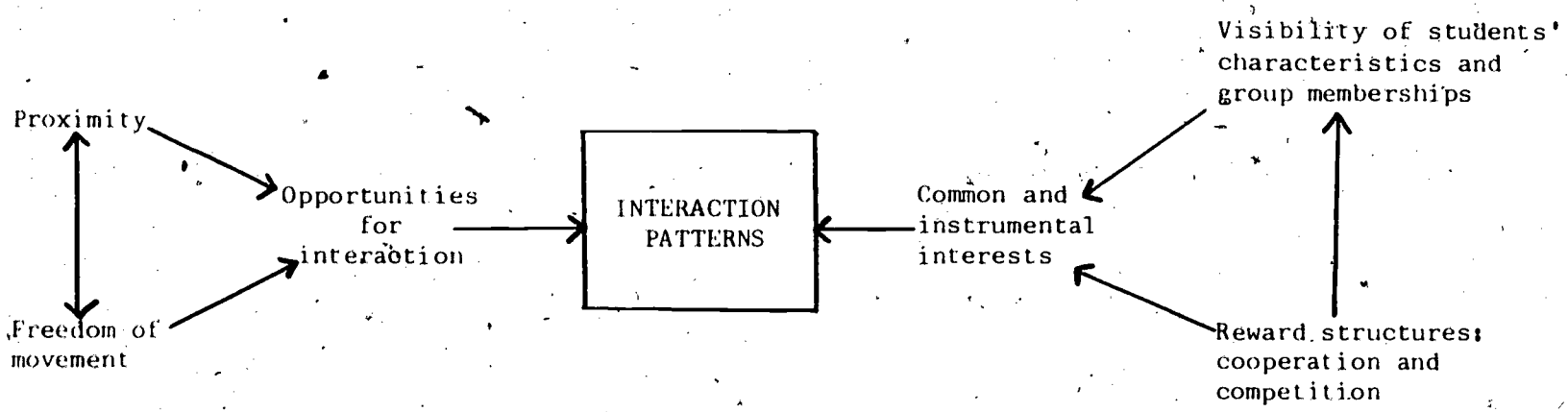
Proximity
Freedom of movement
Opportunities for interaction
INTERACTION PATTERNS
Common and instrumental interests
Visibility of students' characteristics and group memberships
Reward structures: cooperation and competition

Figure II-2

sense then, the importance of similarity in predicting interaction, is determined by the school.

The second element of opportunity for interaction is the amount of freedom of movement permitted (or at least how much can and does occur regardless of whether it is officially permitted) in a classroom. Children who spend most of the school day in their seats are limited to interaction with those spacially close to them. In classrooms where children move about freely during much of the school day, there is a much greater possibility of interaction among those who are not seated next to or near one another. In classrooms where children are allowed considerable freedom of movement, and particularly in those where they can readily change their seats, teacher designated seating is only a minor factor in determining with whom one can interact. The structural arrangement of the room remains important, however. For example, round tables are still likely to limit interaction to those seated at a table.

Interests. People are likely to choose to interact with others with whom it is in their interest to do so. There are at least two distinct types of interest that are relevant to children in classrooms. First, students will choose to interact with others with whom they share common or complementary interests and therefore with whom interaction is mutually rewarding. In this case, similarity along certain dimensions provides cues as to who is likely

to share common interests. When status differences exist children are likely to seek out others of like status for reasons noted earlier--protection and comfort. Children of low status may avoid interaction with higher status children for fear of rejection. Children of higher status may avoid interaction with lower status children because this may threaten their status. Children who have been grouped together for work purposes, such as reading groups, are likely to seek out others in their reading group for help and to give help. In this case, help is exchanged for help, either at once or in the future. The key to this type of interest is that children choose to interact with others for their mutual benefit in a relatively equal status relationship. Perceived similarity along at least some dimensions is likely to be an important factor as to who children seek to interact with.

The second type of interest concerns interactions involving a child who wants or needs something from another, but has little to exchange. Such a child might be seeking goods (eraser, pencil, toy, etc.) or services (help on academic work, help in understanding the teachers instructions for work or behavior, getting chosen for a valued job or turn in a game by a child given the power to make such a choice, etc.). In this case, prestige, status, and/or power are traded for goods and services. Such exchanges either create status differences in a classroom, or perpetuate already existing differences. When this type

of exchange occurs between children within the same group (whether it be sex, reading group, race) it is likely to create a status hierarchy within the group. When it occurs between children who already are in different groups, it creates or perpetuates status differences among those groups.

The peer interaction model presented here retains opportunity for interaction as a primary component. However, "similarity", which is a primary component of a traditionally conceived model, is subsumed under either proximity or interests. By making it a secondary element, rather than standing it by itself, it becomes possible to examine the circumstances which are likely to lead children to interact with others who are similar to themselves. No longer is "similarity" as a basis for interaction necessarily inherent in the make up of the child. As a factor within proximity, its importance in creating interaction patterns is clearly due to forces largely outside the control of the students. As a factor within interests, it may, in part, be under the control of students. But circumstances beyond the students' control may affect the kinds of similarity which are deemed important as bases of common interests. There also are factors which affect how visible similarities and differences are. If similarities and differences are not visible and/or salient, they are unlikely to be used as the basis for seeking or avoiding interaction with others.

Visibility. The more visible a certain characteristic or membership in a certain group is, the more likely it is to be a factor affecting interaction patterns. I have argued that children are likely to select other children of the same race and sex for interaction. It is the high visibility of sex and race that make them such obvious cues for at least the initial phase in the interaction process. The high visibility of these characteristics not only provides students with cues about which of their classmates are appropriate choices for interaction partners, but which of them are inappropriate choices as well. Of course, it is not simply that sex and race are so visible that leads to their importance in this process. There are a critical set of social meanings as well as norms of behavior which are associated with one's sex and race. So it is not simple visibility that is important, but visibility of characteristics that are defined as important for one reason or another, that is important. Sex and race also are characteristics which children have when they enter the classroom and which have been deemed important by society. These are characteristics which were not assigned to children in the classroom or by the school. Yet, various classroom practices can affect how important they are in determining classroom interaction patterns.

Other group memberships are created in the classroom. In this study I will focus on reading group membership. How important such membership is for interaction relates to a

variety of factors, including visibility. Visibility can have an effect on both components of interest. When reading level or groups are highly visible, members of the same group have little difficulty in identifying each other. It makes it easy to know who to seek help from and who shares common interests based on group membership. Highly visible group membership also creates sharp differentiation between groups. This heightens the possibility that they will become the basis of a status hierarchy in the classroom.

Reward Structure. The reward structure affects interactions patterns as it affects interests and visibility. It no longer is directly linked to the interaction patterns. Conceptualizing its role in this manner places the effects that the reward structure has within the context of other factors. This makes it possible to explore the process by which all the factors influence the interaction patterns. To the extent that the reward structure encourages cooperative behavior, students will relate to one another based on common interests in relatively equal status relationships. To the extent that the reward structure encourages competitive behavior it creates or perpetuates status differences. The more public the rewards are the more visible are the members of each status level. Under these circumstances members of each level perceive themselves to be similar to others members of that level and see common interests in interacting with same level children.

It may be that children at the top and bottom of the status hierarchy stop competing once the lines of status are clear. The children in the middle might well continue to compete.

Once a status hierarchy is established, lower status students might attempt to interact with higher status ones for several reasons. The higher status students may control access to various classroom resources (as supply monitors, teacher allies). They may also hope to gain some status by "rubbing" elbows with those of higher status. In either case, the status system is preserved and strengthened. Lower status students are clearly and visibly acknowledging the fact that they have lower status and giving the higher status students prestige and power. In so doing, high status becomes even more rewarding for those holding that position, while equal status interactions with those in lower positions may become threatening to their position.

As noted earlier, there are also reasons why high and low status students may wish to avoid contact with each other. Low status students might fear rejection (or, indeed, may have rejected the higher status students) while higher status students may wish to avoid a lowering of their status by associating with those of lower statuses.

CLASSROOM CHARACTERISTICS AFFECTING INTERACTION PATTERNS

My research will not attempt to directly "prove" the validity of the peer interaction model. What I will do is examine the interaction patterns in several classrooms and

relate those patterns to various characteristics of the classrooms. To the extent that the model is useful in explaining the link between these characteristics and the interaction pattern, the model is valid. The model was devised in part as an attempt to explain the relationships that were found. In this sense, the model represents an exercise in grounded theory and arises from the data.

What sorts of classroom and school characteristics affect the components in the peer interaction model? There are three types of characteristics that I will focus on. The first is the organizational structures of the classrooms. This includes activity structures and ability groupings as indicated by reading group membership. The second concerns other classroom features which specifically affect student opportunities for interacting with other students in their classroom. Seating arrangement, use of space, rules concerning movement within the classroom, and teacher enforcement of those rules are included in this category. Finally, there are school factors, factors which have an impact in the classroom, but have their genesis at the school (or district) level. This includes school decisions to regroup classrooms for a special reading period each day, decisions to form multi-graded classrooms, and the sex/race composition of teachers and administrators.

The teacher is not included in this study as one of the primary classroom characteristics to be examined. Actions and practices by teachers will not be completely ignored in

this analysis, but they are not of primary concern. There are several reasons for this. A tremendous amount of classroom research has focused on teachers and on the teacher-student dyad. There are a host of studies on the effects of teacher expectations (Rosenthal and Jacobson, 1968). An earlier set of studies conducted by Lewin and his colleagues and followers, examined the effects of differing leadership styles on a variety of social outcomes in groups of children. (See Lewin, et al., 1939, and Lippitt and White, 1947, for example.) These studies tend to imply that it is something in the makeup of the teacher, in his or her personality, that leads to certain sets of expectations for certain children and to particular leadership styles. At best, teachers are seen to have been raised in a particular society and trained in particular institutions to be the sort of person they are and to lead in the way that they do. It is then primarily teachers' direct interactions with children that lead to various social outcomes. In a sense, this leads to a teacher-blame argument when trying to account for stratification in the classroom. The factors I will focus on are ones which either affect the stratification process directly, without operating through the teacher, or are factors which structure a teacher's behavior regardless of a teacher's personality. To be sure, the types of task structures a teacher employs in a classroom and things such as seating arrangement may be related to the teacher's personality. The point is that it

is no longer the direct interplay between teacher and student by itself that is the basis for social outcomes. Furthermore, many factors beyond the teachers control go into determining such things as the task structure and seating arrangements.

I do not intend to imply that teacher characteristics are irrelevant to the processes being look at. I will take them into account, particularly teacher enforcement of rules concerning student movement in the classroom. But, teacher characteristics have been well studied while the other factors have not. The results of the teacher studies are not very satisfying as explanations of the interaction patterns which are found in classrooms, nor are they particularly useful in planning for change.

Organizational Structures

Hallinan (1976) points out that almost all studies of social structure in classrooms have been carried out in traditional classrooms. Glidewell (1966) reports that most such studies have found that the social structures of elementary school classrooms develop very quickly and are usually characterized by stable, exclusive pairs and subgroups of students. Within subgroups there is a high degree of interaction and influence but little of these across groups. Recent studies in different types of classrooms have found patterns of interaction and friendship groupings other than those reported by Glidewell (Bossert, 1977a; Hallinan, 1976; Hallinan and Tuma, 1978). These

studies make it quite clear that patterns of children's interaction and friendship groups are affected by the organizational structure of the classroom.

The organizational structure can affect each of the components and their elements of the peer interaction model. Activity structures in classrooms which provide increased opportunities for interaction among students are likely to decrease the number of social isolates, thus equalizing the typically skewed distribution of friendship choices which most sociometric studies have found in traditional classrooms. Structures which provide more opportunities for more children to interact, increase the chances of children's finding mutual bases for friendships.

Classrooms may be structured in such a way as to increase the degree of perceived similarity between certain groups of students. They also may be structured in ways that make certain types of similarities more salient as a basis for liking and friendship. For example, when students are placed in various groups, such as reading or math groups, each group provides a basis on which a child may perceive himself or herself as similar to others in the group and dissimilar to those not in the group. The extent to which membership in such groups is labeled, made highly visible, and/or rewarded by the teacher may determine how important these membership groups are for friendship choices and interaction patterns (Rothenberg, 1979). When these instructional groups are formed on the basis of ability or

achievement, group members are likely to share similar SES and ethnic backgrounds, thus providing an even stronger basis for group members to perceive similarities and form friendships (Hallinan, 1978).

A problem arises about how to best describe, distinguish, and categorize the variety of activity structures found in classrooms. The way in which this is done can have important implications for understanding how organizational characteristics affect the development of particular patterns of peer associations.

A typical approach is to make a dichotomy between "traditional" and "open" classrooms, but this presents a number of serious difficulties. One problem is that it is very difficult to clearly define "open" classroom. Definitions and descriptions vary considerably. (Compare, for instance, the definitions found in Gatewood, 1975; Silberman, 1972; and Walberg and Thomas, 1972.) It also is likely that substantial variations can be found even among classrooms identified either as "open" or as "traditional" classrooms. When researchers recognize these problems of distinguishing between "open" and "traditional" they often establish a specific set of distinctions for their particular investigation. It is difficult to compare results or to generalize among studies because a variety of definitions have been used. Another solution to this definitional problem has been to pick a single major characteristic which distinguishes "open" from "traditional"

and to compare classrooms where a variation in this characteristic is found. For example, in one study, Hallinan (1976) designates "classrooms without rigid homogeneous grouping procedures..." as open. However, classrooms thus distinguished may vary on a wide variety of other structural variables not dealt with by Hallinan such as reward structures, the degree to which children engage in the same tasks at the same time, and the amount of choice students have in what they do and when they do it.

Studies which use simple dichotomies between "open" and "traditional" or merely make a differentiation of classrooms based on one characteristic are incapable of examining the varying and often interacting effects that different aspects of classroom organization can have. To most fruitfully explore how organizational structure shapes various patterns of friendship groupings and interaction one must view the organizational structure as being composed of a series of components. Only then does it become possible to understand how these components, individually and in interaction with each other, affect patterns of peer associations.[4]

Bossert (1977b) has taken a further step in analyzing effects of classroom organization by using components and their combined influence to describe a set of task structures and their effects. He divided the activities

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[4].This discussion concerns the affect of classroom structures on peer associations. However, it should be noted that this approach using multiple components is useful, and I believe necessary, in exploring a wide variety of classroom processes, effects, and outcomes.

observed in elementary school classrooms into three types of patterns: recitation, class task, and multi-task. Four components form the basis for these three categories. They are group size, division of labor, pupil choice, and the extent to which evaluation is public and comparable. Each of these components may vary. Group size can vary from large groups comprising most of the class to small groupings within the class to complete individualization. Divisions of labor can vary from all students performing the same task to each student performing a different task. The locus of control can swing from high teacher control to high student control. Performance and evaluation can vary both in the degree to which they are public and the degree to which they are comparable. To a certain extent the evaluation system is dependent on the other components. For example, evaluation in large group activities where all children are performing the same task will necessarily be highly public and comparable. Each child can see the level at which others are performing and where he or she fits in to the overall pattern of performance in the classroom because performance rewards are visible. In theory, the task structure determines patterns of rewards and punishments in the classroom, that is, the reward structure. The components can individually and collectively affect the opportunity for interaction, the reward structure, and the degree to which cooperative or competitive environments are created in classrooms.

In classrooms where a recitation format predominated, Bossert observed the emergence of norms of competition. Friendship groups were based on levels of achievement and remained stable and basically unchanged. High achievers interacted with and were friends only with other high achievers. Low achievers also clustered together. In the classrooms where class task and multi-task activities predominated, Bossert observed norms of cooperation. Such classrooms were characterized by fluid friendship groups in which attachments were based on mutual interests rather than on achievement. As the children's interests changed, so too did the friendship groups.

Despite the fact that Bossert recognized the component nature of task structures, he narrowed the types of classroom structures to three, and used the predominating structure as the unit of analysis when examining organizational effects on peer associations. A recent analysis of observations collected in three fourth grade classrooms (Rothenberg, 1979) suggests the following modifications:

1. Additional components are needed to describe task structures in ways which are useful for determining effects on various classroom behaviors and outcomes. These include: (a) whether or not students are required to be actively engaged in the activity; (b) whether or not children are grouped according to some set of academic skill or achievement levels for the activity; and (c) whether or not the activity is primarily an academic one with the reward structure based on academic skills or achievements.

2. Students are exposed to a wide variety of activities, and hence a variety of task structures, throughout the day. The total pattern of activities and their

components must be examined to determine effects on peer associations. Components can be thought of a vectors, each constraining some types and encouraging other types of behaviors and outcomes. Each component may have varying strengths depending on the extent to which it is supported or counteracted by other components. It is this pattern which must be examined and understood.

3. Some components and some task structures may be more important than others in their effects on peer associations.

Classroom Characteristics Affecting Student Movement in the Classroom

The consequences for interaction patterns that the seating arrangement and spacial arrangement of the classroom has already been discussed. These arrangements effect opportunities for interaction as well as the visibility that particular individuals and groups have. In some classrooms children are assigned seats early in the term and only minor changes are made thereafter. In other classrooms the assigned seating changes frequently through the year. In still other classrooms the children are free to change their seats whenever they like. Again, it is clear that such variations in classroom procedure will affect opportunities for peer interactions.

Idiosyncratic variations among teacher behavior also can have an impact on interaction patterns. I will argue later, in the conclusion of this report, that many teacher actions are either made more likely or constrained by the organizational structure of the classroom. Within these constraints teachers do vary. They vary in the extent to which they label groups, affecting how visible those groups are. They vary in the extent to which they provide

differential rewards to certain children and to certain groups, thus affecting the reward structure. Some teachers exert more control than others over students' informal exchange (talking and moving) thus affecting opportunities for interaction.

School Level Factors

There are a variety of decisions and factors which occur at the school or district level which affect children in the classroom and have an impact on their interaction patterns. They affect children as they operate in the classroom. They differ from the kinds of factors considered as classroom factors in that control over them rests outside of the classroom.

Probably the most important school level factor in this study was the decision by one of the schools to regroup the children from the three classes at each grade level for a special reading instruction period each day. In the classrooms in all the other schools in the study, children were grouped for reading within the classroom. The difference between two types of reading instruction formats created critical differences in all of the components in the interaction model. This provided a kind of natural field experiment and will be discussed more fully later.

There are many other school level factors which can and did have an effect on peer interaction patterns in the classroom. Most schools group children by age thus limiting in-class interaction to those of similar age. Some

classrooms are multi-graded and thus provide the opportunity for some cross grade interaction. How much actually occurs depends on the same set of factors that affect interaction among children of any type of group--those postulated in the interaction model.

The types of activities and organizational structures found in classrooms reflects in part at least, desires and decisions made at the school and district level. Whether or not a school or school system will provide "open" classrooms, how much emphasis is placed on a "back to basics" push in the schools, what materials are made available, are all factors which will affect the organizational structure of classrooms and hence affect the interaction patterns among children.

The principal and other administrators are important actors who can affect many of the classroom practices. The administration can encourage or discourage the use of reading and math groups in classrooms, they can emphasize the need for an equitable reward system, one that does not heighten race, sex, or social differences among the children. The race and sex makeup of the staff as well as the patterns of interaction among the staff in a school can be important. Children model the behavior of the adults in a school. To the extent that students see men and women and blacks and whites interacting on an equal status basis, that behavior will be reflected in the students' interactions.

The primary focus of this study, in terms of the factors affecting the components of the classroom interaction model, is on the organizational characteristics of the classroom. Other classroom characteristics, including idiosyncratic variations among teachers, and school level factors will be noted and discussed where appropriate.

Chapter III

METHODS AND DESCRIPTIONS OF CLASSROOMS STUDIED

The data used in this study were collected as part of a two year research project at The University of Michigan entitled, "Socialization into the Student Role" which was conducted by Professors Blumenfeld, Bossert, and Hamilton. Information was gathered from a variety of classrooms which differed in the types of activity structures utilized, grade level, and social class background of the students.

This chapter contains descriptions of the types of data which were collected, descriptions of the classrooms selected for intensive study of peer group networks, and the procedures by which interactions were coded and peer networks were mapped.

Data Collection

Two types of data were used to study peer networks: observations in classrooms provided information about interaction patterns and a sociometric questionnaire was used to obtain information about students' friendship choices.

Classroom observations. Ethnographic data were collected in 20 classrooms. Blumenfeld, Bossert, and Hamilton (1978) describe their plan for the collection of the ethnographic data as follows:

> In depth records of classroom interactions...will be gathered using field research and ethnographic observation techniques. Observations will involve the collection of process notes detailing as much as possible of the daily activities, interactions and

conversations that occur in each classroom without using precoded observation categories. This preserves the natural order and complexity of social interaction and allows for the use of multiple coding schemes in later analysis. These notes provide an ethnography, or natural history, of classroom events and allow for the tracing of patterns and changes in patterns over the course of the observation period.

Each classroom was observed for a total of ten to thirty hours over a period of 2 to 6 months. Observation periods lasted between 45 and 90 minutes and were rotated so that all periods of a normal school day were covered.

The observers, trained by Bossert in ethnographic data gathering techniques, were instructed to specifically record all of the following:

---Subject matter title (math, English, crafts, recess, etc.).

--All teacher instructions related to the work process (e.g., T: Group a will line up first, then group c...). Record teacher grouping practices, especially when groups are using different materials and/or working at different levels on the same materials. Be sure to record which children (by name) are in each group, when group composition shift occur (e.g., when a child is sent to another group), and why these shifts are occurring.

---All teacher-pupil communication about rules, rule violations, etc. Be sure to include what is said to whom about what, and the response.

--All peer communications about rules.

---All spontaneous peer groupings. Who chose whom to do what, and all shifts in these groupings. Include kids assessments friendships...if you can overhear them.

In addition, the observers were instructed to record as much of the other happenings in the classroom as possible.

The observers made "jot notes" while in the classrooms and later (on the same day if possible) expanded these into

a set of field notes. These field notes contained the information required to trace out interaction patterns, determine the typical activities engaged in by students, and examine a variety of factors which might affect peer networks.

Friendships choices. Data on the children's friendship choices were collected as part of an interview with the students. These interviews were conducted in the Spring and occurred toward the end of the period of observation. Parental permission was required for these interviews. The response rate varied considerably, from under 50% in some classrooms to nearly 100% in others. The observations indicate that most of this variation probably was due to variations in teachers' enthusiasm and persistence in collecting the permission forms from the students. The response rate tended to be better in schools in white collar communities than in those in blue collar communities.

Children were asked to go through a list of the children in their classrooms and to designate their "best friends", their "friends" and those children who were "not a friend." The names of classmates were read to students in the primary grades, (first, second and third grades). The fifth and sixth grade students filled in the friendship questionnaires by themselves. During the second year of the study the students were asked to designate their two very best friends after they had completed the initial

designations of "best friend", "friends", and "not a friend."[3]

Classrooms Selected for Intensive Study

This report concerns the peer networks in eight of the classrooms in the Blumenfeld et al. study. I was the observer in six of those classrooms[4] --Gibson's, Warren's, Schultz's, Casey's, Rizzo's, and Snyder's. Because of my interest in interactions among peers I had been particularly careful to record peer interactions in detail. Furthermore, having spent many hours in each of these classrooms, I knew the children, I knew the teachers, and I knew the context in which their behaviors took place. Field notes provide considerable information about these things, but I found that my own field notes were far more meaningful to me than were those of other observers. The models, theories, and findings in this report not only fit the data in the sense that they fit the numerical bits in various tables, but they make sense to me in terms of my understanding of the classroom processes which I observed. I used these understandings to frame the questions, to determine which variables were to be examined, and to help organize the analysis of the data.

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[3].Some children said that they had no very best friends, some said that they had just one very best friend, and others said that they had three very best friends. These preferences have been used in the analysis. Most children did designate two very best friends.

[4].Classrooms are identified by teachers' names. All names are pseudonyms.

I included two additional classrooms, Reed's and Bell's, in my study. I selected these two for several reasons:

a) Four of the six classrooms in which I observed were in white collar communities. Reed's and Bell's classrooms were in a blue collar community. By including them in the study I balanced the number of classrooms in white and blue collar communities.

b) There were 30 hours of observation in these classrooms. The pattern of peer interactions was likely to be more complete with 30 hours of observation compared to classrooms with 10 or 20 hours of observations.

c) The field notes for the observations in these classrooms were particularly detailed and complete.

d) The observer in these classrooms, Linda Grant, also was interested in peer interactions and had made careful notes of those events.

e) The observer was available for clarification of the field notes as well as for consultation. I was able to check my findings in these classrooms with the observer's understandings of the peer group patterns.

f) Finally, I had spent about half an hour observing in each of these classrooms and had some sense for the teachers and children in them.

Characteristics of the Eight Classrooms

Table III-1 describes several characteristics of the eight classrooms chosen for intensive study. Most of the

TABLE III-1

CLASSROOM DESCRIPTIONS

Teacher	Grade	Social Class	Hours of Observation	Dates of Observation	Number of Boys	Number of Girls	Total Number of Students	Percent Responding to Questionnaire
Warren	1	white collar	30	10/18/78 to 4/26/79	13	12	25	88.0%
Bell	1	blue collar	30	10/23/78 to 5/2/79	13	14	27	55.6
Reed	1	blue collar	30	10/23/78 to 5/2/79	17	11	28	39.3
Gibson	1/2	white collar	30	10/23/78 to 4/24/79	11	14	25	96.0
Snyder	1/2	blue collar	20	10/12/79 to 1/28/80	13	13	26	46.2
Schultz	2	white collar	10	2/6/80 to 3/26/80	11	13	24	50.0
Rizzo	2/3	blue collar	10	10/16/79 to 1/18/80	15	8	23	60.0
Casey	5/6	white collar	20	11/7/79 to 3/14/80	15	13	28	75.0

categories in this table are self-explanatory. Some additional comments are presented below about grade level, social class, and multi-graded classrooms. Further descriptions of the classrooms are included at the end of this chapter.

Grade level. Seven of the eight classrooms were primary grades, first through third. Only one classroom, Casey's, a fifth/sixth grade classroom contained older children. This creates some obvious problems of analysis and interpretation of peer networks found in this classroom with older children. These children have been in school much longer than the children in the primary grades. The pattern of peer networks may have been formed in earlier years and then solidified. As older children move into new classrooms, changes in activity structures or changes of other classrooms features which might affect the peer structure in lower grades, may have only a limited impact on the peer group. Another problem with studying only one class with older children is that developmental differences might account for variations in peer patterns between older and younger children. The sixth grade students in this classroom (most obviously the sixth grade girls) were on the verge of adolescence. Physically many had reached puberty. Many of the students in this classroom (both the fifth and sixth graders) seemed to be much more aware of their appearances than were students in the younger grades. There was much combing of hair and trips to check appearances in a

mirror in the back of the room. Casey's students also tended to be more stylishly dressed than the first and second graders in the same school. The boy-girl interactions often seemed flirtatious, with much teasing and giggling.

It will be difficult to separate out age effects from classroom effects in Casey's class. The inclusion of two or three additional older grades with differing activity structures would help to overcome these problems. At best I will be able to note cautions as I analyze data, and point out differences which may be caused by age differences.

Social class. Half of the classrooms were in schools in blue collar communities. The other half were in a white collar community. Most of the parents of the children in the blue collar community were employed as factory workers or as clerks in nearby stores. Some were at the lowest levels of management, as line foremen or floor supervisors. During an observation period in one blue collar classroom, Snyder's class, the teacher discussed parents' jobs with the children. In addition to positions in factories and stores, the students mentioned jobs such as policeman, beautician, and mechanic in describing their parents occupations.

All four of the classrooms in the white collar community were in the same school. The community was a mid-sized (100,000 population) university-dominated city which had a substantial amount of white collar industry (research firms, computer software developers, pharmaceutical research

laboratories, data processing companies, etc.). The school district was composed of single family homes. It was a middle and upper middle class area, though not in the wealthiest part of town.

Multi-graded classrooms. The fact that half of the classrooms were multi-graded turned out to be serendipitous. Grade level is a characteristic of students, a group membership, created by the educational system. One of the findings to be discussed in later chapters is that the greater the number of groups represented in a classroom, the less important any one is in terms of structuring interaction patterns. In a classroom which has boys and girls, three or four reading groups, and two grade levels, each child is likely to have at least one base of common interest with many other children who vary on other characteristics. Having a sample of classrooms which included multi-graded classrooms made it possible to examine this phenomenon.

Reliability of the Data

I am confident that patterns of interaction and the profiles of classroom characteristics based on 20 and 30 hours of observation are reasonably accurate. The observations were spread over several months in these classrooms and all parts of the school day were well sampled. Enough time was spent in these classrooms so that unusual events or aberrant, but temporary patterns, were unlikely to have distorted overall patterns which were

discerned. I am less confident about the generalizability of the data collected in the two classrooms with only 10 hours of observation. The data collected in Schultz's classroom are particularly suspect. Schultz was reluctant to have observers in the room. She had been a fourth grade teacher for a number of years and this was her first year as a second grade teacher. She said that she was having some trouble making the adjustment to a lower grade. She allowed me to observe only after she felt that things were running smoothly which was not until the winter term. She requested that I only observe for one morning a week, on the same day each week.[7] The 10 hours represent five observations, over a two month period. The teacher said that all her mornings were essentially the same. She spent the mornings working with reading groups while the rest of the students worked independently.[8] The activity profile and the interaction patterns are probably accurate descriptions of typical mornings in this classroom. However, I was not able to determine afternoon patterns. Based on casual observations and brief conversations with the teacher, I was able to get

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[7].Schultz let me choose the day of the week, and I chose Wednesdays. Her concern was to know well in advance when I would be coming. She seemed rather tense during the first observation but relaxed for the others.

[8].On other days of the week as I was on my way to and from observing in other classrooms I often walked by this classroom and glanced in. Also, I interviewed the children in this classroom on other days of the week and spent a few minutes in the room each time I came to pick up a child to be interviewed. All mornings did seem to be spent in the same manner.

only a general picture of what afternoon activities were like.

I am somewhat more confident about the quality of data collected in Rizzo's classroom. I was able to distribute my observations throughout the day. Rizzo was very organized and meticulous (bordering on rigid). Her schedule of activities varied very little from day to day or week to week. The description of the activities and other classroom characteristics are probably a good reflection of typical patterns. With only 10 hours of observation, however, the interaction patterns observed may be less than typical.

Activity Structures

Bossert and I developed a coding scheme to label the activities described in the ethnographic field notes. The scheme was designed to fit the needs of the Blumenfeld et al. project as well as my research. Each activity was coded with a three part code.

The subject code labeled the subject matter. This included academic subjects (math, language, spelling, etc.), art, show and tell, information giving (relating to rules, procedures and plans for the day), and non-academic games.

The activity code indicated the type of activity in which the majority of the students were engaged. There were five types of activities included in this category:

1) Large group activities. The majority of the class (usually the whole class), were engaged in either a recitation type of activity in which students were required to respond to questions or recite out loud, or in activities such as watching a movie or listening to

a story in which no response from students was required.

2) Class-task activities. Children worked individually, but all children performed the same task. For example, all were working on math, or all were working on reading.
3) Multi-task activities. Children worked individually or in small groups on many different tasks and subjects at the same time. Some children might be working on math while others worked on reading and still others were engaged in an art activity.
4) Transition times. This included times between activities, times when children were moving into the classroom, cleanup times and times when students were getting ready to leave the classroom. It also included times when the teachers were handing out or collecting papers or materials, and organizational tasks such as taking role and collecting lunch money.
5) Free time activities. This included outdoor recess and indoor free time.

The form code described the activity type in more detail. It captured variations such as: children working on different tasks according to ability level (and/or grade level in multi-graded classrooms); most students engaged in one type of activity (e.g., class-task) while the teacher worked with a reading group; large group activities during which children had to publicly perform compared to large group activities during which children did not have to perform.

This coding scheme was designed to be flexible. Types of activities can be combined in a variety of ways depending on what is being examined. For example, in the analysis of the relationship between reading groups and interaction patterns all the types of activities in which children were grouped by ability were combined.* This combination

*"Ability level" and "reading group" will be used interchangeably in this report. Grouping by ability level

technique and its usefulness will become evident as it is used in the analytic chapters.

Calculating a "Typical Day"

Each school day in all the classrooms was composed of a variety of activities which varied in subject matter, type and form. No two days were exactly alike. Futhermore, teachers periodically rearranged schedules and put more emphasis on one area or another.

In order to be able to examine the activity structures in each classroom and to compare classrooms I calculated what a typical day might look like for each classroom. It was difficult to accurately calculate the proportion of time spent in various activities. Part of the difficulty was that it had been impossible to equally sample every part of the school day for each day of the week. In some of the classrooms a disproportionate number of the observations had occurred during the morning and in others a disproportionate number had occurred in the afternoons. In order to calculate at least a rough measure of the proportion of time spent in each type of activity an averaging technique was used. I broke the school day into ten minute intervals. For each interval I averaged the types of activities noted

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usually meant grouping by reading groups. In a few classrooms a small proportion of time was spent in math groups. In the single graded classrooms most of the children were assigned in the same work in math. In the multi-graded classrooms, children in each grade level were assigned the same math work. In the multi-graded classrooms the form code for math activities would indicate that the children were differentiated by grade level.

in all observations that covered that time period. For example, five separate observations might have included the time period from 10:00 AM to 10:10 AM. Fifty minutes of activities would therefore have been recorded for that time period. If a total of fifteen minutes had been spent in a multi-task activity, twenty-five minutes in a class-task activity, and ten minutes in a large group activity, then, 30%, or an average of three minutes of the ten minute time period was typically spent in multi-task activities, 50% or an average of five minutes was spent in class-task activities, and 20% or an average of two minutes was spent in large group activities. This averaging technique was used on every ten minute time period of the school day. Different numbers of observations occurred at varying times of the day. This meant that some intervals might be used on six, seven, or eight observations while others might be based only on two, three, or four observations.'° The total number of average minutes spent in each activity was calculated and a proportion of the school day was computed. There was only a five minute difference in the length of the school day among these classrooms. Similar proportions of time spent in activities represent similar amounts of actual time spent in those activities.

'°.If a particular observation period began or ended such that less than three minutes of the time period could be coded, that observation was discarded for that time period.

Coding Interactions

All interactions between children in the same classroom[1] which were noted in the field notes were coded.[2] I attempted to capture the quality of the interaction. Affectively positive and affectively neutral interactions were combined into a single category. These included such things as: children talking or chatting with one another; playing a game together; sharing materials; non-verbal interactions such as hugging, kissing, holding hands, stroking hair; and work related interactions such as working together, helping one another on work, asking directions from each other, and comparing work. Affectively negative or hostile interactions also were combined into a single category. These things included such things as: hitting, teasing, arguing, stealing materials, threats, criticism, and refusing asked for help. It was often difficult to distinguish between affectively positive and affectively neutral types of interactions. Affectively negative ones were much easier to code as such because, if

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[1].During reading group time in Reed's, Bell's and Snyder's classrooms, most of the regular students were dispersed in other classrooms. Therefore, interactions were not coded during these times. Interactions during transition times just before and just after the reading period were coded.

[2].Interactions during outside recess were not coded. There were several reasons for this. Usually several classes went to recess at the same time. Students were spread over the whole playground area, which was quite large for these schools. It was impossible to record even a fraction of the interactions among students of the same classroom. Furthermore, during colder weather students

nothing else, the actual volume of the interactions (or the resulting screams or pleas for teacher help) was often louder than other interactions. Observers were able to include more details about these interactions.

The clearest distinction can be made between affectively negative interactions and all other interactions. The analyses in this report will be based on all non-negative interactions. The primary reason for this limitation is to keep the study within manageable limits. Examining negative interactions would have enriched the findings reported here. Hopefully this will be done in future analyses.

Calculating Interpersonal Ties Between Students

Granovetter (1973) suggests that the strength of interpersonal ties can be used to study a variety of issues involved in network analysis. He defines the strength of a tie as "a (probably linear) combination of the amount of time, the emotional intensity, the intimacy (mutual confiding), and the reciprocal services which characterize the tie." The strength of the ties between the children studied here was calculated based on the amount of non-negative interaction the children had with each other. This calculation focuses on the "amount of time" component of Granovetter's definition of ties. He notes that although each of the components "is somewhat independent of the

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bundled up in snow-suits and hats. It became difficult to identify students at a distance.

other,...the set is obviously highly intracorrelated." I have assumed that children who frequently interact with others in a non-negative manner have a relationship that involves at least some emotional intensity, intimacy, and reciprocal services. The more children interact with each other, the greater these will be.

Granovetter divides the strength of ties into three categories--strong, weak, and absent. I used a much finer gradation in the initial calculation of the ties but combined various strength ties into strong, weak and absent divisions for most of the analyses. The maps of the peer network in Chapter VII are, however, based on the finer gradations.

Once all the interactions in the field notes were identified and coded, a matrix was generated for each classroom which showed the number of non-negative interactions between every pair of students in the classroom. For each student the percentage of interactions with each other student was calculated. Values were assigned based on the percentage of interactions as follows:

Value	Percent of Interactions
4	15% or more
3	7% to 14.9%
2	5% to 6.9%
1	2.5% to 4.9%
0	less than 2.5%

Some base line cutoff points were used. Some students had very low rates of interaction with others. If only one interaction was recorded with another student, even if it was more than 2.5% of all that student's interactions, it was coded as 0. Two interactions between students could not receive a value greater than "1", three interactions could not receive a value greater than "2", and four interactions could not receive a value greater than "3". The strength of the tie between children was calculated by summing the value of the tie that each had with the other. The use of cutoff points eliminated the possibility that students who had extremely low rates of interaction, and who were actually quite isolated, could be rated as having strong ties with others.

There were several reasons why this method was used to calculate the strengths of ties. First, I wanted the strength of a tie to represent the students' points of view. Some students had much lower rates of interaction than did others. For those students, a few interactions represented a large proportion of all the interactions they had. Therefore, from their point of view, their strong ties were with those with whom they had the largest proportion of interactions. By summing the values of both students involved in the tie, some sort of average strength is represented. For example, student A, who had many interactions with many others, might have five recorded interactions with student B. This might represent 3 percent

of all student A's recorded interactions, and would be valued as a "1". For student B, who had a low rate of interactions, the five interactions with student A might represent 10 percent of all student B's recorded interactions and would have a value of "3". The strength of the tie between students A and B would be "4", thus combining both students patterns of interaction. In this example there was a gap of a full category between the two students. In fact, most pairs of students either had the same value or only a difference of one category.

The second reason that I used proportions has to do with the relatively limited amount of time that classrooms were observed. If a particular child happened to be absent for one or two of the observation periods, he or she would appear to have low rates of interaction with others. This could be largely, though not completely, compensated for by using the percentage of a child's interactions as a basis for calculating the strength of ties.

Ties which had a strength of 1, 2, 3, or 4 were considered to be weak ties. Those with a strength of 5, 6, 7, or 8 were considered to be strong ties. Very strong ties were those which had a strength of 7 or 8.

This method of measuring the strength of ties is, of course not perfect. Yet it does seem to compensate for various possible errors in observation. The children who, based on this method, had strong ties with one another, were

the same children I would have listed as good friends based on casual observations.

Mapping the Peer Networks

The maps of the peer networks to be discussed in Chapter VII were generated using a multidimensional scaling technique, MINISSA. (This technique was designed by L. Guttman and J. C. Lingoes. See Lingoes, 1965 and Guttman, 1968.) Multidimensional scaling techniques are designed to examine the structure of data, usually by looking at the interrelationship of variables. MINISSA is a mapping technique which can generate a visual map which shows how data interrelates.

The input of MINISSA is a matrix of data showing similarity or relationships among objects or variables. The matrix used in this study was of the ties between children. MINISSA takes into account the total data, looking at the relationship each child has with every other child. The map which is generated not only indicates which children cluster together, but shows the relationship of clusters to each other.

The output can show the relationship of children in one or more dimensions. If there were 25 children in the classroom, 24 dimensions would perfectly "fit" the data and a perfect map could be produced showing the exact relationship of every child to every other child. The goal of a small space analysis (MINISSA in this case) "is to reduce the number of dimensions in the space as much as

possible (preferably to one, two, or three dimensions) while disturbing the overall relationships among points (as shown by the distance coefficients in the input matrix) as little as possible" (Bailey, 1974). By measuring the degree of montonicity (the rank ordering of the original distances, or strength of ties in this case) which is retained for each small space, a measure of fit can be derived. The MINISSA output gives two such measures--the coefficient of alienation and Kruskal's Stress. A "good" fit is .15 or less for the coefficient of alienation while .1 is considered a fair fit for Kruskal's stress and .05 or below is a good fit.

A "good" fit means that the map of the peer network is a reasonable representation of the relationship of all children to each other based on the strength of the ties they have, one with the other. It was possible to achieve a good fit for all the classrooms using three dimensions. For the purpose of this report and this study, it was difficult to visualize or discuss peer networks in this form. (Ideally, three dimensional models of the peer group could be constructed.) In order to get a good fit in two dimensions in some classrooms, some of the weakest ties had to be dropped from the matrix. The measures of "fit" and the range of the strength of ties is indicated on each map.

Descriptions of the Classrooms

Appendix 1 contains a table for each classroom showing the proportion of time spent in various activities on a

"typical" day. I make no attempt to characterize classrooms as "open" or "traditional" or even as "multi-task", "class-task", or "recitation" type classrooms. The analysis presented in the analytic chapters combines types of activities in ways which are relevant to the particular variables under consideration.

The classroom descriptions which follow provide further information which is relevant to the peer interaction patterns which developed in each classroom. Variations in the activity patterns structures which are not captured by the coding scheme are described. Seating patterns and frequency of seating changes are noted. I also have attempted to give very brief descriptions of the teachers. The information was obtained through the observations as well as from informal discussions with the teachers. Some of the information comes from formal interviews which were conducted with Gibson, Warren, Bell, Reed, and Casey. These descriptions are intended to give the reader a "feel" for the teachers and their classrooms rather than to present a true analysis of their behavior.

Warren

Warren had returned to teaching after 20 years of raising a family. I observed her classroom during the second year of her return. She was a warm and friendly teacher who obviously cared very deeply about her students. Her classroom was designated by the school as a traditional classroom. She told me that she would prefer to teach in an

open classroom. She had attempted to individualize her reading program the year before but had been reprimanded for doing so by the principal. She said that she planned to quietly wait to be tenured (which would happen after three years in the system) and then attempt to teach in ways which were more comfortable for her. Warren described all her students as being bright and said that some were exceptionally bright.

Warren's classroom was often quite noisy and outwardly chaotic. She was constantly asking students to be quiet, typically by making a loud hushing sound. Students would quiet down for a few minutes and then the noise level would quickly rise again. Warren rarely got angry at her students. Reprimands to individual students were often given quietly or in private. Her approach seemed to be to try to calm very active students rather than to threaten or punish.

The seating arrangement was changed every few weeks. Not only did Warren reassign students to different seats, but she altered the desk arrangement as well. (The map of this classroom shows only the arrangement on the final observation period.) She often seated friends near one another, presumably at their request. There was a listening corner in the room with a record player and head phones. In addition there was a library with comfortable seats and a rug. Children were allowed to read or play games in this area when their work was completed.

The students were divided into four reading groups--a high group, two middle groups, and a low group. The two middle groups were assigned the same work. Students were assigned by reading group (and would work as a group) to tasks at the listening center.

Students were engaged in class-task and multi-task type activities during a relatively large proportion of the school day. The teacher permitted students to move about rather freely during these times. During multi-task activities, many children would work on reading and language assignments given in reading group. All students were assigned the same math most of the time. All work was assigned by the teacher.

Bell

Bell was very concerned with order. She kept her room neat and clean, with everything in its place. Her classroom was generally quiet and students usually appeared to be busily working on an assigned task. Bell maintained a rigid schedule, moving from one activity to the next precisely at preplanned times.

Students spent no time engaged in multi-task activities. They did spend 35% of their time engaged in class-task activities. All work was assigned by the teacher and the students worked on the assigned tasks at times specified by the teacher. Bell discouraged interaction during class-task activities and for the most part, students were required to remain in their seats. It is interesting

to note that students in this classroom spent much more time on show-and-tell than did students in any of the other classrooms.

Bell frequently reprimanded students, most often in attempts to keep them quiet and on task. The observer in this classroom noted that reprimands were "apt to be strong, public, and sarcastic," and noted the following as a typical example:

> T:Now that's just what I wanted you to do, Gary, talk and forget all about your work. Thanks a lot.

Students were seated around tables, four or five students to a table, for most of the observation periods. A few students, who the teacher felt were disruptive, were separated from the rest of the class and seated in isolated spots. Bell separated students who she felt spent too much time talking to each other.

There were three first grade classrooms in the school (including Bell's and Reed's). Students from all three first grades were regrouped into five reading groups for a one hour reading period each day. Bell worked with two of the groups, a middle level group and the lowest level group.

Reed

Reed became the classroom teacher in January.[1] This was her first teaching assignment. She replaced a teacher who was well liked by students and parents. As Reed

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[1].About five hours of observation occurred in the Fall when the previous teacher was still in charge. Three of those hours were of substitute teachers.

attempted to reorganize and rearrange the class to fit her own style, she was often met with cries from the students that "Mrs. Green (the former teacher) used to do ....." in that particular situation.

Reed was quite friendly with the students, spending considerable amounts of time chatting with them. The observer noted that she was "alternately stern and warm with students." She sometimes gave "sharp, public reprimands for misbehavior" but was often "ambivalent and even playful" as she disciplined students. Students could challenge her without fear of harsh retribution.

Students were seated around tables. The teacher frequently moved students who she felt were talking too much, separating them from each other. During large group activities desks were rearranged so that all could see the chalkboard.

Very little time was spent in multi-task activities. During class-task activities, Reed did not allow students to move about the room, though she did allow students to talk quietly with those seated close by. Students had no choice in what work they did or when they did their work.

Reed encouraged competition. There were numerous public contests--spelling bees, math quizzes, and even art contests. Winners names were posted on the board and they received prizes, usually candy.

Along with the students in Bell's class, and those in the other first grade class, Reed's students were regrouped

for a one hour reading period each day. Reed worked with a middle level group and the highest level group.

Gibson

Gibson was a very orderly, well organized teacher in her fifth year of teaching. She had a quiet but firm manner in talking with students, rarely having to raise her voice to gain student compliance with her wishes. She rarely threatened students. At the first hint of noise or disruption, the individuals involved were sanctioned by the teacher, often in private. Gibson occasionally yelled at a student or students. At these times all activity in the room stopped and all attention was focused on the disciplinary action. The following reprimand occurred during a multi-task activity:

> T to Mark who is talking with some other students: Mark, you were here last night until 4:30 getting your work done. I'd be glad to have you here again tonight. (Everyone else gets quiet and turns toward Mark as T says this.)

The classroom was designated as an "informal" classroom by the school. The children spent nearly 40% of their time engaged in multi-task activities, a high rate compared to other classrooms in this study. The teacher assigned work which was to be finished by certain dates. Students could choose the order in which they did the activities. Sometimes the students could choose among several alternatives within an assignment, such as picking a topic for a story or poem. For the most part, however, they had to do work assigned by the teacher.

There were four reading groups in the classroom, a high and a low group for each grade level. Reading and language assignments were often worked on during multi-task activities. Math was assigned by grade level and these assignments also were often worked on during multi-task activities.

There were a variety of activity centers around the room. One was a listening center with a tape recorder and a variety of tapes and worksheets. Another was a writing center with ideas or topics for stories and poems. The materials in these centers were changed periodically. There was also a class library with cushions and bean bag chairs. Students frequently worked in these areas during multi-task activities.

During class-task and multi-task activities students moved about the room freely, frequently talking with one another (though always quietly). They sat around tables but there were no assigned seats and students could change their seats at any time during the day. Several times during the observation period the teacher separated students who she felt were spending too much time talking to each other and not enough time working. On a few occasions these students were sent to sit by themselves in the back of the room.

In general, students interacted with their classmates frequently and freely throughout the school day. However, most of these interactions were brief and often concerned work related matters.

Snyder was a loud, authoritarian teacher. Students lived in fear of becoming the target of her wrath and they rarely became disorderly. In reprimanding students, Snyder tended to degrade them. The following episode occurred while she was working with a second grade reading group.

> Shirley to T: I accidentally left my reading book at home.
> T:Accidentally, eh?
> T makes several comments about bringing the book back tomorrow. T notices that Shirley does not have her workbook either and asks if she left that at home too. Shirley says that she did. T gets very angry and begins to yell at her telling her that she should never take her workbook home.
> T:It is a school rule... Never take your workbook home...
> The rest of the class sits silently during this exchange.
> T:You had the same problem last year once. Do you remember what happened?
> Shirley shakes her head "no." T tells her that she had to sit with her head down for the entire reading period and that is what she will have to do today.
> T:That workbook comes back! If there is one thing done past page 18 you really are in trouble. That workbook better come back!
>
> T turns to Sam who had been working ahead in his workbook: What does this man think he is doing? I don't think you belong in this group. You belong in Surprises (the first grade group). You don't even belong in Surprises. How can you go ahead and do the pages without my explaining what you are to do? ...and they are all wrong.

Certain children clearly were favored by the teacher and she was much friendlier with these students, frequently talking and joking with them. Girls were more apt to be favored than boys and many of the girls in the class were in a Brownie troop led by the teacher. Snyder had grown up in the community and was the contemporary of, and good friends

with, many of the parents of her students. Despite students' apparent fear of her, she seemed to be well liked by both parents and students.

Students were seated at round tables. For most of the observations there were three first grade tables and three second grade tables. One table of second graders and one table of first graders appeared to be particularly favored by the teacher. Not only did she talk and joke with these students more than others, but she allowed students from these tables to have a variety of special privileges such as taking messages to other teachers or handing out materials. Most of the interaction among students was confined to others seated at the same table. Near the end of the observation period the teacher reassigned seats and first and second graders were seated together at some tables. There were too few additional observation times to assess the effects of these changes on the interaction patterns of the classroom. There was a library area in the room and students were occasionally allowed to go there to read or get books after they finished their assigned work.

The second graders in Snyder's class, along with the students in the two other second grade classrooms in the school, were regrouped into five reading groups for a one hour reading period each day. Snyder worked with one of these groups, a middle level group, as well as with her first graders during this period. (Each of the other second grade teachers worked with two groups.)

Snyder's students spent virtually no time engaged in multi-task activities. They spent 37.7% of the school day engaged in class-task activities. The teacher rarely allowed students to move around the classroom during these activities.

Children spent considerably more time drawing or coloring than is indicated by the breakdown of activity structures. There were two reasons for this.

1) Many of the class-task activities consisted of working ditto sheets in math or language. Part of these assignments usually called for coloring in the sheet when the work was complete. As long as more than half the children in the class were working on the ditto, even if most of them were coloring it, the activity was coded as an academic class-task type. Many children spent relatively little time on the academic part of the work and much time coloring the worksheet.
2) Children were frequently allowed to color or draw after finishing an assignment. Many students finished the assigned task rather quickly and spent the rest of the activity time drawing. Other students dawdled over the work, or spent time coloring the worksheet.

Schultz

As noted earlier, Schultz was a fourth grade teacher teaching second grade for the first time and was somewhat reluctant to have an observer in her classroom. At her request all observations were conducted in the mornings.

The pattern of activities was basically the same every morning. The teacher spent several minutes talking about the work for the day. This was followed by a brief show and tell period. For the rest of the morning, most students were engaged in multi-task activities while the teacher took turns working with reading groups. There were three reading groups--high, middle, and low. Students not in the group working with the teacher worked on reading, language, and math assignments. All students were assigned the same math work. Students had a choice in the order in which they did their work, but little choice as to the work itself. Work was turned in and checked on a daily basis. The teacher permitted children to move about freely during these activities and considerable amounts of interaction occurred during observation periods.

Schultz tolerated rather high levels of noise and talking. She reprimanded students when she felt that they were interfering with other's work and not completing their own work. Most reprimands were made privately. One of her students had Downs Syndrome. He often seemed restless and wandered about the room, disturbing other students. Schultz would talk with him quietly and attempt to involve him in a activity when he became disruptive.

Students were seated in rows. Schultz made a number of seating changes during the two months of observations. Once, when two students requested a seat change so that they

could sit next to one another, Schultz agreed to the change. This appeared to be a common procedure.

In general students interacted freely and frequently with one another. Many of the interactions concerned work related matters, although there was a considerable number of non-work related interactions as well. The students seemed relaxed and happy in the classroom.

Rizzo

Rizzo was very concerned about order and discipline. She planned student work schedules for each day and in great detail. She would become quite upset when her routine was disrupted. She said that she did not like having a multi-graded classroom and that she felt overwhelmed having to plan for two grade levels. In past years, with single graded classes, she divided her classes into two or three reading groups. She divided the students in this multi-graded class into five reading groups (two second grade groups and three third grade groups). She said that she was concerned that she did not have as much time to spend with each group as she normally would have had with fewer groups. She was afraid that the students would not be able to complete a full year's work. There was a sense of franticness about this teacher as she tried to get through her planned work each day.

All work was assigned by the teacher. Students had some choice as to the order in which they did their work, but no choice as to what work they did. Most of their reading and

language work were assigned in reading group. Math was assigned by grade level. The students in the reading groups, designated by color, were posted in the front of the room and work assignments were listed next to the group labels.

Rizzo was constantly reprimanding students for talking with each other, for being out of their seats, and for not working. These reprimands were done loudly, sometimes in an insulting and degrading manner. The following excerpt from the field notes is from a five minute period during which Rizzo was doing a language exercise with the second graders.

> T is reading words and kids are writing them in a workbook, like a spelling test, but T calls it an 'exercise.'
>
> T to Roberta:Don't look over at her (points to Lisa). Look here--at your own desk.
>
> T to Jerry:Leave your book flat.
>
> T to Sandra:Leave your book flat or everyone can see it.
>
> T helps Jerry and then Paul. She gives him a hint and he begins to say the answer. T to Paul:Don't tell me the answer.
>
> T to Paul who is swinging his arms a bit:We aren't doing karate now.
>
> T to Jerry:Turn around and face this way.
>
> T to Rich who is swinging his arms a bit (really not very much or in a disruptive manner):What are you doing now, practicing your cursive? We don't swing things around.
>
> T to Paul:Where's the vowel in this word?
> Paul begins to answer her.
> T:Don't tell me. (The implication is that he is to write it and not say it out loud because others will hear.)

T:Rich, you're having trouble again following directions toots... There is no excuse for this.

T to Phil:Why haven't you done it? You're not following us Did you get to bed late last night? Or early?
Phil:I don't know. (This mumbled.)
T:Were mommy and daddy home?
Phil:(Nods yes)
T:Then you probably got to bed early.

T:Jeff, are you asleep too? Get a nap at 12:00 (noon).

Although students were engaged in multi-task and class-task type activities for relatively large amounts of time, Rizzo did not formally permit children to move about the room freely during these times. She worked with reading groups during these activities, but was constantly interrupting the reading group to insist that students in the rest of the class be quiet or sit down. Never-the-less, students did engage in a fair amount of interaction during these activities. Children seated near one another frequently talked with each other. Children were often out of their seats, going to the bathroom, getting a drink of water, getting new material, sharpening pencils, etc. They often made contact with other students as they went about these tasks.

The students were seated in rows. All the second graders sat on one side of the room and all the third graders sat on the other. The teacher made very few seating changes during the observation period. The few changes she did make were for discipline reasons, to separate children who she felt were talking too much or who were bothering others. There was an art area with easels in the back of

the room and a library with a rug and comfortable seating. Students who were finished with their assigned work were allowed to go to these areas.

Casey

Casey's classroom was a multi-graded fifth and sixth grade classroom which was designated as an open classroom by the school. Casey spent a great deal of time discussing problems with students, individually and collectively. Students spent 13.8% of the school day in large group information giving activities. Students took an active part in discussing rules, plans, conflicts and discipline. Once a week time was specifically set aside to discuss class problems. To be sure, Casey maintained a high level of control over these discussions. However, this was the only classroom in which students had at least the opportunity to express grievances. In other classrooms conflicts were either ignored or dealt with symptomatically and only when they became "disruptive." The goal of conflict resolution in Casey's classroom was to resolve the conflicts. In other classrooms the goal of conflict resolution was to end a disruption.

Despite Casey's attempt at conflict resolution, she spent a considerable amount of time reprimanding students for improper behavior, usually for talking too loud or for not working. At one point in the term she developed a point system to maintain discipline. Every time a student was reprimanded he or she had to mark down a point on a special

form. The point totals were read off publicly at the end of the week and those who had less than a certain number of points received a reward.

Students were seated around tables or desks pushed together. The teacher made several seat changes during the observation period. She told me that she took students' desires into account in these assignments, but she also paired or grouped students together who she felt would be good for one another (in terms of work and behavior). There was a classroom library with a rug and large cushions.

Casey's students spent nearly 30% of their time engaged in multi-task activities and just over 25% of their time in class-task activities. During most of these activities they were free to move about the room freely and to interact with others.[*] The students had weekly assignments which had to be completed by the end of the day on Fridays. Some of the reading and language assignments varied by reading level. Students were assigned math by grade level. Students were free to choose when they did their work as long as work was completed by the end of the week.

There were three reading groups in the class. Most of the sixth graders were in a sixth grade group. Most of the fifth graders and a few sixth graders were in a fifth grade group, and two sixth graders and two fifth graders were in a fourth grade group. Spelling words were assigned by reading

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[*] The one exception to this was a daily reading period during which all students had to read by themselves. This was coded as a class-task activity.

group. There was a spelling pre-test and a final test each week. The teacher gave the words for all three groups at the same time. (For example she would announce "the first word is..." and then give three words, the first for the sixth grade group, the second for the fifth grade group, and the last for the fourth grade group.)

The students interacted frequently with one another. Most of the time there was a constant buzz in the classroom as various students talked with each other about work, events in the classroom, and outside interests.

Chapter IV

THE RELATIONSHIP BETWEEN FRIENDSHIP CHOICES AND INTERACTION TIES

The sociometric test, devised by Moreno (1934), has been used in one form or another in hundreds, if not thousands of studies in the investigation of a wide variety of classroom issues. Moreno asked students to indicate the two classmates with whom they would most like to sit. A student's social status in the classroom was measured by the number of choices he or she received. Many variations of this technique have since been used. Children have been asked to indicate classmates with whom they would like to work (in a reading group, math group, class project, etc.) and with whom they would choose to play. Students have frequently been asked to identify their classroom "best friends" or those classmates who they "like."[1] Some forms of the test limit student responses to a pre-set number while other forms allow students unlimited choices. The aim of the sociometric test, in all its variations, is to describe "the feelings of the group members toward each other with respect to a common criterion" (Gronlund, 1959, p. 3).

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[1]. Gronlund argues that, technically, such friendship questions should not be considered sociometric ones. He calls them "near-sociometric" questions because their "lack of a clear-cut criterion of choice and the absence of any implied action would not assure valid responses (Gronlund, 1959, p. 7). He acknowledges that such questions can serve useful purposes in research settings. In fact, they have been widely used and interpreted as if they were true sociometric questions.

Students' sociometric choices have been used in a variety of ways. Pattern's of choices and mutual choices are often interpreted as representations of the social structure of the classroom. Typically this structure has been described as varying along a dimension with centrally structures groups at one end and diffusely structured groups at the other end. Centrally structured groups are those in which a few students, the "stars" receive a large number of choices while others, "neglectees" and "isolates" receive few choices. The friendship choices in diffusely structured groups are more evenly dispersed. There are few stars and few neglectees and isolates in these groups (Schmuck, 1963).

Many studies have looked for relationships between students' statuses, as measured by the number of choices received, and other characteristics of the students. For example, status has been related to intelligence (Deitrich, 1964; Roff and Sells, 1965), nurturance giving (Moore and Updegraff, 1964), and birth order (Sells and Roff, 1964). Still other studies have looked at factors that might change low status students' social position in the classroom. For example, Retish (1973) explored the effects of positive, public reinforcement to low status students by teachers.

Some studies have related patterns of friendship choices to other characteristics of the classroom peer group. Muldoon (1955) related patterns of liking to group cohesiveness. Schmuck (1963) related patterns of centrality and diffuseness to the amount of positive group affect.

Some recent studies examined various classroom factors which might affect the social structure of the peer group as measured by a sociometric questionnaire. Hallinan (1976) compared the patterns of friendship choices in open and traditional classrooms. Hallinan and Tuma (1978) examined the effects of various types of instructional organization on the stability pattern of classroom friendships. Hansell, Tackaberry, and Slavin (1981) explored the effects of cooperation and competition on the structure of student cliques. Hansell and Slavin (1979) studied the effects of cooperation on cross-race friendships.

Most of the studies which have asked questions about friendship or liking have assumed, at least implicitly, that students' choices indicate past and future interaction patterns. Hallinan (1976) explicitly made this assumption. She stated that "the single most important factor affecting the formation and development of friendship among children is the amount of interaction in which they engage." She argued that open classrooms, where children are permitted to engage in high levels of interaction, would lead to patterns of friendship choice different from those found in traditional classrooms, where interaction among children is limited. She measured the friendship choices and assumed that mutual friendship choices were the result of interaction between pairs of students. She did not measure directly rates of interaction between students who chose one another.

In other studies (Hansell and Slavin, 1979, for example), children in some experimental groups were induced to cooperate with one another while children in other groups were induced to compete with one another. The researchers measured the effects of these conditions by asking the children to indicate their best friends. Their implicit assumption was that children would continue to interact with those whom they have designated as best friends. The goal of this type of research is to look for ways to change interaction patterns in classrooms. Again, the children's actual patterns of interaction were not examined.

Only a few studies have directly compared students' responses on sociometric tests with their interaction patterns.[*] Byrd (1951) asked fourth graders to indicate whom they would prefer as fellow actors in a classroom play. Over the next two months each student had the opportunity to actually choose classmates and to put on a short play with them. The correspondence between choices made as a response to Byrd's initial question and actual choices were quite high. Both acts involve choices which do not have to be reciprocated and in which those chosen have little influence in the process. Furthermore, the experimenter ensured that the choosers had opportunities to actually interact with

[*] There are a number of studies which related peer evaluations to other behaviors. Winder and Wiggins (1964), for example, studied the congruence of reputation overt behavior. Bonney (1955), and Bonney and Powell (1953) related students' sociometric status to various observed social behaviors such as conforming behavior, smiling, cooperative behavior and voluntary contributions to group activities.

those chosen. In non-experimental situations most interactions involve a measure of choice on the part of all concerned. Also, there are many constraints in most classrooms which limit the amount of interaction between two students who feel friendship with one another and who would like to interact with each other. Therefore, Byrd's study is of limited value in comparing friendship choices and behavior under everyday classroom circumstances.

Singleton and Asher (1977) compared sociometric data and observations of actual interactions in their research on cross-race and cross-sex friendship and interaction patterns. The sociometric ratings for preferred play and work partners were consistent with the observational data in the sense that proportions of children choosing cross-race and cross-sex partners were similar to proportions actually engaging in cross-race and cross-sex interactions. A major limitation of this study was that the observational data were comprised of simple counts comparing cross-race to same-race interactions and cross-sex to same-sex interaction. No attempt was made to determine whether or not the specific children who made cross-race and cross-sex partner choices ever interacted with those particular partners.

I have found only one study that compared individual children's sociometric choices to actual interaction patterns. Biehler (1954) compared kindergarten children's choices of playmates with the children with whom they

actually played. He found a high correspondence between children's first choice play partners and their actual playmates. He found little relationship between of the children's next four choices of play partners and actual playmates.

The relationship between friendship choices as indicated on a sociometric instrument and actual interaction partners, then, is largely unexplored. Yet, this is a crucial link. Here-to-fore it has been assumed that sociometric stars interact with a wide variety of others, and that sociometric isolates are behaviorly isolated, at least as far as positive relationships with other children are concerned. It has been assumed that because boys and girls rarely choose each other as friends that they rarely have positive interactions with each other. It has been assumed that when black and white children begin to nominate each other as friends that they have and will continue to have positive relationships with each other in their classrooms.

If, in fact, friendship choices and interaction patterns are nearly synonymous, as has been assumed, the act of collecting data about social structure and interpreting such data is made quite simple. Indeed, one reason for the wide use of sociometric tests is that they are a relatively quick and inexpensive way to gather large quantities of data. The assumption that choices and interaction are similar makes interpretation of sociometric data rather

straight forward. Sociometric status can be determined by how many choices children receive, and this can be correlated with any number of other factors.

But what if friendship choices do not always indicate children's actual interaction partners? What then, do the responses to sociometric questions mean? They probably do measure aspects of status in the classroom and can be used as one dimension in describing the social structure of the peer group. But they cannot be used as the sole basis for describing social structure. The child who receives many friendship choices but does not interact with very many others is isolated. The child who receives few choices but has positive relationships with many other children is not isolated, and the label of sociometric isolate is misleading.

In Chapter I of this report, I discussed some reasons why children's interactions with peers are classroom behaviors worth studying. As children interact with others they receive nurturance and support, feedback on their ideas and behavior, and have access to resources and help. If responses to sociometric questions do not correspond to interactions, they are not useful for exploring these issues.

The relationship between friendship choices and interaction is probably dynamic. Children are likely to view others with whom they have frequent non-negative interactions as friends. They also are likely to seek out

friends for interaction. Interaction leads to friendship, and friendship leads to further interaction. I will not attempt to separate cause and effect. In the following sections of this chapter I will: (1) describe the correspondence between friendship choices as indicated on a sociometric instrument and actual patterns of interaction; and (2) discuss factors which lead to a greater correspondence between these two measures in some classrooms than in others.

THE CORRESPONDENCE BETWEEN FRIENDSHIP CHOICES AND INTERACTION TIES

Measures of friendship choices and interaction. Students were given a list of their classmates and asked to indicate who were "best friends," "friends" and "not a friend."[11] Students in four classrooms were then asked, "Who are your two very best friends in your class?" These friendship choices were obtained during the spring after most of the classroom observations had been completed. Not all students were interviewed and thus it was not possible to obtain friendship choices from all the students in any classroom. A value of 1 was assigned to "not a friend" choices, 2 to "friend" choices, 3 to "best friend" choices and 4 to "very best friend" choices. For much of this analysis "best friend" and "very best friend" choices have been collapsed into the "best friend" category. This was

11. The interviewers read each name on the list to the students in the primary grades. The fifth and sixth grade students read the names themselves.

done so that the four classrooms in which the "very best friend" data were obtained could be compared with the rest of the classrooms.

The measure of interaction used in this study is the various strength ties students had with one another.[18] Only in-classroom interactions were counted. Ties between two students could range in strength from 0 to 8. A value of 0 means that the students had virtually no interaction with one another during the observation periods. A value of 8 indicates that both students had 15% or more of all their non-negative interactions with one another. All correlations reported here are based on the complete 0 through 8 scale of ties. However, in the two-way tables showing relationship between friendship choices and ties, ties with values of 1 through 4 have been combined into a "weak tie" category, and ties with values of 5 through 8 have been combined into a "strong tie" category.

Correlations between friendship choices and interaction ties. The correlation between friendship choices and interaction ties for students in all the classrooms is .28.[19] Although this is a statistically significant relationship ($p < .01$), it does not indicate a particularly strong relationship between the two measures. Knowing the

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18. A complete discussion of ties, how they were calculated, and what they mean can be found in Chapter III.

19. "Very best friend" and "best friend" choices were combined for this correlation. When the "very best friend" choices, which were obtained in only four of the classrooms, are kept separate from the "best friend" choices the correlation is .30.

TABLE IV-1

CORRELATIONS BETWEEN FRIENDSHIP CHOICES AND TIES

Teacher	Correlations between ties and choices: not a friend, friend, best friend	Correlations between ties and choices: not a friend, friend, best friend, two very best friends
Casey	.50	.56
Schultz	.39	.46
Warren	.37	--*
Gibson	.26	--*
Rizzo	.23	.21
Reed	.18	--*
Snyder	.16	.20
Bell	.07	--*
All Classrooms	.28	

*Children in these classrooms were not asked to indicate their two very best friends.

value of one measure only explains about 8% of the variance in the other measure. Knowing one student's friendship choice of another is not very informative about how much interaction the two students had with one another.

There was considerable variation among the classrooms in the strength of the correlations between friendship choices and interaction ties. Table IV-1 shows this correlation for each classroom. The correlations presented in the first column exclude the "two very best friends"

question from the calculations, while the second column includes it. In three of the classrooms, knowing the children's choices of two very best friends slightly improves the correlations, while in one classroom the correlation is slightly lower.

The correlations range from virtually 0 in Bell's classsroom to .50 in Casey's. Even the strongest relationship, .56 for Casey's students when using the "two very best friends" question, indicates considerable variations between actual interactions and friendship choices. Because the correlations do vary so much by classroom and because they are so low in some classrooms, responses to questions about friendship should never automatically be used as indications of interaction patterns.[16]

An examination of two-way tables leads to a better understanding of the relationship between friendship choices and interaction ties than can be achieved by simply examining the correlations of the two measures.

Two-way tables. Table IV-2 shows the proportion of children who had strong, weak and no ties with those classmates they designated, respectively, as "best friends," "friends," and "not a friend." Overall, students had strong ties with only 28.8% of their "best friends." They had no ties with 47.8% of those whom they said were best friends,

16. Preliminary data analysis in the few classrooms in which the friendship choices of most of the students were obtained indicates that knowing mutual choices only slightly improves the prediction of interaction.

TABLE IV-2

PROPORTION OF STUDENTS WHO HAD STRONG, WEAK, AND NO TIES WITH THOSE THEY DESIGNATED AS "BEST FRIEND," "FRIEND," AND "NOT A FRIEND"

Teacher	"Best Friend"			"Friend"			"Not a Friend"		
	No Tie	Weak Tie	Strong Tie	No Tie	Weak Tie	Strong Tie	No Tie	Weak Tie	Strong Tie
Casey	21.5%	17.7%	60.8%	64.9%	27.0%	8.1%	80.2%	17.2%	2.6%
Schultz	38.8	22.5	38.8	72.7	18.2	9.1	78.1	17.2	4.7
Warren	29.2	33.8	37.0	64.4	27.2	8.4	71.8	21.8	6.5
Gibson	36.4	32.3	31.3	61.1	27.0	11.9	69.6	18.3	12.2
Rizzo	63.9	12.6	23.5	80.1	11.5	8.3	81.8	18.2	0.0
Reed	58.0	16.0	26.0	69.2	18.2	12.6	74.6	17.9	7.5
Snyder	68.9	11.8	19.3	73.6	11.8	14.5	96.6	0.0	3.4
Bell	59.9	25.9	14.2	34.8	31.3	25.6	61.8	30.9	7.3
All Classrooms	47.8%	23.4%	28.8%	67.7%	22.4%	9.9%	75.4%	18.7%	5.9%

The relationship between best friend choices and interaction ties was particularly weak in four of the classrooms--Rizzo's, Reed's, Snyder's, and Bell's. Students in these classrooms had no ties with some 60% or more of their "best friends." Students in Casey's class were the only ones who showed a high correspondence between best friend choices and interaction ties. They had strong ties with 60.8% of their designated best friends. Even so, they had no ties with just over 20% of those who they said were best friends.

Even when students were asked to indicate their two very best classroom friends, they did not necessarily choose others with whom they had high rates of in-class interaction (see Table IV-3). Rizzo's and Snyder's students had no ties with a large proportion of those they said were "very best friends." On the other hand, Schultz's and Casey's students did have strong ties with many of their "very best friends." Overall students had strong ties with 52.2% of their very best friends and no ties with 33.9% of their very best friends.

It is worth reiterating at this point that interaction ties are only indicative of within classroom rates of interaction. Students can interact with "best friends" in other settings--on the playground, in the lunchroom, in gym, or at home. The data presented here show only that students do not have high rates of interaction in their classrooms with many of their classmates who they say are best friends.

TABLE IV-3

PROPORTION OF STUDENTS WHO HAD STRONG, WEAK, AND NO TIES WITH THOSE THEY DESIGNATED AS "VERY BEST FRIENDS"

Teacher	"Very Best Friend"		
	No Tie	Weak Tie	Strong Tie
Casey	14.6%	12.2%	73.2%
Schultz	18.2	4.5	77.3
Rizzo	63.3	20.0	16.7
Snyder	45.5	18.2	36.4
All Four Classrooms	33.9%	13.9%	52.2%

If a student said that a classmate was a "best friend" it is difficult to predict how much interaction there had been between the two students. However if a student said that another student was "not a friend," or even a "friend," there is a good chance that the two students had little or no in-class, non-negative interaction with one another. Students had no ties with 67.7% of those who they said were "not a friend."

Table IV-4 shows the proportion of students who said they were "best friends," "friends," and "not a friend" with those classmates with whom they had, respectively, strong, weak, and no ties. The students said that they were best friends with more than 60% of those with whom they had

TABLE IV-4

PROPORTION OF FRIENDSHIP CHOICES OF CLASSMATES WITH WHOM STUDENTS HAD STRONG, WEAK, AND NO TIES

Teacher	Strong Tie			Weak Tie			No Tie		
	Not a Friend		Best Friend	Not a Friend		Best Friend	Not a Friend		Best Friend
Casey	6.5%	31.2%	62.3%	26.0%	63.0%	11.0%	42.4%	52.9%	4.7%
Schultz	6.5	26.1	67.4	20.8	45.3	34.0	28.2	54.2	17.6
Warren	9.3	24.4	66.3	18.4	46.3	35.4	30.2	54.6	15.3
Gibson	12.6	26.1	61.3	13.4	42.0	44.6	26.0	48.4	25.6
Rizzo	0.0	31.7	68.3	15.4	46.2	38.4	11.8	54.8	33.4
Reed	13.2	52.6	34.2	24.5	59.2	16.3	26.5	58.2	15.3
Snyder	2.1	33.3	64.6	0.0	40.6	59.4	12.7	36.8	50.4
Bell	9.3	25.6	65.1	17.2	31.3	51.5	14.6	34.8	50.6
All Classrooms	8.2%	29.8%	62.0%	18.1%	46.8%	35.1%	25.4%	49.4%	25.1%

strong ties, while they said they were "not a friend" with only 8.2% of those with whom they had strong ties.

These data indicate that children feel that they are friends, and usually best friends, with those with whom they have high rates of interaction. But, they also see themselves as being friends and best friends with many other children in their classrooms, children with whom they have little or no in-classroom interaction. This means that responses to questions about whom students like, or whom their friends are, are not good indicators of classroom interaction patterns. They are not very informative about peer networks in the classroom.

FACTORS WHICH AFFECT THE RELATIONSHIP OF FRIENDSHIP CHOICE AND TIES

What accounts for the relatively weak relationship between friendship choice and interaction ties? What accounts for the fact that this relationship is markedly stronger in some classrooms than in others? I will argue that the answers lie primarily in understanding how activity structures and the teachers' seating rules (and teacher enforcement of those rules) affect the opportunities students have to interact with one another in their classrooms. Before discussing these issues I will note two other factors which might account for some of the variation in the strength of the correlations between friendship choice and interaction ties.

TABLE IV-5

AVERAGE NUMBERS OF "BEST FRIEND" CHOICES AND STRONG TIES

Teacher	Correlation of friendship choices and interaction ties	Average number of "best friend" choices	Average number of strong ties
Casey	.50	3.8	3.9
Schultz	.39	6.7	3.8
Warren	.37	7.0	3.8
Gibson	.26	9.0	4.6
Rizzo	.23	8.5	2.9
Reed	.18	4.5	2.9
Snyder	.16	13.4	3.9
Bell	.07	13.1	2.7

The data presented in Table IV-2, IV-3, and IV-4 indicate that the low correlations stem from the fact that children nominate a number of others as best friends with whom they do not interact. Variations in the strength of these correlations could occur because children in some classrooms nominate many more best friends than do children in other classrooms and yet have the same (or fewer) numbers of strong ties as do the children in the other classrooms. Table IV-5 shows the average number of "best friends" choices and the average number of strong ties students had in each classroom. In the classrooms with the lower

correlations children did tend to nominate larger numbers of others as best friends and they did tend to have fewer strong ties than did the children in the classrooms with higher correlations.

It is difficult to account for the difference in the numbers of best friend choices. There might be a strong norm of friendship in some classrooms. "We are all good friends here" may be a message conveyed to them by their teacher or principal. It may be that children in some classrooms do perceive large numbers of other children in the class as their best friends even if they have no interaction with them. And, of course, children may well be interacting with many of those designated as best friends outside of their classrooms. Whatever the case, it is still not clear why children have very low rates of in class interaction with many of the children whom they identify as their best friends.

Another factor which might account for the relatively high correlation between friendship choices and interaction ties for Casey's students is the older age of these children. This is the only upper elementary level classroom in the study. The friendship choices of older children might be a more accurate guide to interaction patterns than are those of younger children. There is some evidence for this in previous works. Gronlund (1959) notes that studies have shown that sociometric results are more stable for older children. In addition, he claims that younger

children make little discrimination beyond their first choice. It is possible that older children are more discriminating and accurate in their indications of best friends. It also is possible that younger children do perceive many others as their best friends. But, after years of schooling in which interactions in their classrooms are limited to certain others, they only see those certain others as their best friends.

Of the four major factors affecting interaction--opportunity, interest, visibility, and reward structure (see the interaction model in Chapter II)--opportunity for interaction seems to have the greatest effect in limiting children's interaction with those identified as best friends. To the extent that children are physically separated from "best friends" and to the extent that movement in the classroom is restricted, students will be unable to interact with at least some of their "best friends." Activity structures, seating arrangements and rules about "staying in your seat" (and their enforcement) are the key variables affecting opportunity for interaction.

Even when children have many opportunities to interact with whomever they like, they will not necessarily choose to interact with best friends. The students in Gibson's classroom probably had the most opportunities to interact with whomever they chose, yet the relationship between friendship choices and interaction ties was not as high in this classroom as in some others. For a variety of reasons

students in this classroom often interacted with others for the purposes of giving and receiving academic help. They did not necessarily seek out best friends for such help, but rather sought others who were in the best position to give them help. Aspects of the reward structure countered the effects of opportunities for interaction and limited the relationship between friendship choices and interaction ties. In chapters V and VI on reading groups and patterns of interaction, I will concentrate my discussion on factors which make interaction among certain children more likely. In the next sections of this chapter I focus primarily on factors which tend to constrain interaction.

Activity Structures. Children have the most choice of interaction partners during activities which allow them to move freely around the room. Presumably, they could choose to interact with others whom they feel are their best friends. Free time, multi-task activities, and non-academic class-task activities give students the most freedom of movement. In the classrooms in which children spend more time engaged in these types of activities there should be a stronger relationship between friendship choices and interaction ties than in classrooms where they spent less time in these activities.

During free time activities children have almost complete freedom to interact with whomever they chose. The free time activity category includes both outdoor recess and in-class free time. However, interactions during outside

recess were not recorded and were not included in the measurement of interaction ties. The interactions during in-class free time periods were recorded and were included in determining ties. Since children in all the classrooms spent about the same amount of time in outside recess, differences in the amounts of free time activities represents differences in the amounts of in-class free time.

Children were doing a variety of things during multi-task activities and had (or found) many reasons to move about their classrooms. Students often moved around their classrooms getting books, handing in material, getting new work, getting folders with study materials, going to the bathroom, or just getting a drink of water. On their way to or from (usually to and from) such trips, they often made contact with children in many parts of the room. Some children took rather circuitous routes on their journeys so that they could talk with several friends. In some of the classrooms children also moved about asking for help from one another during multi-task activities.[2']

All of the classrooms had a library area and several classrooms had learning centers of one sort or another. During multi-task activities small groups of children often gathered in these areas. Thus, students had the opportunity to gather with friends who were not seated close to them.

[2']. Helping behavior was discouraged in some of the classrooms, while it was tolerated in others. In none of the classrooms did teachers generally encourage students to help one another, although occasionally one child was assigned to help another.

Quiet talking and walking about the room to talk with others is not particularly disruptive to the class. Many of the teachers allowed the children to engage in at least low levels of such interactions during a large proportion of multi-task activity time. But even when a teacher did not permit the students to interact freely during multi-task activities, the nature of multi-task activities made it difficult to enforce such rules. As children wandered about the room for their various "task-related" reasons, they would contact others. The teachers' attention was usually focused elsewhere--helping individual children, preparing material for another lesson, or, more frequently, working with a reading group.

Some students' movements were more restricted than others. Children whom teachers felt had trouble finishing their work were often watched more carefully than their classmates. In general, teachers curtailed interactions which became noisy. Some students were noisier than others and received more reprimands during multi-task activities.

Students had considerable freedom of movement during non-academic class-task activities. Compared to their behaviors during academic class-task activities, teachers were more relaxed and were not nearly as concerned about keeping students "on task." During art activities, the most common non-academic class-task activities, students wandered around the room and talked with each other quite freely. There also was considerable movement about the room getting

art supplies or cleaning up. Thus, children had many opportunities to interact with a wide variety of others during these activities.

Activities during which at least some children were formally grouped, tended to limit the interaction possibilities for and with those in the group. This was true even during multi-task activities. Therefore, grouping children during a multi-task activity inhibited children's freedom to choose interaction partners. Grouping by ability (or achievement) and grade level in multi-graded classrooms were, by far, the most common bases for grouping students.

Table IV-6 shows the proportion of time in each classroom devoted to activities during which children were most free to interact with others of their own choosing. The table also shows the proportion of time spent in activities during which some of the children were grouped. In the classrooms which had the highest proportions of activities allowing freedom of movement children were most able to interact with others designated as best friends. In Gibson's and Rizzo's classrooms the high proportion of activities which usually allow students many opportunities to interact with many others, was counterbalanced by a high proportion of activities during which children were grouped. Students engaged in group work with the teacher are unavailable for interaction with other members of the class. In Gibson's classroom, children were engaged in multi-task activities for nearly 40% of the time. However, during 60%

TABLE IV-6

PROPORTION OF TIME SPENT IN VARIOUS ACTIVITIES

Teacher	R	Proportion of time spent in multi-task activities	Proportion of time spent in non-academic class-task activities	Proportion of time spent in activities allowing free movement	Proportion of time spent in activities during which students are grouped
Casey	.50	28.3%	0.0	28.3%	13.3%
Schultz	.39	24.1*	--*	24.1*	--*
Warren	.37	15.4	3.3	18.7	21.9
Gibson	.26	38.9	0.0	38.9	36.2
Rizzo	.23	18.6	4.9	23.5	49.7
Reed	.18	1.4	14.0	15.4	17.5
Snyder	.16	2.0	8.1	10.1	32.1
Bell	.07	0.0	3.7	3.7	12.3

*Observations were limited to mornings in this classroom. It was impossible to calculate the proportion of time spent in different activities, although the indications are that they were similar to those in Warren's classroom.

of this time the teacher was working with a group. In Rizzo's classroom children spent just under 20% of their time engaged in multi-task activities. The teacher worked with small groups during virtually all of that time.

Proximity and teacher enforcement of rules. One component of opportunity for interaction is proximity. Children are more likely to interact with others who are seated close to them than with those seated relatively far away. Teachers assigned seats to students in seven of the eight classrooms. In some classrooms the seating arrangement was changed frequently (every couple of weeks), while in others it was rarely changed. In the classrooms in which seating arrangements were changed frequently, children sat near many classmates over a period of several months. Children in these classrooms had the opportunity to interact with a wider selection of classmates than did the children in the classrooms with unchanging seating.

The extent to which proximity is an important factor influencing with whom students are likely to interact, varies depending on the types of activities in which students engage. As I have shown, the activity structure can strongly affect students' freedom of movement. When students are allowed to move about the classroom freely seating arrangements become less important in determining likely interaction partners than when students are restricted to their assigned seats.

TABLE IV-7

SEATING AND MOVEMENT

Teacher	Seating	Amount of Movement Tolerated during Multi-Task and Class-Task Activities
Casey	Assigned Changed Frequently	high
Schultz	Assigned Several changes during observations	high
Warren	Assigned Changed Frequently	high
Gibson	Children chose own seating and free to change whenever they chose	high
Rizzo	Assigned Few Changes	low
Reed	Assigned Few Changes	low
Snyder	Assigned Few Changes	low
Bell	Assigned Few Changes	low

Despite activity structure, the teachers in this study varied in the amount of movement they tolerated. Some teachers permitted children to move about freely during multi-task and class-task activities, including academic class-task activities. Other teachers attempted to restrict

movement during all types of activities, including during multi-task activities.

Table IV-7 shows which teachers permitted movement during class-task and multi-task activities and also shows frequency of seating changes in each classroom. Once again, it appears that in the classrooms where children were able to move about relatively freely, reported friendships were more similar to actual interactions than in classrooms where movement was restricted. Also, in the classrooms where there were frequent seating changes, children's friendship choices were more congruent with whom they did interact than were those of children in classrooms where seating changed infrequently.

CONCLUSIONS

When students had the opportunity to interact with whomever they chose, they were likely to interact with others identified as best friends. The relationship between friendship choices and interaction ties was stronger in classrooms in which students spent time engaged in activities allowing movement around the room and in which teachers permitted free movement.

These findings make it possible to explain why the correspondence between choice and ties was relatively low in all classrooms. Activities which were most likely to allow freedom of movement accounted for less than one-half of the time in any classroom. In most classrooms these activities accounted for less than one-third of the school day. None

of the teachers permitted children complete freedom of movement during these activities. In seven of the classrooms children were assigned seats, and large portions of their time in school was spent in those seats, thus limiting interaction partners. It is understandable why children have virtually no in-class interaction with many of the children they identify to be best friends. What is surprising is that, despite all the restrictions on them, they see so many of their classmates as best friends.

The basic finding of this section may seem obvious. When children are allowed to interact with whomever they choose, they tend to interact with their friends. There are, however, several important implications here. First, the findings mean that the relationship between interaction and friendship is not a simple one. Children do not necessarily come to see all those with whom they interact in relatively positive ways as their friends. And, they see many children as friends, even though they do not interact with them at all in their classrooms.

Second, activity structures do make a difference in the patterns of interaction. More will be said about this in following chapters. The point to be made here is that activity structures must be taken into account when examining patterns of interaction.

Third, classroom practices such as assigning seats and changing assignments frequently, can strongly affect with whom children are able to interact.

The points discussed here also indicate that thinking about opportunity for interaction as a combination of proximity and freedom of movement is a useful approach.

In the next two chapters I will examine the effect of reading group and sex on interaction patterns. I also will look at how these factors affect whom children indicate as friends. This will further illuminate the relationship between friendship choice and interaction. I will then use the behavioral ties that students have with one another to describe patterns of peer networks.

Chapter V

READING GROUPS

In most of the elementary school classrooms in this country children are grouped for reading instruction (Austin and Morrison, 1963; Wilson and Schmits, 1978). Reading groups tend to be highly visible, meet frequently and are maintained throughout the school year. The use of reading groups creates opportunities and interests for children within the same groups to interact with one another.

All classrooms in this study had reading groups, and most teachers spent at least an hour each day working with reading groups. In some classrooms, teachers spent as much as two hours a day working with reading groups. Clearly the potential exists for reading group membership to form the basis for important divisions among students within classrooms. In this chapter I will: (1) discuss reading groups and their role in the larger stratification process in American society; (2) examine the relationship between reading group membership and interaction ties and between reading group membership and friendship choices; and (3) explore factors which create and modify the relationships which occur.

Reading Groups-The First Step in the Sorting Process

Homogeneous reading groups continue to be widely used in classrooms despite studies which suggest they are not a particularly effective means of instruction, especially for low-ranking students. Compared with heterogeneous grouping

procedures, high ranked students do as well or somewhat better in homogeneous groups while low ranked students do worse (Chesler and Cave, 1981; Eder, 1981). The use of reading groups is promoted by teacher training programs and by the literature read by classroom teachers. The use of homogeneous groups is supposed to enable teachers to work effectively and efficiently with children who are at different levels and have different needs. Two alternatives, individualized instruction and heterogeneous grouping, are seen to have serious drawbacks. Many teachers feel individualized instruction would consume an inordinate amount of their time. They believe it would take more time to work with individual children than with groups and are concerned about the considerable amount of bookkeeping needed to keep track of their students' progress. Heterogeneous grouping is seen as unfair both for faster and slower learners. There is concern that "brighter" children would have to slow down and learn at the rate of the slower children in the group. Teachers have concerns that slower learners, who would be likely to compare themselves with the faster learners, would suffer a loss of self-esteem as well as a decrease in motivation since they would be likely to feel that they have no hope of catching up with the others.[22]

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[22]. I used to give many talks to teacher groups describing open classrooms and techniques for individualizing instructions. Typically the teachers responded to these ideas with objections similar to the ones noted here.

The teachers whose classrooms are discussed here took it as a matter of course that some form of homogeneous grouping would be used for reading instruction. For example, Gibson, who started teaching in the middle of the school term several years previously, told me of her shock that the first term teacher had not used groups. From my field notes:

> Gibson complained (to me) that she couldn't find any system that the other teacher was using. All the kids were in different places in math and reading. She said that the other T, "just let them go on as they finished their work." (This was said rather incredulously.)

Gibson said that she promptly promptly organized the students into reading groups.

Ostensibly, ability and reading readiness are the bases by which children initially are sorted into reading groups. In fact, teachers rarely have much evidence of students' abilities at the beginning of first grade and many other factors usually are involved in the placement decisions. Rist (1970) described a variety of non-academic criteria used to sort children into groups. In his study, family social class, behavior and performance of older siblings, and children's style of dress, speech and personal grooming influenced where children were placed. Other studies (Grant, 1981; Eder, 1981) have identified teachers' perceptions of children's maturity as a key factor in assigning children to groups. Children who are seen as bright but immature usually are not placed in the top group

so as not to disrupt those who are (presumably) ready to learn.

First grade teachers typically alter reading group assignments in the first few weeks of a new term, but then placements stabilize and there are few additional changes (Weinstein, 1976; Rist, 1970, 1978; Groff, 1962; Hawkins, 1966). There is, in particular, little movement of students initially assigned to top groups, even when children move on to new teachers in different grades (Rist, 1970).

During the period of observations in the eight classrooms in my study, Warren was the only teacher to move children from one level to another. Two children were moved from a low ranked to a middle ranked group and two children were moved from a middle ranked to a low ranked group. One child, who the teacher described as being extremely bright but very immature, was removed from the top reading group. Warren worked with him individually for the rest of the school year.

Once children are sorted into groups, they have different experiences depending on the group level. Eder (1981) found that, "while students in low groups were instructed in an environment characterized by disruption from the teacher as well as from other members, high group members were instructed in a much less disruptive environment." She attributed this finding primarily to the fact that the less mature students were placed in low groups. The experiences that children had in reading groups

were analyzed for five of the classrooms in this study (Gibson's, Warren's, Schultz's, Reed's, Bell's), as well as in three other first grade classrooms (Grant and Rothenberg, 1981). The findings were that, in comparison to their classmates in lower ranking groups, children in higher ranking groups learn more academic skills, have greater opportunities to demonstrate academic competence, engage in more autonomous, self-directed learning, and have more experiences which enhance expectations for future success. In addition to these academic advantages, we found that higher group children enjoy more trust in their interactions with teachers and with peers, have more opportunities to establish more equal interchange with teachers, and have more chances to form close personal relationships with teachers.

Teachers' differential treatment of groups should not be seen as simply favoritism of top group children. Rather, the use of homogeneous groups, combined with administration and community pressures on teachers to "produce" learning (as measured by high reading scores), makes differential treatment (and outcomes) almost inevitable. Teachers believe that the students in higher groups will learn more quickly and easily than those in the lower groups (after all, they are the "top" group). Teachers are not worried about the progress of students in the top group, and feel relaxed in terms of the use of time in the group. They take the time to talk with the children and to let the children

express themselves. Teachers feel more pressure to be task oriented when working with children in lower groups. Since these children are perceived as being slower learners than top group students, teachers do not feel that they have the time to casually chat with the students. Thus, the atmosphere in low groups is likely to be less relaxed than in the high groups and teachers are not as likely to form close personal ties with children in the low groups. Furthermore, since the children in the high groups are, almost by definition, more mature, they are given opportunities to learn and work independently. Teachers feel that they need to "sit on" the immature, low group students, and they give these children few opportunities to work independently.

Given the different experiences that children have because of their group placement, it is not surprising to find that students in the top groups have higher levels of achievement than do students in lower groups (Rist, 1970; Weinstein, 1976; Eder, 1981). As Eder noted, "those students who were likely to have more difficulty learning were inadvertently assigned to groups whose social contexts were much less conducive to learning." By the end of the year, these differences are likely to produce hard evidence, achievement scores, which are used to place children into appropriate reading groups in the next grade. The process continues and gaps between children in different groups are likely to widen as the students more from grade to grade.

Chesler and Cave (1981) cite evidence that achievement differences between minority and majority students, and between students from lower and higher income families, increases as children move to higher grades. It is likely that at least some of these increasing gaps in performance are due to differential placement in reading groups. The differences in treatment by reading group is not only an intra-classroom effect. In the Grant and Rothenberg study (1981) we found that in a white-collar community the experiences of children in the middle groups were similar to those in the top groups. In the classrooms in a blue-collar community, the experiences of the children in the middle reading groups were similar to those in the low groups. This, too, helps explain widening gaps between children from different social class backgrounds. Many more children in the white-collar community, compared to those in the blue-collar community, have experiences in reading groups which are likely to promote academic and social growth.

Assignment to reading groups becomes the first step in an academic sorting process which channels some students toward success and some students toward failure. This sorting process often closely parallels race, social class, and sex characteristics of children and is legitimated as a process based on merit (Bowles and Gintis, 1976; Chesler and Cave, 1981). Students who work hard and whose achievement merits it, are supposedly able to advance and move up the hierarchy of achievement groups. Yet, the different

experiences that children have in these groups, makes such advancement difficult at best.

The extent to which interaction patterns correspond to reading group placement can strengthen or weaken the differences created by reading group placement. If children interact primarily with other children in their reading groups, the different experiences that children have while in the group and working with the teacher continues through other times and other activities. Reading group membership becomes a master status within the classroom which can affect the whole pattern of peer relationships. To the extent that characteristics such as race, social class, and/or sex are reflected in reading group assignments, and to the extent that the total interaction pattern corresponds to reading group placement, differences by race, sex and social class become (or more likely, are reinforced as), major barriers among children.

THE RELATIONSHIP BETWEEN READING GROUP MEMBERSHIP AND INTERACTION TIES

The relationship between reading group membership and interaction ties will be examined in the classrooms of six teachers--Gibson, Warren, Rizzo, Schultz, Bell, Reed. In two classrooms, it was either not possible or not appropriate to look at the relationship between reading groups and interaction.[23] Table V-1 shows the composition

[23]. In Snyder's classroom half the class were first graders and formed a single reading group. The second graders split into five groups and were dispersed among all the second grade teachers for reading. I was unable

TABLE V-1

COMPOSITION OF READING GROUPS

Teacher	Grade	School SES	Levels	Enrollment in Reading Groups[1]		
				Boys	Girls	Total
Rizzo	2/3	Blue Collar	High 2nd	3	2	5
			Low 2nd	4	1	5
			High 3rd	1	4	5
			Mid 3rd	4	1	5
			Low 3rd	3	0	3
Gibson	1/2	White Collar	High 1st	1	3	4
			Low 1st	6	3	9
			High 2nd	2	6	8
			Low 2nd	2	2	4
Warren	1	White Collar	High	1	2	3
			Mid-A[2]	5	3	8
			Mid-B	2	4	6
			Low	4	3	7
Schultz	2	White Collar	High	2	6	8
			Mid	6	3	9
			Low	2	4	6
Reed	1	Blue Collar	Highest	0	1	1
			High	2	4	6
			Mid	7	3	10
			Low	6	3	9
			Lowest	2	0	2
Bell	1	Blue Collar	Highest	1	2	3
			High	5	2	7
			Mid	2	7	9
			Low	2	0	2
			Lowest	3	3	6

1. Enrollments are reported for the final observation period for each group.
2. The two mid groups in this classroom did the same work and progressed at the same rate. They are labeled Mid-A and Mid-B to distinguish them from each other.

of reading groups in each of the classrooms. Rizzo and Gibson had multi-graded classrooms. The children at each grade level were divided into reading group levels, and there were no cross-grade assignments. In Bell's and Reed's school a special hour long reading instruction period was set aside each day for all first graders. The first graders from all three of the first grade classrooms (which included Bell's and Reed's students) were divided into five ability level groups. Bell and Reed each worked with two of these groups, and the other first grade teacher worked with one first grade group.[24] Some reading groups contained only one or two children from Bell's or Reed's classroom. Those children and groups are excluded from the analysis which follows.

Warren and Schultz each had one child who was not part of a group. The teachers worked individually with these children. These children also are excluded from the analysis. In Warren's class there were two middle level groups. Both groups did the same work. Children were

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to interview this teacher and it was impossible to precisely ascertain the group placement of some of the second graders. This, combined with a single large first grade group, made any analysis of the relationship of reading groups to ties nearly impossible. In Casey's classroom, there were three reading groups, one each at a fourth, fifth and sixth grade level. Most of the fifth and sixth graders in the classroom were in the appropriate grade group. A few sixth graders were in the fifth grade group. The fourth grade group was made up of two sixth graders and two fifth graders. It was impossible to separate grade level effects from reading group effects.

[24]. The other first grade teacher had a split first and second grade class. She kept her second graders as her second group during the reading hour.

switched back and forth between these groups frequently during the fall, but the groups stabilized by January. I labeled these two groups Mid-A and Mid-B to differentiate them.

The fact that groups had different numbers of students in them (and in some cases there were big differences) means that it is difficult to use a simple statistic to compare groups and classrooms. Furthermore, children in different groups had different rates of interaction. To get a full picture of the interaction patterns, several different measures are needed. These measures control for different numbers of children in groups, different rates of interaction, and both these variables at once.

The first step in examining the relationship between reading group membership and ties will be to compare rates of in-group and out-group ties. This will indicate the overall importance of reading group membership for interaction and will make it possible to compare classrooms on this dimension. The second step will be to look for differences in interaction patterns between higher and lower groups.

Rate of in-group ties. Table V-2 presents the overall ratios of actual to expected in-group ties.[28] This table

[28]. The expected in-group ties are the proportion of ties that students would have with other students in the same reading group if all students were equally likely to interact with each other. As a simple example, assume a classroom has 10 students in it. Four children are in the bluebird group and six are in the robin group. There are 45 possible connections that could be made among the 10 children in the class (10 x 9/2). Of those 45

TABLE V-2

RATIO OF ACTUAL TO EXPECTED IN-GROUP TIES

Teacher	All Ties	Weak Ties	Strong Ties	Very Strong Ties
Rizzo	2.1	1.0	3.2	3.2
Gibson	1.4	1.0	2.0	2.6
Schultz	1.4	1.2	1.7	1.9
Warren	1.0	.6	1.6	1.8
Bell	1.0	.8	1.2	1.6
Reed	.9	1.0	.9	.6

indicates that in three classrooms, Rizzo's, Gibson's and Schultz's, the proportion of all in-group ties was appreciably greater than would be expected if reading group membership made no differences in children's interaction partners. The children in these classrooms had an even greater proportion of strong ties with members of the same reading group. Warren's students also had a

connections, 6 (4 x 3/2) are between bluebirds and 15 (6 x 5/2) are between robins. (There are 6 x 4, or 24 cross-group connections.) So, of the 45 possible ties 21 are in-group which is 46.7% of all possible ties. If reading group membership made no difference with whom children interacted, it could be expected that 46.7% of all the actual ties that do occur would be in-group ties. In this case, the proportion of actual to expected ties would be 1.0. The larger the ratio, the greater effect reading group membership has on with whom children have ties. This measure makes it possible to take into account the fact that these classrooms had different numbers of reading groups and reading groups had different numbers of children.

disproportionately high number of strong in-group ties. Reed's and Bell's students were no more likely to interact with children of the same reading group than they were with children of other reading groups.

Each strong tie that a child had accounted for at least 5% of all his or her interactions. Many of the strong ties accounted for a much larger percentage of all interactions, as high as 40% for some children. This means that the students in the four classrooms with a disproportionately high number of in-group strong ties had a very large proportion of all their interactions with other children in the same reading group.

In none of the classrooms were the number of in-group weak ties substantially greater than would be expected by chance. In fact, in two of the classrooms they were below the expected rate. This means that children had incidental interactions with children from all reading groups. No substantial relationships were found between reading group membership and weak ties when the rate of weak ties was examined separately for each group. The rest of this chapter discusses only the strong and very strong ties. Again, it should be remembered that the strong ties accounted for most of the interactions in the classrooms.

In four of the classrooms, then, students had a disproportionately high number of interactions with other members of their reading group. The next question is, whether or not the level of reading group made an

appreciable difference in interaction patterns. Several things are of interest here. First, did children at particular levels have greater total numbers of strong ties than children at other levels? Second, did children in certain level groups have greater proportions of strong in-group ties than children at other levels? Finally, were out-group ties evenly distributed among students of other groups, or were a disproportionate number with members of a particular other group?

Total number of ties

Table V-3 shows the average number of strong ties that children in each group had. In the four classrooms where children had a disproportionately high number of in-group strong ties, the children in the higher level groups tended to have a greater number of strong and very strong ties than did children in the lower ranked groups. This trend is particularly striking in the number of very strong ties the student had. (A very strong tie means that the two children involved averaged more than 10% of all their interactions with each other.)

In-group and out-group ties. As I noted earlier, several measures are needed to get a complete picture of in-group and out-group ties. Table V-4 shows the proportion of all possible connections that students in one group could have with members of every other group (as well as with students in their own group) that are strong ties. For example, in Rizzo's class, 8% of all the possible

TABLE V-3

AVERAGE NUMBER OF STRONG AND VERY STRONG TIES

Teacher	Reading Group Level	Average Number of Strong Ties	Average Number of Very Strong Ties
Rizzo	High 2nd	3.8	2.0
	Low 2nd	1.8	1.2
	High 3rd	3.0	1.4
	Mid 3rd	2.6	1.6
	Low 3rd	3.3	1.7
Gibson	High 1st	6.0	1.5
	Low 1st	4.4	1.3
	High 2nd	4.6	1.6
	Low 2nd	3.3	1.3
Warren	High	4.3	2.7
	Mid-A	3.8	2.1
	Mid-B	3.8	1.8
	Low	3.7	1.3
Schultz	High	4.7	1.7
	Mid	4.3	1.5
	Low	1.5	.6
Reed	High	2.3	1.3
	Mid	3.6	1.6
	Low	2.3	.9
Bell	Highest	2.7	.7
	High	2.9	1.3
	Mid	2.7	1.1
	Low	2.8	1.7

connections between students in the high third grade group and students in the mid third grade group were strong ties. Of the possible connections the students in the high third grade group could have with each other, 50% were strong ties. Of the possible connections that students in the mid

TABLE V-4

PROPORTION OF ALL POSSIBLE CONNECTIONS THAT ARE STRONG TIES

Teacher	Reading Group Level				
		High 2nd	Low 2nd	High 3rd	Mid 3rd	Low 3rd
Rizzo	High 2nd	60.0%	20.0%	8.0%	0.0%	0.0%
	Low 2nd	20.0	20.0	0.0	0.0	0.0
	High 3rd	8.0	0.0	50.0	8.0	6.7
	Mid 3rd	0.0	0.0	8.0	30.0	33.3
	Low 3rd	0.0	0.0	6.7	33.3	66.7
		High 1st	Low 1st	High 2nd	Low 2nd	
Gibson	High 1st	66.7%	30.6%	15.6%	0.0%	
	Low 1st	30.6	27.8	4.2	16.7	
	High 2nd	15.6	4.2	46.4	9.4	
	Low 2nd	0.0	16.7	9.4	33.3	
		High	Mid-A	Mid-B	Low	
Warren	High	33.3%	25.0%	11.1%	14.3%	
	Mid-A	25.0	21.4	8.3	10.7	
	Mid-B	11.1	8.3	33.3	14.3	
	Low	14.3	10.7	14.3	32.8	
		High	Mid	Low		
Schultz	High	32.1%	16.7%	4.2%		
	Mid	16.7	33.3	5.6		
	Low	4.2	5.6	6.7		
		Highest	High	Mid	Low	
Bell	Highest	0.0%	9.5%	11.1%	16.7%	
	High	9.5	9.5	9.5	14.3	
	Mid	11.1	9.5	16.7	3.7	
	Low	16.7	14.3	3.7	13.3	
		High	Mid	Low		
Reed	High	13.3%	10.0%	1.9%		
	Mid	10.0	13.3	16.7		
	Low	1.9	16.7	2.8		

third grade group could have with each other, 30% were strong ties. The measure used in this table controls for the varying sizes of the reading groups but does not take

into account the differing rates of interaction that members of different groups had.

TABLE V-5

RATIO OF ACTUAL TO EXPECTED STRONG TIES

Teacher	Reading Group Level				
		High 2nd	Low 2nd	High 3rd	Mid 3rd	Low 3rd
Rizzo	High 2nd	3.5	1.2	.5	0.0	0.0
	Low 2nd	2.5	2.4	0.0	0.0	0.0
	High 3rd	.6	0.0	3.7	.6	.5
	Mid 3rd	0.0	0.0	.7	2.5	2.8
	Low 3rd	0.0	0.0	.4	2.2	4.4
		High 1st	Low 1st	High 2nd	Low 2nd	
Gibson	High 1st	2.7	1.2	.6	0.0	
	Low 1st	1.7	1.5	.2	.9	
	Low 2nd	0.0	1.2	.7	2.5	
		high	Mid-A	Mid-B	low	
Warren	High	1.9	1.4	.6	.8	
	Mid-A	1.6	1.4	.5	.7	
	Mid-B	.7	.5	2.1	.9	
	Low	.9	.7	.9	1.5	
		High	Mid	Low		
Schultz	High	1.7	.9	.2		
	Mid	.8	1.6	.3		
	Low	.6	.9	1.0		
		Highest	High	Mid	Low	
Bell	Highest	0.0	.9	1.1	1.6	
	High	.9	.9	.9	1.3	
	Mid	1.1	.9	1.6	.4	
	Low	1.5	1.3	.3	1.2	
		High	Mid	Low		
Reed	High	1.6	1.2	.2		
	Mid	.8	1.0	1.3		
	Low	.2	2.0	.3		

The measure in Table V-5 shows the ratio of (a) the proportion of strong ties that students in each group had

TABLE V-6

RATIO OF ACTUAL TO EXPECTED VERY STRONG TIES

Teacher	Reading Group Level				
		High 2nd	Low 2nd	High 3rd	Mid 3rd	Low 3rd
Rizzo	High 2nd	3.3	1.8	0.0	0.0	0.0
	Low 2nd	2.9	1.8	0.0	0.0	0.0
	High 3rd	0.0	0.0	4.7	.6	0.0
	Mid 3rd	0.0	0.0	.6	2.8	2.8
	Low 3rd	0.0	0.0	0.0	2.6	4.4
		High 1st	Low 1st	High 2nd	Low 2nd	
Gibson	High 1st	5.3	.9	0.0	0.0	
	Low 1st	1.0	2.1	.3	.5	
	High 2nd	0.0	.2	2.4	.9	
	Low 2nd	0.0	.5	1.2	3.2	
		High	Mid-A	Mid-B	Low	
Warren	High	3.0	1.1	1.0	.4	
	Mid-A	1.4	1.6	.7	.6	
	Mid-B	1.5	.8	1.8	.3	
	Low	.9	1.0	.4	1.8	
		High	Mid	Low		
Schultz	High	2.2	.4	.3		
	Mid	.4	1.9	.3		
	Low	1.0	.9	0.0		
		Highest	High	Mid	Low	
Bell	Highest	0.0	1.9	1.5	0.0	
	High	1.0	1.0	.6	1.9	
	Mid	.9	.7	2.0	0.0	
	Low	0.0	1.5	0.0	2.1	
		High	Mid	Low		
Reed	High	0.0	1.4	.4		
	Mid	1.1	1.1	1.1		
	Low	.6	2.0	0.0		

with students in each of the other groups (and with each other), to (b) the proportion of strong ties that students in each group could be expected to have with members of each other group (and with each other) if reading group

membership made no difference with whom children interacted, i.e. the proportion of strong ties that would be expected to occur by chance.[26] Table V-6 shows the same ratio for very strong ties.[27].

Once again, it is clear that in four of the six classrooms students have much higher than expected ratios of actual to expected in-group ties. These tables show that this not only is true on the average for the class as a whole (as indicated by Table V-2), but it is true for members of each group. All but one group in these four classrooms had at least 1.5 times the expected rate of strong in-group ties and nine of the sixteen groups had more than twice the expected rate. For children in eleven of the reading groups in these four classrooms, the ratio of actual to expected very strong in-group ties was even greater than

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26. This measure is similar to the one used in Table V-2. However, this measure takes the perspective of each group, rather than of the whole class. Take for example the class which had 4 bluebirds and 6 robins. Each of the 4 bluebirds has the possibility of having 3 ties with other bluebirds and 6 ties with robins. Their expected rate of in-group ties is therefore 3/9 or 33.3%. If the four bluebirds had a total of 12 strong ties, an average of 3 per child, and if 8 of those ties were with other bluebirds, they would have an actual rate of 8/12 or66.6% of in-group ties. The ratio of actual to expected in-group ties would be 66.6/33.3 or 2. In other words, of all the strong ties that the bluebirds had, twice as many as would have been expected by chance were with other group members. Calculating ratios in this manner makes it possible to look at the distribution of ties from the perspective of each group and controls for variations in the average numbers of ties that the different groups had.

27. Very strong ties are a subset of strong ties. At least one of the two children involved in the ties had 15% or more of all their interactions with the other child. Many of the children having very strong ties had as much as 40% of all their interactions with each other.

the ratio of actual to expected strong in-group ties. A large proportion of the children's very closest ties were with classmates in the same reading group.

The high groups in Rizzo's and Schultz's classes and the high second grade group in Gibson's class had much higher ratios of actual to expected in-group ties than did children in the low groups. As indicated by Table V-4 and V-5 the proportion of all strong and very strong ties each group had that were in-group ties was remarkably high for some top groups. For the students in the high second grade group in Gibson's class, 75% of all their very strong ties were with other high second graders. For the children in Rizzo's high third grade group, 85% of all very strong ties were in-group.

Students in some groups had a larger proportion of their strong and very strong ties with students of another group but still had a much larger than expected ratio of in-group ties. This generally occurred when groups were relatively small. For example, Warren's high group and Gibson's high first grade group were relative small groups, having three and four members respectively. Given the fact that these high groups had relatively high average rates of strong ties, a substantial proportion of their strong ties had to be out-group. (With three people in a group each person can only have two in-group ties.) Even so, the ratio of actual to expected ties is quite high for those groups, particularly for very strong ties. Warren's high group had

three times the expected rate of in-group very strong ties and Gibson's high first group had more than five times the expected rate.

Cross-group ties. Rizzo's and Gibson's classrooms were multi-graded. Children in these classrooms had relatively few cross-grade strong ties. This was particularly true in Rizzo's class. In that classroom, students in the high second grade group had most of their out-group ties with low second graders, though the few ties they did have with third graders were with children in the high third grade group. The low second graders had all their out-group ties with high second graders. The children in the high third grade group were rather exclusive and had relatively few out-group ties. They had no ties with the low second grade group. Low third graders and mid third graders had most of their out-group ties with each other. In Gibson's classroom, children in the high and low first grade group had a disproportionately high share of out-group ties with each other. The out-group ties that students in the low second grade group had tended to be with low first graders. The out-group ties that high second graders had were with the high first graders. In these classrooms, then, the few cross grade level ties that children had tended to be with children of the equivalent reading group level.

In Schultz's and Warren's classes the out-group strong ties that children in the low group had were spread more or less evenly among the other groups. However, for students

in the high groups in these two classrooms (and also in Reed's), out-group ties tended to be with children in the middle groups. Relatively few of their out-group ties were with children in the low groups.

A picture emerges of peer networks with exclusive high group students. To the extent that high group students had out-group ties, they were with middle level students or, in the multi-graded classrooms, with cross-grade high level students. Low group students also had a disproportionately high rate of in-group ties, but, as compared to the students in the high groups, they had a larger proportion of their ties with students in other groups.

In-group and cross-group friendship choices. In Chapter IV the relationship between friendship choices and interaction was examined. Children who had strong ties with other children often said that those others were best friends. But they also said that many children with whom they had only weak ties or no ties were best friends. One conclusion based on these findings was that high numbers of friendship choices might be best considered as indications of status, but they could not be used to predict interaction patterns. In this section I will examine the patterns of in-group and cross-group friendship choices. This will provide information about the status of the different reading groups.

Table V-7 and V-8 show the percentages of children in each reading group who were said to be "best friends" and

TABLE V-7

PERCENTAGE OF CHILDREN IN EACH READING GROUP CHOSEN AS "BEST FRIENDS"

Teacher	Number of Choosers	Group of Chooser	Group of Chosen				
			High 2nd	Low 2nd	High 3rd	Mid 3rd	Low 3rd*
Rizzo	5	High 2nd	50.0%	32.0%	52.0%	60.0%	46.7%
	4	Low 2nd	55.0	12.6	20.0	60.0	25.0
	3	High 3rd	26.7	0.0	75.0	26.7	0.0
	2	Mid 3rd	20.0	0.0	50.0	100.0	33.3
	0	Low 3rd	--	--	--	--	--
			High 1st	Low 1st	High 2nd	Low 2nd	
Gibson	4	High 1st	66.7%	22.2%	56.3%	31.1%	
	8	Low 1st	50.0	48.4	42.2	40.6	
	8	High 2nd	40.6	19.4	41.1	43.8	
	4	Low 2nd	25.0	22.2	34.4	33.3	
			High*	Mid-A	Mid-B	Low	
Warren	2	High	50.0%	37.5%	33.3%	28.6%	
	7	Mid-A	42.9	32.7	23.8	16.3	
	6	Mid-B	61.1	31.1	56.7	31.0	
	6	Low	33.3	16.7	19.4	16.7	

*Three children in group.

TABLE V-7 (Continued)

PERCENTAGE OF CHILDREN IN EACH READING GROUP CHOSEN AS "BEST FRIENDS"

Teacher	Number of Choosers	Group of Chooser	Group of Chosen			
			High	Mid	Low	
Schultz	6	High	35.7%	27.8%	13.9%	
	4	Mid	31.1	40.6	25.0	
	2	Low	15.1	38.9	30.0	
			Highest*	High	Mid	Low
Bell	2	Highest	75.0%	78.6%	66.7%	50.0%
	4	High	66.7	45.8	44.0	48.8
	5	Mid	60.0	28.6	60.0	30.0
	3	Low	77.8	61.9	74.1	80.0
			High	Mid	Low	
Reed	4	High	25.0%	19.4%	16.7%	
	5	Mid	13.3	16.7	5.3	
	1	Low	16.7	0.0	0.0	

*Three children in group.

TABLE V-8

PERCENTAGE OF CHILDREN IN EACH READING GROUP CHOSEN AS "NOT A FRIEND"

Teacher	Number of Choosers	Group of Chooser	Group of Chosen				
			High 2nd	Low 2nd	High 3rd	Mid 3rd	Low 3rd
Rizzo	5	High 2nd	0.0%	4.0%	0.0%	0.0%	6.7%
	4	Low 2nd	15.0	37.5	30.0	10.0	8.3
	3	High 3rd	6.7	33.3	0.0	0.0	33.3
	2	Mid 3rd	0.0	30.0	0.0	0.0	16.7
	0	Low 3rd	--	--	--	--	--
			High 1st	Low 1st	High 2nd	Low 2nd	
Gibson	4	High 1st	8.3%	27.8%	9.4%	18.8%	
	8	Low 1st	18.8	18.8	18.8	12.5	
	8	High 2nd	21.9	29.2	19.6	15.6	
	4	Low 2nd	6.3	30.6	15.6	25.0	
			High	Mid-a	Mid-B	Low	
Warren	2	High	0.0%	6.3%	8.3%	21.4%	
	7	Mid-A	4.8	14.3	14.3	20.4	
	6	Mid-B	11.1	20.8	20/0	21.4	
	6	Low	27.8	29.2	30.6	47.2	

TABLE V-8 (Continued)

PERCENTAGE OF CHILDREN IN EACH READING GROUP CHOSEN AS "NOT A FRIEND"

Teacher	Number of Choosers	Group of Chooser	Group of Chosen			
			High	Mid	Low	
Schultz	6	High	16.7%	31.5%	36.1%	
	4	Mid	6.3	9.4	8.3	
	2	Low	37.5	27.8	40.0	
			Highest	High	Mid	Low
Bell	2	Highest	0.0%	0.0%	16.7%	8.4%
	4	High	8.3	20.8	13.9	12.5
	5	Mid	0.0	20.0	12.5	33.3
	3	Low	0.0	9.5	3.7	6.7
			High	Mid	Low	
Reed	4	High	0.0%	25.0%	12.9%	
	5	Mid	36.7	26.2	26.3	
	1	Low	16.7	70.0	42.9	

"not a friend" by students from each of the reading groups. These tables can be interpreted only with caution, because not at all the children indicated friendship choices. The response rates in Schultz's, Reed's, and Bell's classrooms were particularly low. Friendship choices for half or less of the students in these classrooms were obtained. The patterns of choices are clearest when both "best friends" and "not a friend" indications are examined.

Children in the high reading groups in all classrooms reported that a relatively high proportion of other children in their group were "best friends." In Rizzo's and Gibson's multi-graded classrooms children in the high groups also reported relatively high proportions of "best friends" in the cross-grade high level reading groups. In the classrooms with mid level groups, children in the high groups tended to report a somewhat lower proportion of "best friends" in mid groups than in their own groups. They said that relatively few children in low groups were "best friends."

The "not a friend" designations by children in the high groups reveal similar patterns. High group students said that relatively few of the other children in their own groups were "not a friend." In other words, they saw all of their fellow group members as either friends or best friends. However, they said that relatively large proportions of low group students were "not a friend."

The pattern of friendship choices for children in the low groups is somewhat mixed. The students in the low groups in all of the classrooms except Bell's reported that a larger proportion of children in at least one other group were "best friends" than they reported for their own group. In four of the low groups, the proportion of "best friend" ratings for other children in their group was particularly low. With the exception Bell's students, children in low groups reported relatively high proportions of other children in their groups as "not a friend." Most of these groups reported that relatively low proportions of children in the high groups were "not a friend."

In sum, children in high groups were most likely to say that relatively high proportions of other high group children were best friends while they said that a large proportion of children in low groups were not friends. Children in low groups, however, report a larger percentage of children in high groups as their best friends than they did for students in their own group. Overall, top group students received a disproportionately high number of the "best friend" choices from all groups. Students in low groups received a disproportionately high number of "not a friend" choices from all groups, including from other low group students. If, in fact, patterns of friendship choices are indications of status, students in the high reading groups were likely to have high status in these classrooms

and the students in the low groups were likely to have low status.

It is worth noting that in Reed's and Bell's classrooms, classrooms in which reading group membership was not related to interaction patterns, reading group membership was related to friendship choices. Although perhaps the patterns are not as clearcut as in the other classrooms, students in higher reading groups did have more status than did students in the lower reading groups. One of the implications of this is that status, by itself, does not structure interaction patterns. Many other factors are involved.

DISCUSSION

Interaction was not related to reading group membership in two classrooms (Bell's and Reed's), while it was clearly related to reading group membership in the other four classrooms. In those four the strength of the relationship varied substantially. These findings can be explained by examining the factors which create an interest for students to interact with other members of their reading group and the factors which give students opportunities to interact with others in their group and limit opportunities to interact with members of other reading groups.

Reward structure, visibility, and interest. During the hour of reading instruction, Bell's and Reed's students were divided into five reading groups. For the students in these classrooms, student's group membership was visible to the

whole class only briefly when students were lined up and sent to their respective reading teacher. Performance and rewards during reading time were public and comparable only to the other students meeting with a particular teacher. Students from each of these classrooms were divided into five groups, dispersed among three teachers and mixed with students from two other classrooms. Students' group memberships and reading performances were not particularly visible and were difficult to compare with those of most of their classmates.

Since all reading assignments were worked on during the hour of reading instruction, students usually did not bring work back to their classrooms to be completed during other activities. Students from the same reading groups had no extrinsic reasons to interact with each other in their classrooms.

Reading group membership thus did not become an important basis for interaction for the students in Reed's and Bell's classrooms. Yet, there is evidence that status, as measured by friendship choices was weakly related to reading group membership in these classrooms. In part this might be due to the fact that reading group membership was somewhat visible and it was likely that students knew the level of their own and others' reading groups.

In the four classrooms in which reading group membership was strongly related to the interaction patterns (in Rizzo's, Gibson's, Schultz's, and Warren's classrooms),

TABLE V-9

PROPORTION OF TIME SPENT IN VARIOUS TYPES OF ACTIVITIES

Teacher	Ratio of actual to expected in-group ties	Activities in which students are grouped by reading groups	Activities in which students are grouped by grade level	Multi-Task activities
Rizzo	3.2	33.1%	16.5%	18.6%
Gibson	2.0	23.5	12.6	38.9
Schultz	1.7	(22.1)*	--	(24.1)*
Warren	1.6	21.9	--	15.4
Bell	1.2	16.0	--	0.0
Reed	.9	17.3	--	1.4

*Based on morning observations only. Since teachers worked with reading groups in the morning, this statistic is probably accurate for activities which grouped children by reading group. The rate of multi-task activities is probably higher than indicated here.

reading group membership was highly visible. These teachers worked with reading groups for substantial proportions of the school day, 20% or more of in-class time (see Table V-9). Typically the teachers publicly announced the name of the group they wanted to work with, often calling out the names of the students in the group. The students then gathered in an area of the classroom set aside for reading groups. The groups were clearly visible to the rest of the class and, most of the time, the teacher's and reading group members' voices were audible to most others in the room. Frequently students not in the reading group stopped their

own work, faced the reading group and apparently listened to the group's proceedings. Occasionally non-group members wandered by the reading groups and stopped, listened, and in some classrooms even briefly participated in the group. In these four classrooms reading group membership was clearly visible and the levels of the work and performance in the group were highly public and comparable.

Students in these four classrooms had many reasons to interact with other members of their group when they were not meeting as a group. Teachers assigned work which was to be completed outside of the group, usually during multi-task activities. Students often consulted with other members of their group--clarifying assignments, comparing work, and asking for help. Sometimes, when an assignment was unclear or students could not agree on how to do the work, the group either went to the teacher as a group or sent a delegation to the teacher to ask for clarification. These practices were most common among students of higher reading groups.

Reading and language achievement were highly valued in these classrooms. A large proportion of class time was devoted to reading and language work. Teachers praised students for doing well and reprimanded those who failed to adequately complete the work. The fact that teachers publicly expressed concern and often devoted extra time to students not performing adequately probably served to reinforce the message that reading was a highly valued skill. The combination of this emphasis with a high degree

of group visibility and the high degree to which performance was public and comparable, provided additional incentives for students within each reading group to cooperate with one another during non-group times.

Sherriff's (1961) "robber cave" experiments indicate that situations in which students are rewarded for cooperating with others in their group and for competing with other groups are likely to lead to major divisions among groups. This seems to have been the situation in the four classrooms discussed here. Students did have a disproportionately high number of their interactions with same-group members. In addition, the distribution of status in these classrooms, as indicated by the friendship choices, was clearly related to reading group membership. Students in the top groups received a disproportionately high ratio of "best friend" choices and very few "not a friend" choices.

The data available makes it difficult to explain why the higher grouped students were the most likely to interact with each other and why they had higher status than lower grouped students. One possibility is that they were clearly in a favored position vis a vis the teachers. They publicly received more and better rewards and fewer negative sanctions than lower grouped students. It is likely that they were motivated to do well to maintain their high levels of reward and were thus motivated to contact other group members to gain help and to check their work. The

distribution of status among the students might be reflective of the distributions of rewards by the teachers.

There also were some indications that for students in higher ranked groups reading time was a pleasant and enjoyable time (Grant and Rothenberg, 1981). These students had warm relationships with their teachers and generally were able to demonstrate their competence. Such positive shared experiences might well lead to feelings of friendship with other group members and to a desire to interact with them at other times. The experiences of the children in the lower groups were quite different. For them, reading group time was uncomfortable and unpleasant. They rarely established warm relationships with the teacher, and many were reprimanded often for misbehavior. They frequently were forced to display their incompetence. To the extent that they associated these negative experiences with being with certain others, they were not likely to see those others as friends or desire to interact with them outside of reading group time. It is possible that high group members had much incentive to maintain their valued position and therefore were highly motivated to cooperate with same-group members. Low group students, with little possibility of moving up, had much less motivation to work and cooperate with their same-group members.

Although students in all four of these classrooms had a disproportionately high number of ties with students in their own reading group, students in Rizzo's classroom had

considerably higher rates of in-group ties than did the students in Gibson's classroom. The rates in Gibson's classroom were higher than those in Warren's and Schultz's classrooms. Rizzo and Gibson had multi-graded classrooms whereas Warren and Schultz did not. Rizzo and Gibson divided the students in each grade level into two or three reading groups. A certain proportion of the interactions students had with others in their grade level, would also be with students in their reading group. Therefore, the more reasons students had to interact with their grade mates, the higher would be the overall rate of ties between students of the same reading groups.

Students in Rizzo's class typically spent 16.6% of the school day engaged in activities during which they were grouped by grade level. Students in Gibson's class spent 12.7% of their school day grouped by grade level. In both classrooms much of this time involved math activities. Both teachers assigned math by grade level and they typically spent some time alone with each grade giving a math lesson. Students were assigned math work which they completed during multi-task and class-task activities. Thus, students had good reason to seek out other grade mates for information and help. A substantial proportion of such interactions would, necessarily, be with others in the same reading groups since a substantial proportion of their grade mates were in the same reading group.

Warren and Schultz taught a single math lesson to the whole class and assigned the same math work to all students. The pool of potential math interactees was much greater for these students than for the students in Gibson's and Rizzo's classrooms. Thus, a smaller proportion of such interactions were likely to be with members of the same reading group.

Opportunities for interaction. The degree to which students had opportunities to interact with other members of their reading group and the degree to which opportunities to interact with members of other reading groups were limited, also are useful in explaining the differences found in the rates of in-group interaction among these classrooms. Three factors which affected students' opportunities for interaction were: (1) the proportion of in-class time during which students were grouped by reading level (and grade level in Rizzo's and Gibson's classrooms); (2) the amount of time spent in multi-task activities; and (3) teacher's policies about seating and movement in the classroom.

There was relatively little interaction among students in a reading group while the group met with the teacher. Students were usually involved in recitation type activities in the group and most interactions were between the teacher and individual students. All teachers sharply curtailed student-student interactions during these times. At most, students had some opportunities to interact with group members when the group first gathered for reading

instruction. Teachers often spent a few minutes gathering materials or giving help to non-group members before joining the group. Children's ties with one another represent interactions which usually occurred at times other than when the group actually met with the teacher.

Large amounts of group time did, however, encourage fairly high rates of in-group interaction in another way. Students meeting with the teacher were unavailable for interactions with members of the rest of the class. Take for example, a classroom with three reading groups. When the teacher met with group A, students in group B could interact with other group B members and with group C members. When the teacher worked with group C, students in group B could still interact with other group B members and now with group A members. This meant that members of group B had more opportunities to interact with other group B members than with members of either group A or group C. Furthermore, in the classrooms with two grade levels, teachers time spent with one grade level meant that students in the other grade had opportunities to interact with each other and no opportunities to interact with members of the other grade. Again, since reading groups were created by grade level, this would mean an overall increase in opportunities for members of the same reading group to interact with one another.

Students who had a desire or an interest in interacting with other group members were most likely to have

opportunities to do so during multi-task activities. In most classrooms the students were relatively free to move about the room and interact with others during these activities. However, the amount of movement and interaction was somewhat dependent on teacher imposed and enforced rules about movement and talking.

The students in Rizzo's classroom had the highest rates of in-group ties. Fully a third of in-class time was spent in activities during which students were grouped by reading group. (See table V-9.) This was, by far, the highest rate of any classroom. Combined with the 16.6% of the school day students were grouped by grade level, half of the time students spent in their classroom was spent with some students in either reading groups or grouped by grade level. Clearly opportunities for interaction with non-group members were limited while opportunities for interaction with group members were great.

Students in Rizzo's classroom spent 18.6% of their time engaged in multi-task activities, a moderate amount of time compared to other classrooms. Rizzo, more so than other teachers, strictly enforced rules limiting students' interactions. Students in her classroom were thus more restricted in their movements about the classroom during multi-task activities than were students in the other classrooms with high rates of in-group ties. Had reading group members been assigned seats which were evenly dispersed throughout the classroom, the teacher's

restrictions would have limited in-group interactions. However, students in this classroom were seated by grade level. All the second graders sat on one side of the room and all of the third graders sat on the other side. This meant that most students were in close proximity with at least several other members of their reading group. During multi-task activities there was a substantial amount of whispering among children seated near one another, and thus between students in the same reading group.

The students in Gibson's, Schultz's and Warren's classroom all spent about the same amount of time engaged in activities during which some students were working in reading groups. Students in Gibson's classroom, however, spent 38.9% of the school day engaged in multi-task activities, considerably more time than was spent by students in any other classroom. Students were not assigned seats in Gibson's classroom and they were free to move about the room and talk quietly during multi-task activities. Thus they had many opportunities to interact with other group members if they so chose. The students in Warren's and Schultz's classrooms had somewhat lower rates of in-group ties than did the students in Gibson's classroom. Although Warren and Schultz allowed students to interact freely during multi-task activities, their students spent less time engaged in multi-task activities than did the students in Gibson's classroom and therefore had somewhat less opportunity to interact freely.

The primary reason for the lack of a relationship between group membership and ties in Bell's and Reed's classrooms relates to the grouping practices which have already been described. In addition, students in these classrooms spent less time grouped by reading group than did students in the other classrooms. They also spent virtually no time engaged in multi-task activities. Even if group membership were visible and students had reason to interact with other group members, their opportunities to do so would have been limited.

SUMMARY

When reading group membership is highly visible, when the reward system encourages students within the same group to cooperate with one another, and when students have many opportunities to interact with other members of their group, students are likely to have a disproportionately high number of their non-negative interactions with members of their reading group. Students in high ranked groups have an even higher proportion of in-group ties than do students in low ranked groups. Students in high ranked groups also receive a disproportionate number of "best friend" and "friend" choices from members of all other groups while students in low ranked groups receive few such choices from members of any other group, including from members of their own group.

Chapter VI

CROSS-SEX INTERACTION AND FRIENDSHIP CHOICES

The barrier between the sexes is one of the most impenetrable ones in a classroom. Low rates of cross-sex friendship choices and interactions have been consistently reported in the literature (McCandless, 1969; Hartup, 1970; Nash, 1970; Bossert, 1979). The rates of cross-sex interaction and cross-sex friendship choices in the classrooms in this study also were low. This chapter will begin with a brief discussion of some social forces which create barriers, ones which operate even before children enter school. The data on the amount of cross-sex interaction and friendship choices will then be presented. Finally, classroom factors which inhibit or promote cross-sex interaction in classrooms will be explored.

Social Forces Which Create Barriers Between Boys and Girls

Sex-typed behavior in children is encouraged and enforced from birth. Even minor deviations from sex-appropriate behavior create concern in adults. Children who are not socialized into stereotypical sex roles at home cannot avoid pressures elsewhere for such socialization. Models of sex appropriate behavior abound, particularly in the mass media (Tuchman, 1978). Sex roles also are learned in play with other children. Indeed, much of children's play is sex-typed and children frequently act out adult roles in their play. Girls often play mommies who take care of the house and the children and boys often play daddies

who go to work. The boys play doctor, the girls play nurse. Boys play with trucks, girls play with dolls. Boys play competitive sports, girls cooperate to act out fantasies (Joffee, 1974).[20]

The fact that modes of play do vary considerably by sex makes it difficult for boys and girls to find common bases of interest on which to form relationships. Furthermore, there frequently are social costs to high rates of cross-sex interaction and sex inappropriate play. Boys open themselves to the label of "sissy" and girls to the label of "tomboy."[21] It therefore is not surprising that children are likely to enter school with strong biases against having much cross-sex interaction. Of course, social pressures do not stop once children enter school, and indeed, peer pressure plays an increasingly important role in children's acquisition of appropriate sex-typed behavior and the maintenance of low levels of cross-sex interaction.

THE DATA

Table VI-1 shows the proportions of all ties which were cross-sex. In addition this table presents the ratios of

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20. It might be argued that some of these traditional differences in children's play have diminished recently. Based on casual observations of children's play, I suspect that most play is still sex segregated and sex-typed.

21. It is interesting that "sissy" is a more powerful and negative label than "tomboy." Girls are given more leeway to "grow out of it." Extreme social pressure may not be brought to bear on "tomboys" until they are older, not until adolescence perhaps. (See Sadker and Frazier, 1973.)

TABLE VI-1

PROPORTION OF TIES THAT ARE CROSS-SEX

Teacher	Proportion of ties that are cross-sex			Ratio of actual to expected cross-sex ties		
	All ties	Strong ties	Weak ties	All ties	Strong ties	Weak ties
Rizzo	29.4%	39.4%	20.0%	.62	.83	.42
Reed	35.0	27.5	39.7	.71	.56	.80
Gibson	35.3	24.6	42.7	.69	.48	.83
Snyder	29.0	23.5	35.7	.56	.45	.69
Bell	41.1	21.6	49.4	.79	.42	.95
Casey	31.9	18.5	40.5	.62	.36	.78
Schultz	27.0	15.2	37.0	.52	.29	.71
Warren	26.0	6.3	37.3	.50	.12	.72
All Classrooms	32.1%	21.3%	39.6%			

actual to expected cross-sex ties.** Overall, about one third of all ties were cross-sex. Of the strong ties, which account for the largest proportion of interactions, only about one fifth were cross-sex. These rates of cross-sex ties were well below the rates which would have occurred had sex not made a difference in the students' interactions.

** This measure is the ratio of, (a) the proportion of ties which were actually cross-sex, to (b) the expected proportion of ties which would have been cross-sex if sex made no difference in student's choices of others for interaction. This measure controls for variations in the numbers of boys and girls in the classrooms.

The proportions of cross-sex strong ties were less than half the expected rate in six classrooms and well below the expected rate in the other two classrooms.

There was considerable variation among the classrooms in the rate of cross-sex ties. The proportions of all cross-sex ties varied from 50% of the expected rate for Warren's students to nearly 80% of the expected rate for Bell's students. There was even more variation in the rates of cross-sex strong ties. They varied from 12% of the expected rate in Warren's classroom to more than 80% of the expected rate in Rizzo's classroom. The fact that there was this much variation makes it possible to look for causes of variation.

Since the rates of cross-sex ties were relatively low, the measures based on the proportion of ties that were cross-sex and on the ratios of actual to expected ties could be misleading. If a few children had many cross-sex ties, these rates would be high but most of the students would have had few, if any, cross-sex ties. An alternative measure of the amount of cross-sex interaction, one which indicates how many children engage in various amounts of cross-sex interaction, is presented in Tables VI-2 and VI-3. Classrooms are ranked based on the percentage of students who had at least one cross-sex strong tie, the percentage that had at least two cross-sex strong ties, and equivalent measures for weak ties.

TABLE VI-2

PERCENTAGE OF STUDENTS HAVING AT LEAST ONE AND AT LEAST TWO STRONG TIES

Teacher	Percentage of students having at least one strong cross-sex tie			Percentage of students having at least two strong cross-sex ties		
	Males	Females	Total	Males	Females	Total
Rizzo	60.0%	100.0%	73.9%	20.0%	37.5%	26.0%
Gibson	54.5	71.4	64.0	36.4	21.4	28.0
Snyder	61.5	61.5	61.5	23.1	23.1	23.1
Casey	40.0	61.5	50.0	13.4	15.4	14.1
Reed	41.2	54.4	46.4	23.5	36.4	28.6
Schultz	54.5	38.5	45.8	9.1	15.4	12.5
Bell	38.5	42.9	40.7	23.1	14.3	18.5
Warren	15.4	16.7	16.0	7.7	8.3	8.0
All Classrooms	45.4%	54.1%	50.0%	19.4%	20.4%	19.9%

Again, it is clear that there were considerable variations among the classrooms. Overall, only half of the students had at least one cross-sex strong tie. Only 16% of the students in Warren's class had at least one cross-sex strong tie, while nearly 74% of the students in Rizzo's class had at least one cross-sex strong tie.

There were some interesting differences between the boys and girls in terms of how many had at least one strong cross-sex tie. Overall, a larger proportion of girls had

TABLE VI-3

PERCENTAGE OF STUDENTS HAVING AT LEAST TWO AND AT LEAST THREE WEAK TIES

Teacher	Percentage of students having at least two weak cross-sex ties			Percentage of students having at least three weak cross-sex ties		
	Males	Females	Total	Males	Females	Total
Rizzo	6.7%	12.5%	8.6%	0.0%	12.5%	4.3%
Gibson	63.6	64.3	64.0	63.6	42.8	52.0
Snyder	38.5	38.5	38.5	0.0	7.7	3.8
Casey	53.4	76.9	64.3	40.1	46.2	42.5
Reed	47.1	72.7	57.2	17.7	54.6	32.1
Schultz	54.6	38.5	45.8	18.2	30.8	25.0
Bell	92.3	85.7	88.9	61.6	64.2	62.9
Warren	61.5	66.7	64.0	38.5	50.2	44.0
All Classrooms	50.9%	59.2%	54.9%	28.7%	39.8%	34.0%

cross-sex strong ties than did boys. In four of the classrooms--Rizzo's, Reed's, Gibson's, and Casey's--this difference was substantial. Schultz's classroom was the only one in which substantially more boys than girls had cross-sex strong ties. In general, then, a few boys in each classroom had many strong ties with girls but most boys had no strong ties with girls. Many girls had a few strong ties with the same few boys.

TABLE VI-4

PROPORTIONS OF SAME-SEX AND CROSS-SEX CHOICES
WHICH WERE "BEST FRIEND" AND "NOT A FRIEND"

Teacher	Boys' Friendship Choices				Girls' Friendship Choices			
	Proportions of boys who were:		Proportions of girls who were:		Proportions of boys who were:		Proportions of girls who were:	
	Best friends	Not a friend	Best friends	Not a friend	Best Friends	Not a friend	Best Friends	Not a friend
Rizzo	49.1%	8.0%	26.6%	18.8%	9.7%	33.8%	63.2%	3.8%
Reed	25.4	6.0	3.6	54.5	9.6	31.9	36.7	5.0
Gibson	45.0	18.0	30.0	27.1	9.7	33.8	63.2	3.8
Snyder	38.9	5.6	43.6	28.2	30.8	13.7	87.0	0.0
Bell	77.3	10.6	65.5	17.9	25.0	22.2	54.7	7.7
Casey	23.2	17.3	2.6	37.8	1.5	55.6	31.5	26.9
Schultz	70.0	2.0	0.0	18.5	2.6	54.4	51.2	10.7
Warren	42.4	18.2	6.8	31.1	5.6	39.2	66.9	2.5
All Classrooms	42.7%	12.9%	19.9%	29.7%	12.5%	33.4%	58.9%	7.3%

Cross-sex friendship choices. The relatively low rates of cross-sex interaction were repeated in relatively low rates of cross-sex "best friend" choices and fairly high rates of cross-sex "not a friend" designations. Table VI-4 shows the proportion of same-sex and cross-sex choices that were "best friend" and "not a friend."[3'] Overall, boys said that 19.9% of the girls were "best friends" while they said that 42.7% of other boys were "best friends." They said that 29.7% of the girls were "not a friend," compared with only 12.9% of the boys whom they said were "not a friend." Boys therefore identified about twice as many of the boys as girls as best friends and said that only half as many of the boys as compared to girls were "not a friend." Girls said that 12.5% of the boys were "best friends," while they said that 58.9% of other girls were "best friends." Thus the rate of the best friend choices of other girls was four times higher than the rate of best friend choices of boys. Girls said that 33.4% of the boys were "not a friend" and only 7.3% of other girls were "not a friend," or about a fourth the rate of their "not a friend" boy choices.

Both boys and girls were much more likely to say that same-sex rather than opposite sex classmates were best friends. They were much less likely to say that same-sex rather than opposite-sex classmates were "not a friend."

3'. Combining the choices of the boys and girls into a single statistic would be misleading. Some classrooms had fairly high rates of nonrespondents. Those who did respond were not necessarily equally divided by sex. Table VI-4 indicates that boys and girls had quite different patterns of cross-sex choices.

Girls made a stronger differentiation in their choices than did boys. The reason for this is not clear. Furthermore, although these figures seem to indicate that the girls formed more cohesive groups than did the boys, the patterns of peer group ties, which will be examined in Chapter VII, do not support this interpretation.

DISCUSSION

The amount of cross-sex interaction in all classrooms was limited but some had higher rates than others. By looking at factors which led to relatively higher rates of cross-sex ties, it is possible to suggest conditions which generally lead to increased rates of non-negative cross-sex interaction.

More than 60% of the students in Rizzo's, Gibson's, and Snyder's classrooms had at least one cross-sex strong tie. Half or less of the children in the other classrooms fell into this category. The students in Rizzo's, Gibson's and Snyder's classrooms who had cross-sex ties had to overcome rather potent barriers resulting from the high visibility of sex differences and students' different sets of interests based on sex.

The interaction model provides a useful framework to explain the varying rates of cross-sex ties. Higher rates of cross-sex interaction are likely to occur when classroom conditions:

1) Create opportunities for cross-sex interaction. (Because of the strong social forces which operate

against high rates of positive cross-sex interaction among children, the "opportunity" component of the interaction model might better be thought of in terms of situations or conditions under which boys and girls have little ~~choice~~ but to interact with each other.)

2) Create common interests which are strong enough and important enough to overcome pre-existing differences and barriers.

3) Make other characteristics of children more visible, thus decreasing the importance of sex as a characteristic which defines similar types of children with similar interests.

4) Make cross-sex interaction rewarding. This would involve a combination of making the rewards for cross-sex interaction outweigh the social costs of such interaction and reducing those costs.

The three conditions which seemed to be the most critical in determining which classrooms had relatively high rates of cross-sex interaction were:

a) the degree to which reading groups were important bases of interaction;

b) whether or not a classroom was multi-graded; and

c) whether or not children in the same grade, in multi-graded classrooms, were seated together.

I will argue that some combination of these conditions were responsible for the higher rates of cross-sex interaction in three of the classrooms--Rizzo's, Gibson's, and Snyder's.

TABLE VI-5

CROSS-SEX TIES WITHIN READING GROUPS

Teacher and % of students having at least one cross-sex strong tie	% of cross-sex strong ties which are in-group	Ratio of actual to expected in-group cross-sex strong ties
Rizzo (73.9)	46.2%	3.1
Gibson (64.0)	57.1	2.4
Snyder (61.5)	--*	--*
Casey (50.0)	--*	--*
Reed (46.4)	18.2	.72
Schultz (45.8)	71.4	2.7
Bell (40.7)	12.5	.65
Warren (16.0)	66.7	2.8

*It was not appropriate to investigate the effects of reading groups on ties in these classrooms.

Reading groups. As I described in Chapter V, a disproportionate number of the strong ties in four classrooms--Rizzo's, Gibson's, Schultz's, and Warren's--were between children in the same reading groups. This was particularly true for students in the higher reading groups in these classrooms. A substantial proportion of cross-sex strong ties also were between students in the same reading groups in these classrooms (see Table VI-5). Furthermore,

TABLE VI-6

CROSS-SEX STRONG TIES
WITHIN HIGH AND LOW READING GROUPS

Teacher and % of students having at least one cross-sex strong tie	% of cross-sex strong ties which are between students in high groups	% of cross-sex strong ties which are between students in low groups
Rizzo (73.9)	66.7%	26.7%
Gibson (64.0)	75.0	25.0
Snyder (61.5)	--*	--*
Casey (50.0)	--*	--*
Reed (46.4)	0.0	0.0
Schultz (45.8)	60.0	0.0
Bell (40.7)	100.0	0.0
Warren (16.0)	0.0	100.0

*It was not appropriate to investigate the effects of reading groups on ties in these classrooms.

most of the cross-sex strong ties were between students in the higher level groups (see Table VI-6).[33]

Rizzo's and Gibson's students, who had the highest rates of in-group strong ties, also had the highest rates of cross-sex strong ties. All the factors which encouraged children in the same reading group to interact with each other led boys and girls within the same reading group to

[33]. The one exception was in Warren's classroom where there were only three cross-sex strong ties. Two of them were between children in the same reading group, but between children in the lowest reading group.

interact with one another. Not only did they have the opportunity to interact with each other, but they often had good reason to do so. They shared information about what to do and how to do it. To the extent that it is in children's interests to interact with others in the same reading group, it is in their interest to interact with boys and girls in the same reading group. As interactions with others in the reading group become more rewarding, so to does cross-sex interaction with others in the same reading group. Reading group membership becomes a new and visible characteristic, one which dilutes the importance of sex as a characteristic on which to base interaction.

Membership in the high groups were particularly rewarding. The pattern of friendship choices indicated that students in the high reading groups had high status. Students in the high reading groups also had a privileged relationship with the teacher, and in general, received many rewards for doing well and remaining in the group. Students in the high groups had strong incentives for working with others in their group and for giving mutual help and support, perhaps a greater incentive to do so than did children in lower groups. Thus, for children in high groups, group membership was highly visible, conferred high status, and created strong bonds of mutual interest. It is not surprising that there were relatively high rates of cross-sex interaction among children in the highest groups.

Multi-graded classrooms. A substantially larger proportion of students in three of the four multi-graded classrooms--Rizzo's, Gibson's, and Snyder's--had at least one strong cross-sex tie than did the students in any of the single graded classrooms. Casey's students, in the fourth multi-graded classroom, were only slightly more likely to have had at least one cross-sex strong tie than were students in some of the single graded classrooms.

TABLE VI-7

CROSS-SEX STRONG TIES WITHIN GRADE LEVEL

Teacher and % of students having at least one cross-sex strong tie	% of cross-sex strong ties which are in-grade	Ratio of actual to expected in-grade cross-sex strong ties
Rizzo (73.9)	100.0%	2.0
Gibson (64.0)	92.9	1.9
Snyder (61.5)	92.3	1.9
Casey (50.0)	40.0	.8

In Rizzo's, Gibson's, and Snyder's classrooms more than 90% of all cross-sex strong ties were between children in the same grade (see Table VI-7). In Casey's classroom, only 40% of the cross-sex strong ties, slightly less than the expected rate, were between children in the same grade.

In three of the classrooms, then, mixing children from two grade levels seems to have increased the number of

TABLE VI-8

PROPORTION OF CLASS TIME SPENT IN ACTIVITIES IN WHICH CHILDREN WERE GROUPED BY GRADE LEVEL AND BY ABILITY GROUP

Teacher	Proportion of time spent in activities which group children by grade level	Proportion of time spent in activities which group children by ability level	Total
Rizzo	16.5%	33.3%	49.6%
Gibson	12.6	23.5	26.1
Snyder	32.0	0.0	32.0
Casey	.9	12.4	13.3

children who had cross-sex interactions. In a fourth multi-graded classroom, this did not happen. For Rizzo's, Gibson's, and Snyder's students, grade level competed with sex as a base of common interest. These students spent a considerable amount of time engaged in activities which differentiated them by grade level (see Table VI-8).[3] Not only did such differentiation make grade level membership visible, but it created opportunities for interaction among members of the same grade level while limiting opportunities for interaction among children of different grade levels. Furthermore, in these classrooms a substantial proportion of the students' work was assigned by grade level. Students thus had many reasons to seek out others within their grade

3. As noted earlier, divisions by reading level were also divisions by grade level in these classrooms.

level for help and clarification of assignments. This they often did.

Students in Casey's classroom spent almost no time grouped by grade level. Also, they spent relatively little time grouped by ability levels. Even when grouped by ability levels, such differentiation did not divide the students by grade level as cleanly as it did in the three other multi-graded classrooms. A few of the sixth graders were in the fifth grade reading group. A fourth grade reading group consisted of two sixth graders and two fifth graders. Thus, in Casey's classroom, grade level did not provide the same impetus to cross-sex interaction as it did in the other multi-graded classrooms. Of course, Casey's students, fifth and sixth graders, were older than the children in the other classrooms. This age difference may account for the particular pattern of peer relations found in Casey's classroom. The age factor will be discussed further in Chapter VII.

Seating arrangements. The students in Rizzo's and Snyder's classrooms were seated by grade level. In Rizzo's classroom second graders were assigned seats on one side of the room and third graders were assigned seats on the other side of the room. Snyder's students sat around six large round tables. The first graders sat at three of the tables and the second graders sat at the other three tables.[14] The

14. Toward the end of the observation period Snyder reassigned seats and some tables contained students from both grades. Only a few observations occurred after these reassignments.

children in Gibson's classroom were free to sit wherever they chose and to change seats whenever they chose. The children in Casey's classroom were assigned seats, though not by grade level. Casey changed the seating arrangement frequently and often took students' desires into account in the seating assignments. This resulted in some grouping by sex and some mixed sex seating.

The fact that Rizzo's and Snyder's students were seated according to grade level certainly increased the amount of in-grade interaction, and concomitantly of cross-sex interaction. However, the data from the other classrooms indicate that simply seating boys and girls near one another is not enough to encourage high levels of interaction among them. In the four of the classrooms with the lowest levels of cross-sex interaction (none of which were multi-graded) children were assigned seats so that boys and girls were well dispersed throughout the classroom. Boys and girls seated near to each other will only interact if they have common interests in doing so. Without classroom created common interests, boys and girls interacted with each other only rarely, even if they were seated next to each other.

CONCLUSION

It seems that any single factor--reading group importance, number of grade levels in the classroom, and seating arrangement--by itself was not strong enough to create high levels of cross-sex interaction. In Schultz's and Warren's classrooms reading groups were important bases

of interaction, yet there was relatively little cross-sex interaction. Indeed, in Warren's classroom there were only three cross-sex strong ties in the whole class. Casey's class was a multi-graded classroom in which children of the same grade did not sit together and reading group assignment probably was not an important basis for interaction. Students in this classroom had only moderate rates of cross-sex strong ties. Students in all of the single graded classrooms were assigned seats so that boys and girls were more or less evenly dispersed throughout the room. None of these classrooms had relatively high numbers of students with at least one cross-sex strong tie.

Apparently high numbers of students had at least one cross-sex strong tie in multi-graded classrooms in which grade level distinctions were prominent in class activities and in which seating arrangements and/or reading group assignments encouraged high levels of cross-sex interaction. Rizzo's classroom had the largest proportion of students with at least one cross-sex strong tie. In this multi-graded classroom, reading group membership was an important basis for interaction. In addition children were seated according to their grade level. Gibson's classroom, which had the second highest number of students with at least one cross-sex strong tie, also was a multi-graded classroom in which reading group membership was an important basis for interaction. The students in this classroom, however, were free to sit wherever they wished. Snyder's students had the

third highest number of students with at least one cross-sex strong tie. This was a multi-graded classroom in which children of each grade level were seated separately. Reading group membership probably was not an important base for interaction in this classroom.[35]

35. It was not possible to examine the relationship of reading group membership to ties in this classroom. The indications are that the relationship was small, similar to those found among Bell's and Reed's students. Snyder's classroom was in the same school as Bell's and Reed's. Snyder's second graders were regrouped and combined with other second graders in the school for an hour of reading instruction each day. This procedure decreased the importance of reading group membership in Reed's and Bell's students and, probably, also in Snyder's.

Chapter VII

PEER NETWORKS

The networks that will be described in this chapter are based on the non-negative interaction ties that students had in their classrooms. Four distinct types of networks were found. These types are described and the occurrence of each type is linked to various classroom characteristics. First, however, I discuss the patterns of peer networks described in the sociometric literature and the basis of the interaction networks which are used to describe the peer groups in this study. I also note some factors which I found to be related to patterns of peer networks.

PREVIOUS RESEARCH ON PEER GROUP NETWORKS

Most of the research on classroom networks has relied on sociometric techniques. Researchers have used (and often confused) four dimensions in describing patterns of peer networks.

Degree of centrality. Gronlund (1959) describes the sociometric structure of a classroom as typically having a positive skew. Some children, the "stars," receive very high numbers of choices. Others are "above average" and receive many choices. "Neglectees" receive only a few choices and "isolates" receive no choices. Schmuck (1963) sees this pattern, which he calls a centrally structured group, as one end of a continuum. The other end he calls a

diffusely structured group. He describes these types as follows:

> Centrally structured peer groups are characterized by a large number of pupils who agree in selecting only a small cluster of their classmates as pupils they like. Along this narrow focus on a small number of pupils, many other pupils are neglected entirely. Diffusely structured peer groups, on the other hand, are distinguished by a more equal distribution of liking choices; by no distinct subgroups whose members receive a large proportion of preference; and by fewer entirely neglected pupils (p. 341).

Cliquishness. Peer structures have been described in terms of the number, size and composition of cliques. (See, for example, Harary and Ross, 1957, and Nash, 1973). The notion of cliques often is contained in discussions of diffuseness and centrality. Yet, cliquishness and degree of centrality are independent dimensions. A classroom in which all students are members of cliques might produce a diffuse pattern of friendship choices in the sense that friendship choices are evenly distributed within each clique. Thus all students in the class would receive about the same number of friendship choices.[1] A classroom in which there are no cliques might be centrally structured with several stars and a number of isolates.

Amount of cross-group interaction. A third dimension along which classroom peer networks have been described concerns the extent to which members of different groups choose each other as friends. For example, some studies

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[1] The term "diffuse" as used by Schmuck implies both a lack of centrality and a lack of cliques. I will use diffuse to only mean a lack of centrality.

have examined how frequently black and white student choose each other as friends (Singleton and Asher, 1977, and Hansell and Slavin, 1979). Any group membership could be examined as a basis for friendship. In chapter V and VI of this report I examined within reading group and cross-sex interactions and friendship choices.

Stability. Finally, a fourth dimension concerns the stability of the peer network. Gronlund (1959) reports that most studies have found that the social structure of peer groups is quite stable. However, Glidewell et al. (1966) point out that correlations as high as .7, which are typical in the studies of change in peer group structure, are only good at predicting that half of the relationships or friendship choices will remain the same over time. Stability, in the sense that children's friendship choices from one time to the next have a statistically significant relationship, might still mean that many children make frequent changes in their friendship choices.

There are a number of problems with the patterns described in the literature. Much of this work tends to oversimplify the connections among students. Hallinan (1976) points out that most of the conclusions of sociometric research "are based on a distribution of choices received and the number of mutual dyads." More complex patterns involving triads and larger groupings are often neglected. Even the research which examines cliques usually fails to look for connections among cliques.

Connections among students have been oversimplified in another sense. They are seen as either present or absent. Students either choose a particular other or they do not choose that other; they are either work partners or they are not work partners. At best children can be "best friends," "friends," or "not a friend." (In fact, even when choices are not dichotomous, only the extremes are usually analyzed.) Students do have connections of varying strength with others. As this report will show, peer networks are much more complex than those generated by dichotomous measures.

Research on peer networks contains the implicit assumption that children's reports of friends, choices of seating patterns, preferred workmates, etc., can be used to infer interaction patterns. As Karweit (1976) notes, "The use of sociometric techniques to describe the pattern of interaction among students has been a long and continuing tradition in social psychology." Patterns of peer interactions which are derived from sociometrics may be misleading. As has been discussed repeatedly in this report, sociometric status does not predict interaction patterns very well. The data show that some individuals who receive many "best friend" choices are behavioral isolates. Other students receive few "best friend" choices and many "not a friend" choices but have a high number of non-negative interactions with other students in their

classrooms. Although these students are sociometric isolates, they are by no means behavioral isolates.

Hallinan (1976) criticized much of the research on friendship patterns for omitting structural characteristics of classrooms as key variables which likely have a strong impact on student friendships. Most studies of friendship patterns have been undertaken in traditionally structured classrooms and have found what Hallinan calls hierarchical patterns (Schmuck's's centrally structured type). She found that the distribution of friendship choices in open classrooms was less skewed than in traditional classrooms.

Bossert (1979) found that the activity structures in classrooms affected both the stability and composition of friendship groups. In classrooms in which multi-task and class-task activities predominated, he found that children were in a friendship group with most other same-sex members of their class at some point during the year. In the classrooms in which a recitation format predominated, children formed cliques early in the school year and maintained them for the rest of the year. These cliques were homogeneous in terms of the ability levels of the students.

As Bossert's work indicates, classrooms do not simply vary from "open" to "traditional" along a two dimensional scale. The activity structures can vary independently along several dimensions. These possible variations, along with other classroom variations (to be discussed later) mean that

there are, potentially, many types of classrooms. Therefore, the relationship between activity structures and the peer group patterns is not a simple "as x varies, y varies" type relationship and a more complex type of relationship needs to be explored.

DESCRIBING PEER NETWORKS

The patterns of peer networks described in this chapter are based on the non-negative interactions among the students. As I discussed in Chapter III, interaction ties of various strength were calculated for all pairs of students in each classroom. Based on these dyadic ties, an interaction measure somewhat analogous to the Degree of Centrality was calculated for each classroom. Based on the strength of ties that each child had with all other children, interaction maps of each classroom were generated. These maps make it possible to examine networks which are more complex, but more realistic, than those based just on dyadic measures and/or measures of the simple presence of absence of a connection between children. Also, the maps can be used to examine the number, size, and composition of cliques as well as the relationship of cliques to one another.

I described cross-sex and cross-reading group interactions in previous chapters. They are considered again here as they relate to other dimensions. The nature of the data made it difficult to examine the stability of

the interaction patterns.[7] This dimension is not considered in this report.

Connectedness of students in the peer group

Ties ranged in strength from 1 to 8. A value of 0 indicated the absence of any tie or interaction between two children. Ties of strength 1 through 4 were combined and designated as "weak" ties. Ties with strengths of 5 through 8 were combined and designated as "strong" ties. Patterns of connectedness were determined by using the number of strong and weak ties that students had. This measure is somewhat analogous to the Degree of Centrality, but it is more complex. Half of the students in all the classrooms had strong ties with four or more of their classmates. They were rated "high" on the "strong ties" dimension. The other half of the students, who had strong ties with less than four of their classmates, were rated as "low" on this dimension. A similar division was made of students having "high" and "low" numbers of weak ties.[8]

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[7].It was particularly difficult to measure stability in a way which made comparisons between classrooms meaningful. In some classrooms observations were distributed over six months while in others only over two months. A comparison of the ties during the first half of the observation with the second half would lead to quite different comparisons in each classroom. There were too few observations in any month to make a month to month comparison meaningful. Furthermore, in some classrooms most of the observations were during the fall and in others most were during the spring. The stability of the peer groups might well differ early in the school year compared with later in the term.

[8].The rate of weak ties was greater in the classrooms which had more hours of observations. In calculating weak ties only children having at least two interactions with

TABLE VII-1

MEAN NUMBER OF STRONG AND WEAK TIES AND PROPORTION OF STUDENTS WITH HIGH NUMBERS OF STRONG TIES AND HIGH NUMBERS OF WEAK TIES

Peer Network Structure	Teacher	Mean Number of Strong Ties	Mean Number of Weak Ties	Proportion of Students with High Numbers of Strong Ties	Proportion of Students With High Numbers of Weak Ties
Centrally structured peer group	Bell	2.7	6.4	29.6%	62.9%
	Reed	2.8	4.5	39.3	28.6
Integrated peer group	Casey	3.9	6.0	60.7	75.0
	Gibson	4.4	6.6	62.5	64.1
Two loosely connected groups	Schultz	3.8	4.5	50.0	66.7
	Warren	3.8	6.5	56.0	56.0
Chain of connected individuals and small groups	Rizzo	2.9	3.0	34.8	21.7
	Snyder	4.0	3.2	65.4	19.2

Table VII-1 shows the proportion of students in each classroom who had "high" and "low" number of strong and weak ties. Also shown are mean number of strong and weak ties for students in each classroom. (Classrooms are grouped in this and the next table according to a typology discussed later in this chapter.)

A child could be "high" on one dimension and "low" on the other. This means that there are four possible combinations of ratings (high-high, high-low, low-high, and low-low). Table VII-2 shows the proportion of children in each classroom who were in each category. Those children who had a low number of weak ties and a low number of strong ties were peripheral students. Most peripherals had at least one, two and occasionally three strong ties with other children. Students who had a low number of strong ties but a high number of weak ties were floaters. They had some interaction with many others but only had a few strong ties. The children who had few weak ties but many strong ties were anchored. They had strong connections with several (four or more) other children, but limited most of their interactions to just those others. Children who had many weak ties and

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each other during the observation period could have weak ties with each other. In classrooms which had more hours of observations it was more likely that more pairs of children fell into this category. In the classrooms in which 30 hours of observations were conducted half the children had 6 or more weak ties and are labeled "high" on this dimension. In the classrooms in which 20 hours of observations were conducted, half the children had five or more weak ties and were labeled "high". In the classrooms which had only 10 hours of observations half the children had 4 or more weak ties and are labeled "high" on this dimension.

many strong ties were central figures in the peer group. They interacted with a wide variety of others.

TABLE VII-2

PROPORTION OF STUDENTS WHO WERE PERIPHERAL, ANCHORED, FLOATERS, AND CENTRAL IN THEIR RELATIONSHIP TO THE PEER GROUP.

Teacher	Peripheral	Anchored	Floaters	Centrals
Bell	33.3%	3.7%	37.0%	26.0%
Reed	46.4	25.0	14.3	14.3
Casey	14.3	10.7	25.0	50.0
Gibson	16.7	29.2	30.8	33.3
Schultz	12.5	20.8	37.5	29.2
Warren	24.0	20.0	20.0	36.0
Rizzo	52.2	26.1	13.0	8.7*
Snyder	23.1	57.7	11.5	7.7

Two additional categories are shown in Table VII-3. Isolates and bridges are subgroups at the extreme ends of the peripheral and central categories. Few students were truly isolated in the sense that they had no strong ties and few weak ties. One, and at most two, children were truly isolated in any classroom. In some classrooms there were not such children. Students who had two or fewer strong ties and few weak ties were considered isolates.''

''.Twenty-five percent of the students had two of fewer strong ties. For reasons noted earlier the number of weak

TABLE VII-3

PROPORTION OF STUDENTS
WHO WERE ISOLATES AND BRIDGES.

Teacher	Isolates	Bridges
Bell	14.8%	7.4%
Reed	25.0	3.6
Casey	7.1	21.4
Gibson	4.2	20.8
Schultz	4.2	12.5
Warren	8.0	8.0
Rizzo	12.5	0
Snyder	0	0

Some of the central students had an exceptionally high number of strong and weak ties with others. They were true bridges in the sense that they connected many different children and groups of children. Students who had five or more strong ties and many weak ties were considered bridge students.[10]

ties that students had was likely to vary systematically with the number of hours of observation. The number of weak ties for the isolates was determined by finding the number of weak ties students had in the lower quartile of all the classrooms with the same number of hours observation. In the 30 hour classrooms the limit was four weak ties. In the 20 and 10 hour classrooms the limit was two weak ties.

[10].Twenty-five percent of the students had five or more strong ties. In the 30 hour classrooms about 25% of the students had eight or more weak ties. In the 10 and 20 hour

Maps of peer networks

Maps of peer networks based on computer-generated pictures of the peer group which take into account ties of all strengths.[4'] Only strong ties are drawn on the maps. Solid lines indicate very strong ties (strengths of 7 and 8). Dotted lines indicate moderately strong ties (strengths of 5 and 6).

These maps can be thought of as photographs in which the camera is set up and the shutter left open for long periods of time. Each interaction between two children etches a faint line on the picture. Many interactions between the same children create a strong connection, the solid lines on the maps. Children who interact somewhat less frequently show up with a faint connection, the dotted lines on the maps. The connections between children who interact rarely but regularly with each other and between children who interact with each other several times over a short period of time appear as weak ties. No lines are drawn on the map showing these weak connections, but they are taken into account in the placement of students on the maps.

The further a student is from other students, the fewer connections that student has with those students. Students

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classrooms about 25% of the students had six or more weak ties.

4'.A program called MINISSA was used to generate these pictures. A full description of this procedure can be found in Chapter III.

on the periphery of the maps also are on the periphery of their peer group. Clusters of students indicate cohesive groups with students having many ties within the group. The tighter the cluster, the more ties there are within the group and the more cohesive is the group.

These maps can be used to identify cliques. Any cluster of students could be considered a clique. However, in order to compare classrooms in terms of the number, size and composition of cliques, a group of students are considered a clique if they are:

a) two students who have a strong tie with each other and are isolated from other students;

b) three or more students who are clustered together on the map and each student has at least two strong ties with other members of the cluster.

Explaining Patterns of Peer Networks

The components of the interaction model provide a useful framework for explaining why particular patterns appear in each classroom. On one side of the model is "opportunities for interaction". Opportunities for interaction are affected by the activity structures, seating arrangement, and teacher created and enforced rules about movement and talking in the classroom. Activities which allow for high rates of interaction and movement around the classroom are likely to permit students to interact with a wide range of others. Activities which group children limit interaction to those within the particular groups. Students

seated near one another have greater opportunities to interact with one other than do those seated far apart. Frequent changes in the seating arrangement put many more students into close proximity with one another and therefore encourage multiple ties. Students in classrooms in which teachers make and enforce rules which limit the amount of movement and talking are likely to have relatively few ties.

The other side of the interaction model contains the primary component of "interest." Students are likely to interact with those with whom it is in their interest to do so, either instrumentally (to obtain resources such as materials, information, etc.) or because of shared interest (including friendship). Student characteristics become important bases of interest to the extent that they are visible and valued. Activity structures affect bases of interest to the extent that they create and/or maintain, such characteristics and make them (or allow them to continue to be) visible and highly valued. Hallinan (1976) contends that in open classrooms:

> ...the frequent interaction among students and the diversity of their activities probably alter the components of status and stimulate the development of a number of different status systems. The wide variety of activities would be expected to increase the probability that every child will succeed in at least one activity, which decreases the number of social isolates and neglectees. At the same time, one would think that the likelihood of a child excelling in all activities or perfectly adhering to all of the group's norms is small, reducing the potential number of sociometric stars. Consequently, a less skewed hierarchical distribution of friendship choices is expected in the open classroom (Hallinan, p.257).

In the language I am using here, children in classrooms which have task structures with reward structures that "stimulate a number of different status systems" will have multiple interests on which to base their interactions.

Each classroom has its unique blend of activity structures, seating arrangements, teachers and students. It is the combination of a variety of factors which leads to one or another peer network pattern.

DESCRIPTIONS AN ANALYSES OF THE PEER NETWORK

Four different patterns of peer networks are evident in the peer group maps. The peer groups in Bell's and Reed's classrooms were centrally structured. In each of these classrooms there was a central core of students with many strong ties who were surrounded by a series of rings of ever more peripheral students. The peer groups in Gibson's and Casey's classrooms were integrated. Most students had connections with many other students and there were relatively few peripheral children. Schultz and Warren had two relatively cohesive same-sex groups which were loosely connected with one another. The peer groups in Rizzo's and Snyder's classrooms resembled a chain, with a series of individuals and small groups connected to one another.

I discuss each of these types in turn and examine patterns of connectedness and cliques in each type. I then analyze the classroom features which generated each pattern.

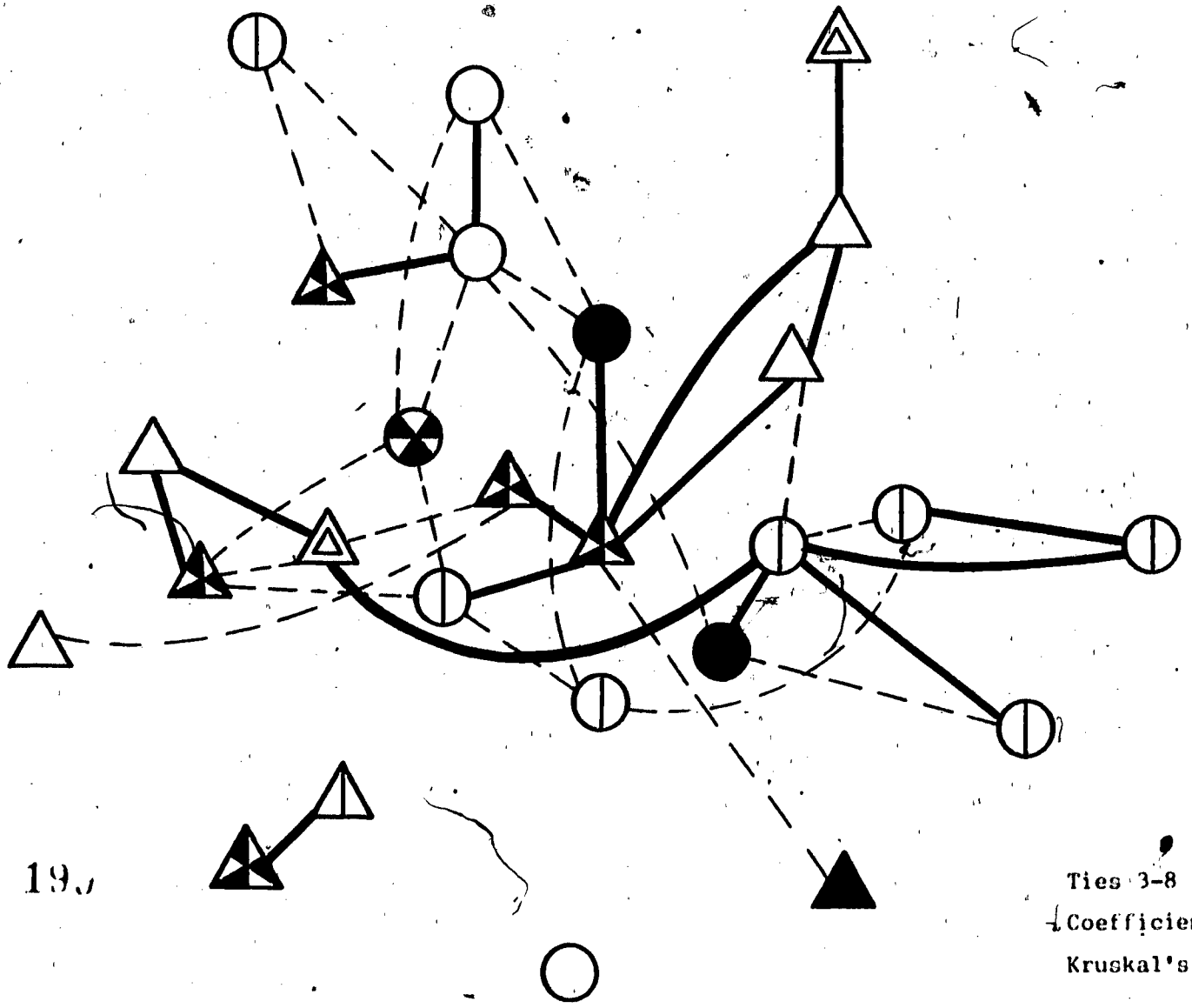
Centrally structured peer groups:
Bell's and Reed's classrooms

Bell's and Reed's classrooms had centrally structured peer groups. In both classrooms there was a core set of children with many strong ties. The further a child was from the core, the fewer strong ties she or he had. There was an outer ring of peripheral children in each of these classrooms. The figures in Tables VII-2 and VII-3 support this description. Bell and Reed had relatively high numbers of peripheral students and the highest numbers of isolates of any of the classrooms in the study. They had relatively few central and bridge students.

The network maps show that Bell's students were clustered together more tightly than were Reed's students. This indicates that the peer group in Bell's class was somewhat more cohesive than was the one in Reed's. The figures in Tables VII-2 and VII-3 indicate that there were fewer peripheral and isolated students in Bell's room than in Reed's and more central and bridge students.

There is little evidence that cliques were important components of the peer group structure in either classroom. In Bell's class there were many three person groupings (most of which were same-sex) which were strongly connected with one another. There was a single clique of three girls, all of whom had very strong ties with one another. However, each clique member had strong ties with many others. There was one pair of boys who formed a relatively isolated two person clique. In Reed's class there was one clique of

Bell's class



Key

Circles=girls

Triangles=boys

Reading group

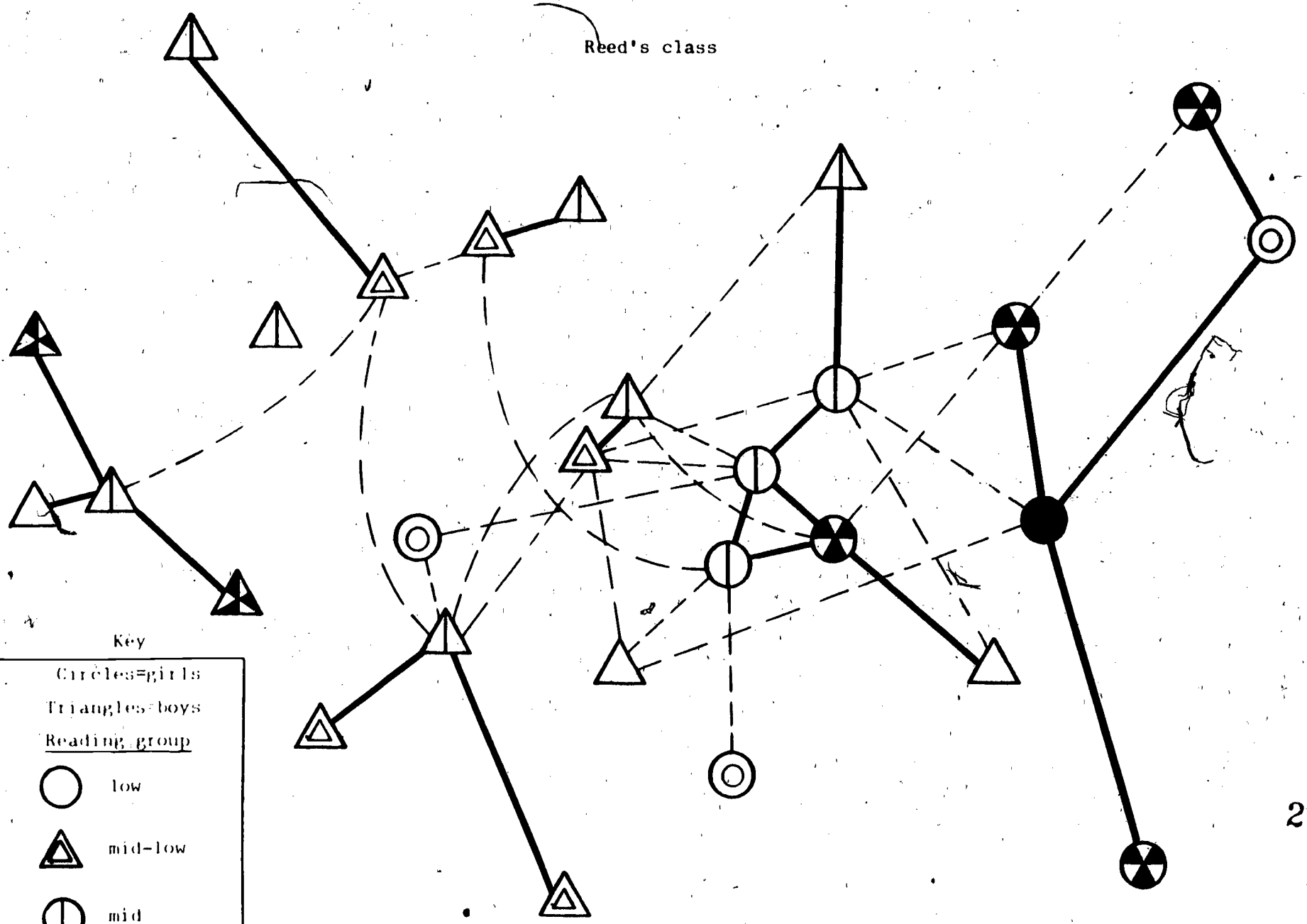
- low
- mid-low
- mid
- mid-high
- high

Ties 3-8

Coefficient of alienation = 0.10617

Kruskal's stress = 0.08721

Reed's class



Key

Circles=girls

Triangles=boys

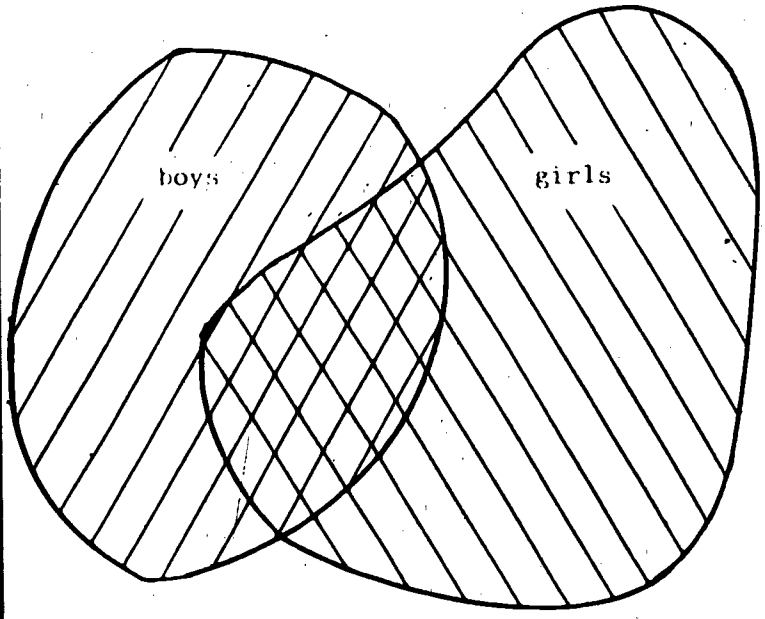
Reading group

- low
- mid-low
- mid
- mid-high
- high

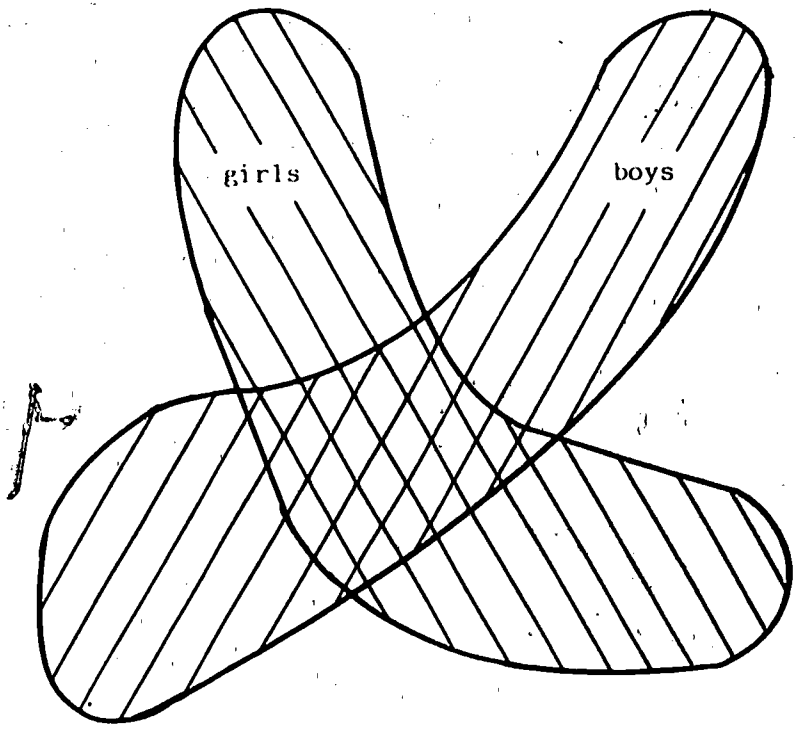
Ties 1-8

Coefficient of alienation = 0.11805

Kruskal's stress = 0.09592



Reed's classroom



Bell's classroom

Figure VII-1

The relationship between the boys' and the girls' peer groups in Reed's and Bell's classrooms

three girls in which all children had very strong ties with one another. As with the cliques of girls in Bell's class, the students in this group all had strong ties with many others and the group was, therefore, not an isolated clique.

As was indicated in Chapter VI, relatively few of Bell's and Reed's students had strong cross-sex ties. Again this is evident in the peer group maps. A few students in each classroom had most of the cross-sex connections and were bridges between the all-girl groups. Most of the girls in Reed's class are on the right side of the map, and most of the boys are on the left side. In Bell's class a band of boys crosses a band of girls. Figure VII-1 depicts the relationship of the boys and girls in these classrooms.

Consistent with the findings in chapter V, the maps indicate that reading group membership of Bell's and Reed's students were unrelated to their interaction patterns. The only minor exception to this was a cluster of mid-group girls in Bell's class.

Analysis

About a third of the time in Bell's and Reed's classrooms was spent in large group activities. When students worked individually (during class-task activities), they all were doing the same work at the same time. There was virtually no time spent in multi-task activities. These activity patterns resemble patterns typical of those in so called traditional classrooms. The centrally structured peer groups in Bell's and Reed's classrooms also were

similar to those described in the sociometric literature as typical of traditional classrooms. The explanation of why such patterns occurred in Bell's and Reed's classrooms also serves to explain why such patterns occur in most traditional classrooms.

TABLE VII-4

PORTION OF DAY SPENT IN VARIOUS ACTIVITIES

Teacher	Large Group	Multi-task and Non-academic class-task	Grouped by Academic Level	Grouped by Grade Level
Bell	30.8%	3.7%	12.3%	
Reed	35.6	15.5	17.5	
Gibson	20.0	38.9	23.5	12.7
Casey	26.1	28.3	12.4	.9
Warren	26.8	18.7	21.9	
Schultz	*	(24.1)	(22.1)	
Rizzo	20.6	23.5	33.1	16.6
Snyder	31.2	10.1	11.6	32.1

Opportunity for interaction. Students in Bell's and Reed's classrooms spent a relatively large proportion of their time engaged in large group activities, activities which provided only limited opportunities for interaction. They spent relatively small amounts of time engaged in multi-task and non-academic class-task activities,

activities during which students are likely to have many opportunities to interact freely with others. (See Table VII-4.) Although Bell's students spent a relatively high proportion of time engaged in academic class-task activities, Bell effectively enforced rules against talking and movement during such activities. Thus, students had limited opportunities for interaction in these classrooms, and, as Tables VII-1 and VII-2 show, most students had low numbers of strong ties. Most students were therefore found in one or another of the peripheral rings in the peer network. A few students, however, had many strong ties and are centrally located in the peer network. For the most part (particularly in Bell's room) these students were the rule breakers.[42] They were the ones who often were out of their seats, and they often were reprimanded. They are the ones who interact with others <u>despite</u> constraints by the activity and by the teacher.

It is worth noting that Bell's students were the least likely to have their strong ties with those seated close to them. Only 43.2% of the strong ties were between students who sat near one another during at least one of the observations. This is an indication of the effectiveness of the teacher's enforcement of the rules. Strong ties are indicative of interactions which occurred during times when

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[42].That these students were the rule-breakers was pointed out to me by the observer in these classrooms. This interpretation is confirmed by information in the field notes.

students were not required to be in their seats or between students who were not obedient to the teacher rules.

Interest, visibility, and reward structure. The reward structure in these classrooms encouraged competition between individual children and discouraged cooperation. The large amounts of time spent in large group activities made performance and evaluation highly public and comparable. Competition was further encouraged by hanging "the best" papers on the walls. Reed even held contests in which students voted on "the best" drawing.

Reading group membership was not particularly visible or salient in either of these classrooms. The procedure by which all students on the grade level were reassigned for the daily reading period lessened the visibility of reading group membership. Furthermore, since all reading work was done during the reading hour, students within the same reading group had little cause to seek one another out for help or guidance at other times during the school day.

Hallinan's (1976) and Bossert's (1979) work indicate that a competitive environment leads to hierarchically structured peer groups. The peer groups in their studies were divided by academic ability. Since the pattern of ties in Bell's and Reed's classrooms do not seem to be affected by reading group membership (and hence not by academic ability), the competitive system seems to create a centrally structured group in a different manner than is indicated by Hallinan or Bossert. Competition discourages the

cooperative types of activities that allow students to discover and create common interests on which to base relationships with a variety of others. Instead, students become locked into relationships with just a few others.

The characteristic that remained as the primary basis of common interest was students' sex. There were no reasons for students to cross the powerful sex barrier in either Bell's or Reed's classroom. No other student characteristics became visible and valued enough for students to abandon patterns of same-sex interaction.

Integrated Peer Groups:
Gibson's and Casey's classrooms

The peer groups in Gibson's and Casey's classrooms were diffusely structured. Most students were well integrated into the peer group and had ties with many others. Although there were several sub-groups within the peer networks, most groups were closely connected with one another.

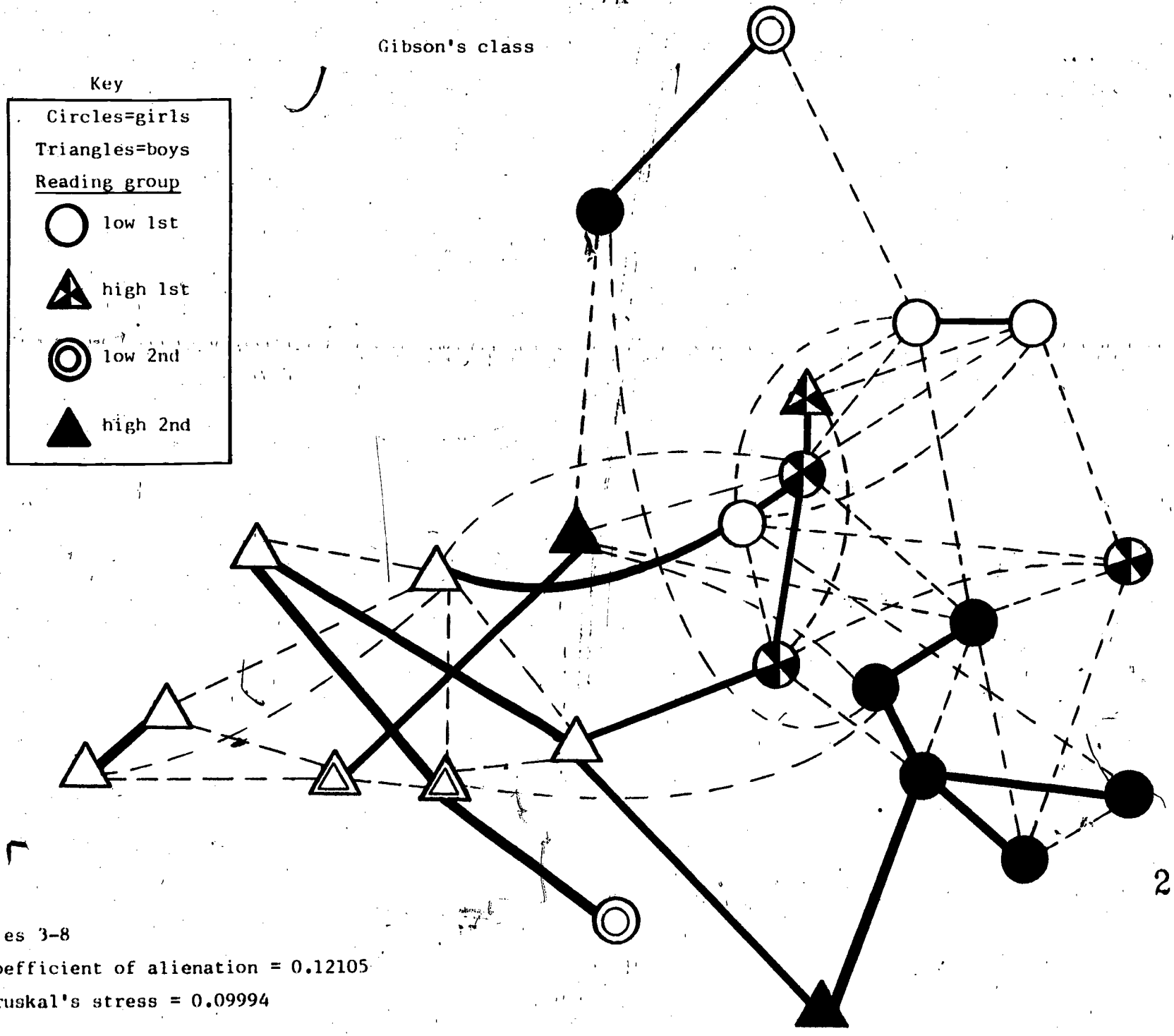
Tables VII-1, VII-2 and VII-3 support the description of these peer groups as being well integrated. At least 60% of the students in these classrooms had high numbers of strong ties. In Gibson's classroom 64.1% of the students had high numbers of weak ties and in Casey's classroom 75% of the students had high numbers of weak ties. One third of Gibson's students and fully half of Casey's students had high numbers of both weak and strong ties. These classrooms had the highest proportions of bridge students of any of the classrooms while relatively few students were peripheral or isolated.

There were no cliques of three or more persons in Gibson's class, and there was only one two-person clique (two girls) which was relatively isolated from the rest of the peer network. In Casey's class there were four cliques with three or more people in them, (four fifth grade boys, three sixth grade boys, three sixth grade girls, and three fifth grade girls). Only the group of three sixth grade girls was isolated from the rest of the peer group.

Despite the high level of integration, the peer groups were clearly divided by sex. In Casey's class all the girls are on the top part of the map, and all the boys are on the lower half. In Gibson's class most of the girls are on the right side of the map, and most of the boys are on the left side. The relationships of the boys' and girls' groups are depicted in Figure VII-2. Although the groups were identifiable, there were many strong ties connecting the groups. As discussed earlier in this report, Gibson's students had relatively high rates of cross-sex ties. Casey's students had a moderate amount of cross-sex ties.

The strong relationship between reading group membership and strong ties in Gibson's class was discussed in Chapter V. That relationship is again evident on the map of the peer network,. A cluster of high-level second graders is closely connected to a cluster of high-level first graders. Clearly, many of the cross-sex ties were between students in the same reading group, particularly those in the high groups.

Gibson's class

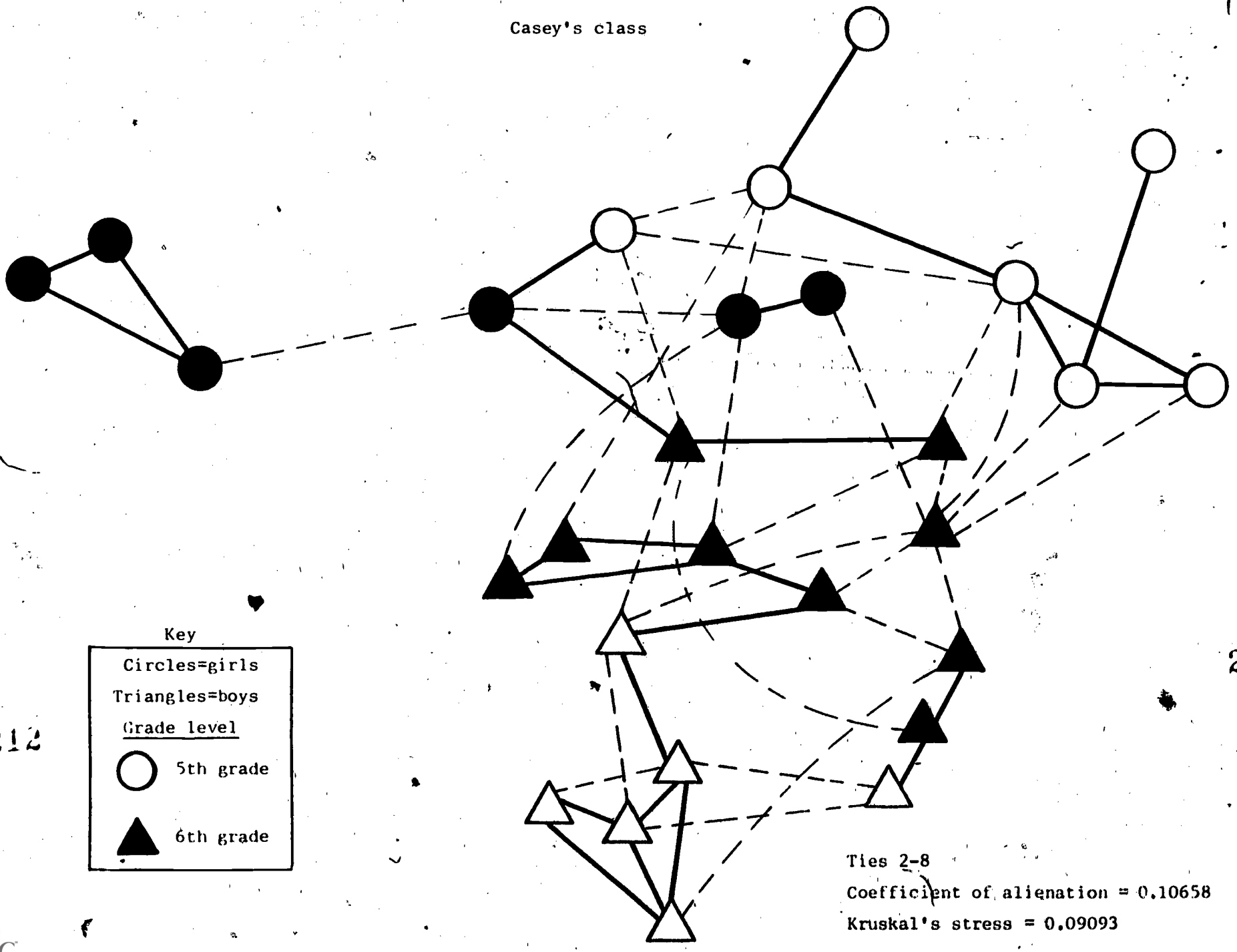


Ties 3-8

Coefficient of alienation = 0.12105

Kruskal's stress = 0.09994

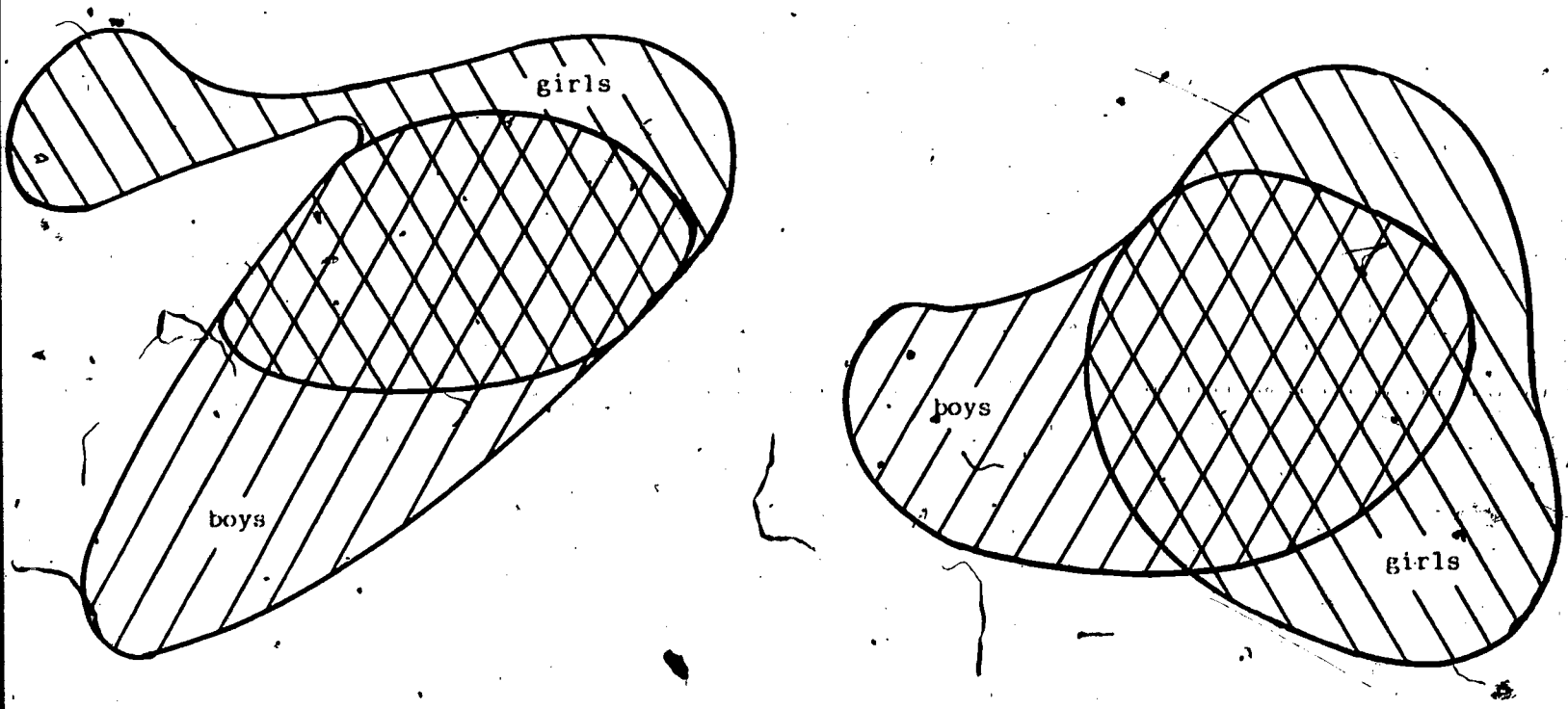
Casey's class



Ties 2-8

Coefficient of alienation = 0.10658

Kruskal's stress = 0.09093



Casey's classroom

Gibson's classroom

Figure VII-2

The relationship between the boys' and the girls' peer groups in Casey's and Gibson's classrooms

The relationship between grade level and cross-sex ties is quite distinctive in Casey's class.[43] The fifth grade boys are clustered together at the bottom of the map. All of their out-going strong ties were the sixth grade boys. They had no strong ties with girls of either level. The fifth grade girls are spread along the top of the map. They were well connected by strong ties with one another. Most of their out-group ties were with sixth grade boys. They had two strong ties with sixth grade girls. The wide separation on the map between the fifth grade boy and girl groups indicates that not only were there no strong ties connecting these groups, but there were few weak ties connecting them.

Three of the sixth grade girls formed an exclusive clique. Only one of them had even one strong tie with anyone else in the class. The other three sixth grade girls had strong ties with each other, with sixth grade boys, and with fifth grade girls. The sixth grade boys had the most wide ranging ties. They had connections with members of all other groups in the classroom.

Analysis

The students in Gibson's and Casey's classrooms spent the largest proportions of time engaged in multi-task activities of any of the eight classrooms. The integrated

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[43].Reading groups tended to parallel grade level in Casey's class. A few sixth graders were in the fifth grade reading group. Two fifth graders and two sixth graders comprised a fourth grade reading group.

peer network in these classrooms is, in some ways, similar to those found by Hallinan (1976) in open classrooms and by Bossert (1979) in classrooms with high rates of multi-task and class-task activities. However, in Gibson's and Casey's classrooms it was the combination of activity structures and the teacher's permissiveness about student movement and interaction within multi-graded classrooms which led to the degree of integration among students which did occur.

The analysis of the peer networks in Schultz's and Warren's classrooms suggest that it was the multi-grade dimension of Gibson's and Casey's classrooms which was the critical factor leading to a relatively high degree of cross-sex interaction. Schultz and Warren had single graded classrooms with relatively high rates of multi-task and class-task activities. The teachers allowed the students to have considerable freedom of movement. Yet, the boys and girls in these classrooms formed distinctly separate groups, although most of the students were well integrated into their respective groups.

The analysis of the peer network in Rizzo's classroom shows the importance of teacher permissiveness in creating a well integrated group. In this multi-graded classroom, students spent a relatively high amount of time engaged in multi-task and class-task activities. But the teacher permitted very little movement, and the peer group in this classroom was not well integrated.

Opportunities for interaction. Students in Casey's and Gibson's classrooms spent a large proportion of their time engaged in activities which gave them the opportunity to interact with a wide variety of others. They had the largest proportions of time spent in multi-task activities and non-academic class-task activities of any classroom in the study. In addition, the teachers in both these classrooms usually allowed students to interact freely during academic class-task activities. Thus, in Gibson's room 58.6% of class time was spent in activities allowing free interaction, and in Casey's room 54.3% of the time was spent in such activities. When free time activities were added, nearly two thirds of class time in these classrooms was spent in activities allowing high levels of interaction. The fact that 60% or more of the students in these classrooms had high numbers of strong ties is directly attributable to the high rates of these activities. The integrated peer networks were made possible because so many students had high numbers of strong ties.

Students in Gibson's class could sit wherever they chose and change seats at any time. Students usually sat near friends, though the seating pattern was continually changing. Students working on a project together, or doing the same reading or math assignment, sat together temporarily to help one another. When the task was completed, they moved and sat elsewhere.

Casey assigned seats to her students. She made four major seating reassignments during the months of observation. Casey said that she took students' desires into account in her assignment of seats but that she sometimes seated students together whom she thought would be "good" for each other. Although 59.3% of all strong ties were between students who sat near one another during at least one observation period, many students had no ties, or only weak ties, with many students who were seated close to them. There was considerable movement around the classroom during most activities, and seating seemed to be relatively unimportant in determining with whom students interacted.

The combination of the activities allowing free interaction and the choice of seating in Gibson's classroom led to the highest average rate of strong ties (4.4 per student) and the highest average rate of weak ties (6.6 per student) of any classroom. The average rates in Casey's class also were relatively high--an average of 3.9 strong ties and 6.0 weak ties per student. Again, the high rates of these ties facilitated and even encouraged an integrated pattern.

Interest, visibility, and reward structure. There were two forces operating in Casey's and Gibson's classrooms which created a peer structure where most students had a high number of ties with a variety of others.

1) The large amount of time spent in multi-task activities enabled (and indeed encouraged) students to cooperate.

Students in these two classrooms did in fact work together extensively, particularly during multi-task activities. Small groups often gathered and work together in learning centers and in the classroom libraries. Groups of students in Casey's classroom frequently worked together in the hallway outside the classroom. Students also moved around their rooms to sit and work with others. Typically "working together" entailed cycles of talking about work and chatting about non-work matters. Cooperation with others who were similar on one dimension (e.g., reading group) made it possible to create bonds which transcended differences (e.g., sex) which otherwise would have constituted barriers to interaction.

2) The fact that students had multiple characteristics (sex, grade level, and reading group membership), each of which provided an important base of common interest, meant that no single characteristic was so important that it became the primary basis for interaction. Furthermore, the existence of multiple characteristics meant that most students could find many others with whom they had at least one characteristic in common. Thus, there were few peripheral and isolated students in these two classrooms.

The combination of cooperation and multiple bases of interest underlay the integrated peer groups. Note that there were still disproportionately high rates of

interaction within-sex, within-grade, and at least for Gibson's students, within-reading group. However these characteristics did not form bases for exclusive groups and no single characteristic formed a barrier which could not be overcome.

As I discussed in Chapter VI, our society creates many reasons (or common bases of interest) for children to interact with same-sex peers and generates considerable pressure against any degree of positive cross-sex interaction. Grade level also becomes an important identifying trait for students, one which creates a common basis of interest for students' interactions with others in the same grade level and inhibits interactions with those of different grade levels. Grade level is a characteristic assigned to students by the school, and students gain status as they move upward from grade to grade. The increased status of higher grade level students occurs, in part, because promotions from grade to grade are used as a reward for good behavior and academic achievement (if not in fact, at least as it is presented to children). Being "left back" stigmatizes students.

Therefore, students in multi-graded classrooms, compared to students in single graded classrooms, have an additional characteristic which creates differences among them. The activities that students engage in can affect the extent to which grade level is a salient characteristic for students in these classrooms. Activities which group

students by grade level make students' grade levels highly visible. Activities in which students are differentially assigned work by grade levels create reasons for students within the same grade level to interact with one another.

As I showed in Chapter V, reading group membership is another characteristic which has the potential of becoming an important basis for interaction. Group membership becomes highly visible when students are grouped within the classroom for lessons with the teacher. Students have much reason to interact with other group members when work which must be completed during class-task or multi-task activities is assigned to the group. Gibson's students spent 23.5% of their time engaged in activities during which at least some students were grouped by reading level. They spent an additional 12.7% of their time engaged in activities for which they were grouped by grade level or for which they were engaged in a class-task activity in which work was assigned differentially by grade level. In addition students worked on assignments given in reading group and on math assignments which were assigned by grade level during multi-task activities. Clearly a substantial proportion of class time was devoted to activities which differentiated students by reading group and grade level.

Differentiation by reading group reinforced grade level divisions because each reading group was homogeneous in terms of grade level. (There were two first grade groups and two second grade groups.) Yet, membership in a high or

low reading group created an identity separate from grade level identity. It certainly affected the interaction patterns. For instance, high group first graders interacted with high group second graders but not with low group second graders.

The academic grouping pattern in Casey's class essentially was parallel to grade level. The three reading groups (which were identical with the spelling groups) were labelled by the teacher as the "sixth", "fifth" and "fourth" grade groups. Most sixth graders were in the "sixth" grade group, most fifth graders were in the "fifth" grade group, and two fifth graders and two sixth graders comprised the "fourth" grade group. Although only .9% of the typical school day was devoted to activities which clearly divided students by grade level, 12.4% of the students' time was spent in activities which divided them by reading and spelling groups. A substantial amount of the students' work during multi-task and class-task times was assigned by grade level and/or reading group. For the most part, the students' division by grade level was the primary division for instruction. Division by reading group only reinforced this. Unlike Gibson's class, there was no separate category based on reading group which differentiated the students.

The peer group maps indicate that the divisions between the sexes and between grade levels were much sharper in Casey's class than they were in Gibson's class. In this sense the peer group in Casey's room was less well

integrated than the one in Gibson's room. A key difference between the two classrooms was that in Gibson's class there were three major student characteristics (sex, grade level, and reading group membership), while in Casey's class there were only two major student categories (sex and grade level). Gibson's students had more reasons to cross the boundary of any one group than did Casey's students. Thus, Gibson's students might interact with a member of the opposite sex because they were in the same grade level or because they were in the same reading group.

Other possible explanations for the greater integration of the peer group in Gibson's class relates to the age differences between the two Groups. Casey's students were older than Gibson's students. There may have been developmental differences which accounted for the fewer cross-sex ties in Casey's class. It is also possible that the older students, with longer experience in school, had developed patterns of within grade level and same sex interaction. Since there is only one older grade classroom in the study, it is difficult to assess these possibilities from these data.

To sum, students in Gibson's and Casey's classrooms had several characteristics--sex, grade level, and reading group membership in Gibson's room--which differentiated them. Both classrooms also had high rates of multi-task and class-task activities and teachers who allowed free movement during these activities. Thus, students had good reason and

many opportunities to engage in cooperative behavior with others who were similar along any one of these three characteristics.

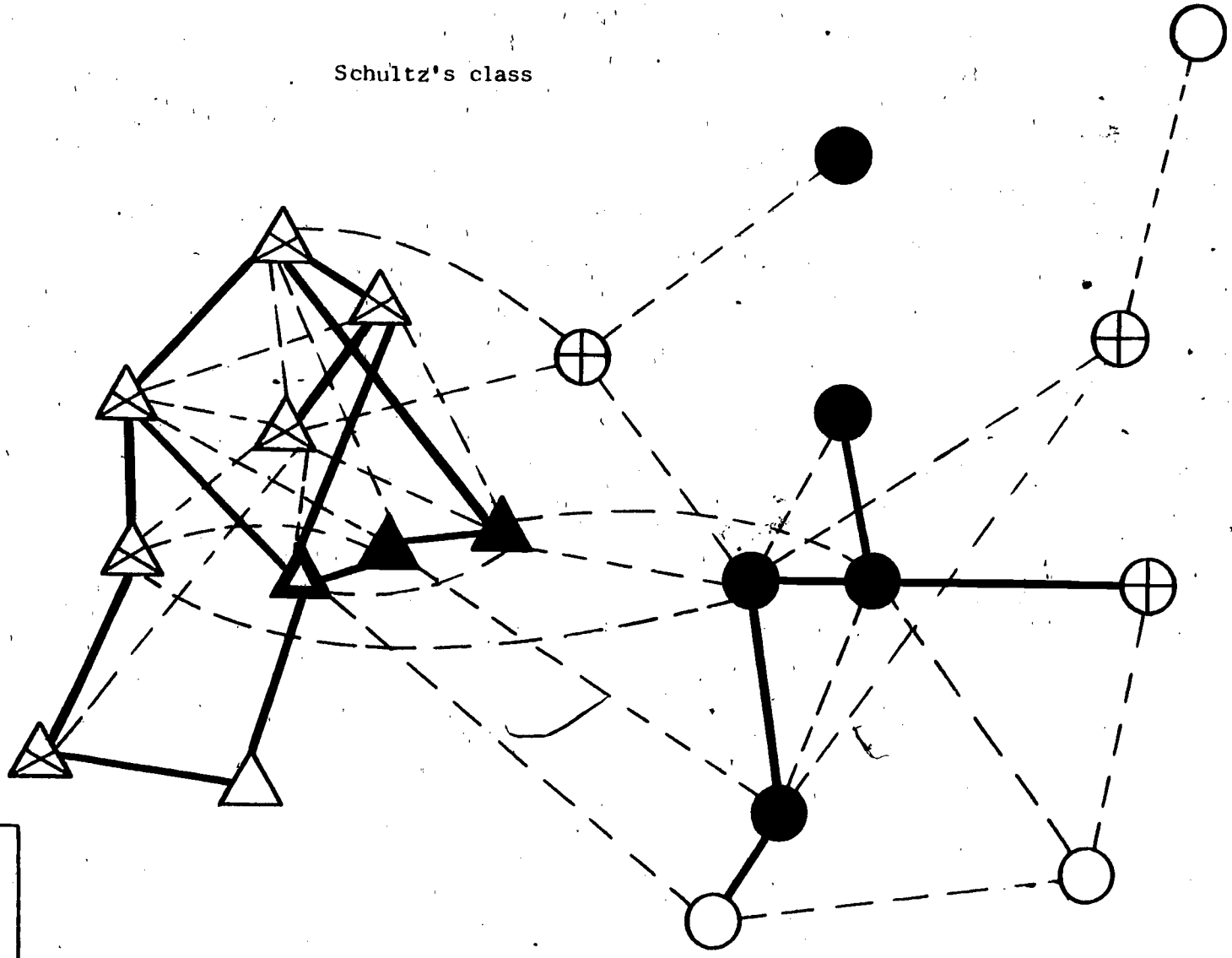
Two loosely connected groups:
Schultz's and Warren's classrooms

The peer groups in Schultz's and Warren's classrooms were composed of two sex-segregated groups loosely connected with one another. The boys' networks were similar to the well integrated peer groups in Gibson's and Casey's classrooms, while the girls' networks were more like the centrally structured groups in Bell's and Reed's classrooms. The boys formed cohesive groups in which most of the boys had strong ties with several other boys. In the girls' networks, a few girls were in the center and had strong ties with many others. The rest of the girls formed a peripheral ring and had fewer strong ties.

Tables VII-2 and VII-3 show that there were many fewer peripheral and isolated students in Schultz's and Warren's classrooms than in Bell's and Reed's classrooms. But there were also many fewer bridge students than in Casey's and Gibson's classrooms. In other words, although most students were fairly well connected to some part of the peer network, the total network was not very cohesive. This is a reflection of the separation between the boys and girls groups in these two classrooms.

There were no cliques of three or more girls connected by very strong ties among Warren's students. There were two such boy cliques in this classroom, though the two cliques

Schultz's class



Key

Circles=girls

Triangles=boys

Reading group

low

mid

high

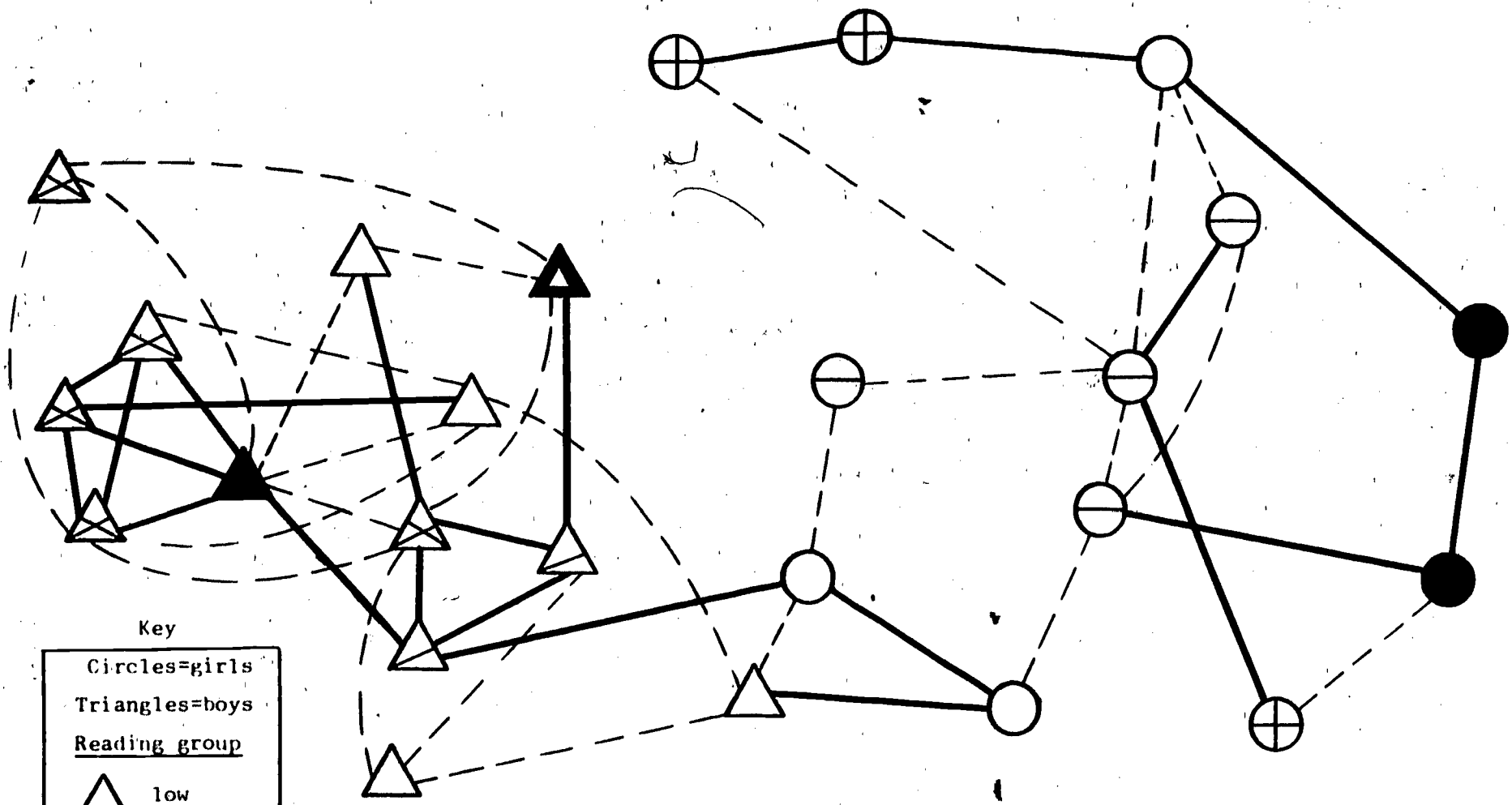
no group

Ties 3-8

Coefficient of alienation = 0.08794

Kruskal's stress = 0.07250

Warren's class



Key

Circles=girls

Triangles=boys

Reading group

low

mid-a

mid-b

high

no group

Ties 3-8

Coefficient of alienation = 0.10744

Kruskal's stress = 0.09199

were well connected with each other and with the other boys in the classroom. In Schultz's class there were no cliques of three or more people all connected by very strong ties. There was a loose central clique of girls. The boys seemed to form a single large clique, though some of the boys were more peripheral to the group than were others.

Chapter V showed that in Schultz's and Warren's classrooms there were a disproportionately high number of strong ties among students in the same reading groups. This was particularly true for the higher groups. This phenomenon is particularly evident in the map of the peer network of Schultz's students. The top reading group students are clustered together. The middle group students also are clustered. Furthermore, the connections between boys and girls in the same reading group form the interface between the boy and girl peer groups. In Warren's classroom the relationship between reading group membership and strong ties is somewhat less evident. There is some clustering among the students of the two middle reading groups and among the students in the low group.

Analysis

The peer structure in Warren's and Schultz's classrooms was, in many ways, very similar to the peer structures in Gibson's and Casey's classrooms. The major difference was the greater separation between the boy and girl groups. Many of the same factors which led to cohesive peer groups in Gibson's and Casey's classrooms were present in Schultz's

and Warren's classrooms. Relatively high proportions of the school day were devoted to multi-task and class-task activities, and the teachers permitted high levels of movement and interaction during these activities. Reading group membership was an important basis for interaction. The critical difference was the fact that Schultz's and Warren's classrooms were single graded classrooms.

Opportunities for interaction. The activities that the students engaged in, plus the teachers' permissive attitudes about movement and talking, allowed the students in Warren's and Schultz's classrooms considerable freedom to interact with many others in their classrooms, including those not seated nearby. Warren's students spent 18.7% of their time engaged in multi-task and non-academic class-task activities. They spent an additional 19.8% of their time engaged in academic class-task activities during which they had considerable freedom to interact with others. Schultz's students spent at least 24.1% of their time engaged in multi-task activities, also with considerable freedom of movement.[4] These rates were somewhat lower than those in Casey's and Gibson's classrooms, and thus opportunities for interaction were somewhat more limited.

In both classrooms there were frequent seat changes. In Warren's classroom these occurred at least once every two

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[4].For reasons explained earlier it was not possible to determine the total pattern of activities in Schultz's classroom, though the indications were that it was similar to that found in Warren's classroom.

weeks. In this classroom 72.9% of all the strong ties were between children who sat near each other during at least one observation period. This figure is not surprising since almost every student sat near every other student during at least one observation period. In Schultz's classroom 58.7% of all strong ties were between children who sat near each other during at least one observation. Both teachers often permitted friends to sit next to each other. However, students did not establish strong ties with many other students who also sat nearby, particularly if they were of the opposite sex.

The multiple seating changes enhanced opportunities for interaction with a variety of others, but the seating arrangement was not the key variable affecting the pattern of interaction ties.

The opportunities for interaction in these classrooms were great enough so that half or more of the students had high numbers of strong ties. Although high, these rates were somewhat lower than in Casey's and Gibson's classrooms. This difference can be accounted for largely by the somewhat smaller proportion of time that students were engaged in activities which permitted high rates of interaction. Nevertheless, there were enough opportunities for interaction so that relatively few students were isolated or peripheral to the peer group.

Interest, visibility, and reward structure. The combination of two factors in Casey's and Gibson's

classrooms, along with a high degree of opportunity for interaction, led to the formation of an integrated peer network. First, large amounts of time spent in multi-task activities encouraged cooperative behavior, and students were able to form bonds with those with whom they found it in their interest to work and interact. Second, students had multiple characteristics which created bases of common interest. Students had good reason to interact with others who, while similar on one characteristic, differed on others. Both of these factors were weaker in Schultz's and Warren's classrooms.

Although students in Schultz's and Warren's classrooms spent a relatively large amount of time engaged in multi-task activities, it was not as much as in Gibson's and Casey's classrooms. Yet it was enough time, particularly because teachers tolerated movement and interaction, to allow most students to become integral members of the peer network. There were relatively few isolated or peripheral students in this classroom.

Students in Schultz's and Warren's classrooms spent at least one-fifth of the school day engaged in activities in which some students were grouped by reading level. Students were assigned work in reading group which they completed during multi-task times. Reading level was thus quite visible and provided an important basis for interaction. In fact, a disproportionately high number of strong ties were among students of the same reading group. Yet, without the

added dimension of multiple grade level, students' sex remained a powerful inhibitor in interaction with members of the other sex.

Chains of connected individuals and small groups: Snyder's and Rizzo's classrooms

The peer networks in Snyder's classroom was composed of clusters of children connected to each other by a few strong ties. The pattern in Rizzo's classroom was similar but with fewer and smaller clusters. The students in this classroom were spread out along a chain of connections.

Most of the students in Snyder's classroom were in a three, four, or five person clique. Students had strong ties with most other members of their cliques but few ties with members of other cliques. Table VII-1 shows that although 65.4% of Snyder's students had high numbers of strong ties, the highest rate of any classroom in the study, only 19.2% of the students had high number of weak ties, the lowest rate in the study.. Furthermore, Tables VII-2 and VII-3 show that while there were few peripheral students and no isolates in Snyder's classroom, there also were few central students and no bridges. Most students, then, were members of cliques and interacted almost exclusively with other clique members. The cliques themselves were only loosely connected with one another.

Most students in Rizzo's classroom had two, three or four strong ties with others and relatively few weak ties. However, the students were not in tightknit cliques. In fact, there were no cliques of three or more students

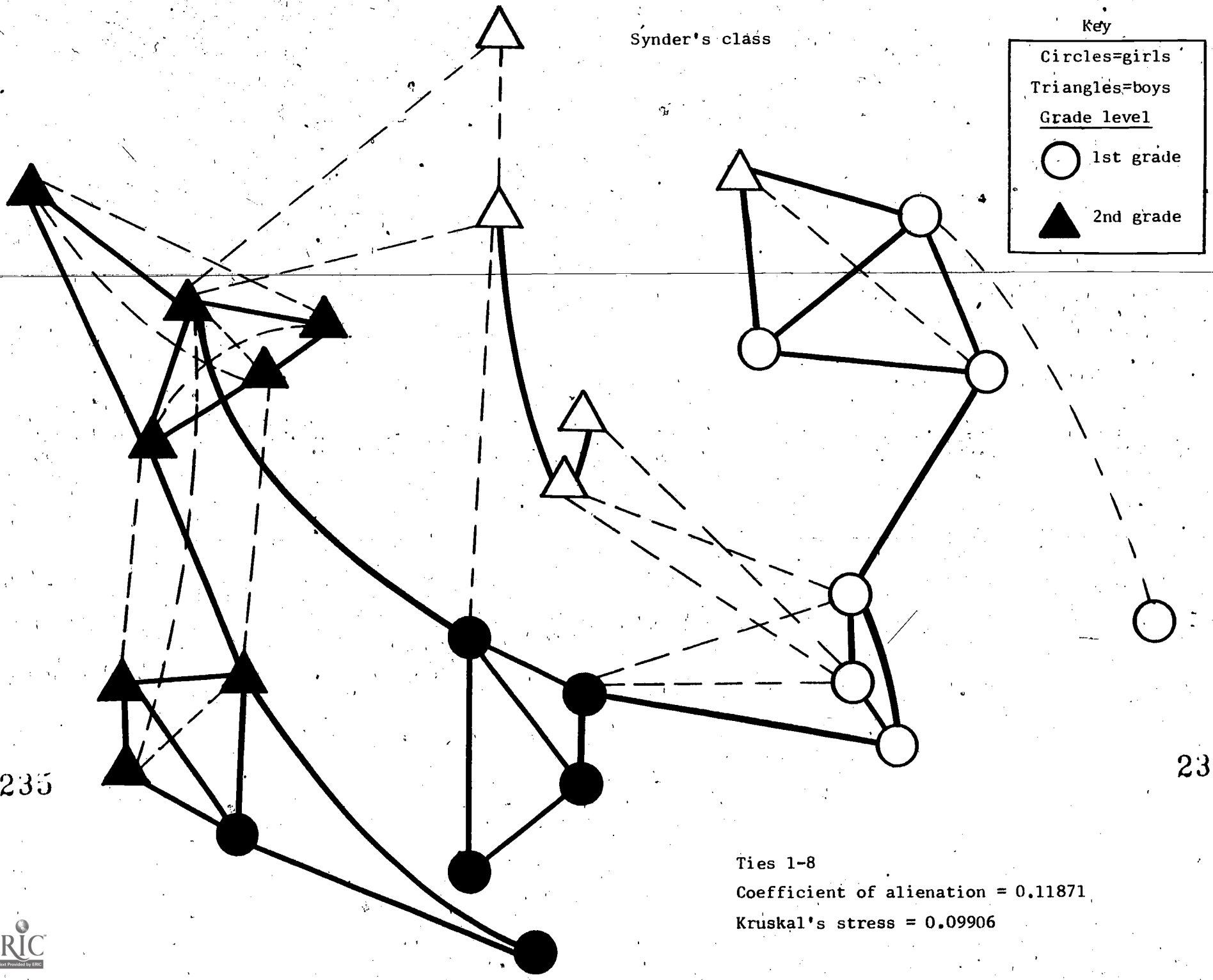
connected by very strong ties. In many ways this was in the least cohesive peer group in the study. Only a third of the students had high numbers of strong ties, and only a fifth of the students had high numbers of weak ties. Just over half of the students fell into the peripheral category, and there were few central students and no bridge students.

Rizzo's and Snyder's classrooms were multi-graded, and the peer networks were clearly divided by grade level in both classrooms. Almost all of the strong ties were between students in the same grade. In addition, in Rizzo's classroom a disproportionate number of strong ties were between students in the same reading group.

Both classrooms had relatively high rates of cross-sex ties. Rizzo's class, in fact, had the highest rate of any class in the study. Two of the cliques in Snyder's class were integrated by sex. A third cluster of students, although not technically a clique, was composed of both boys and girls.

Analysis

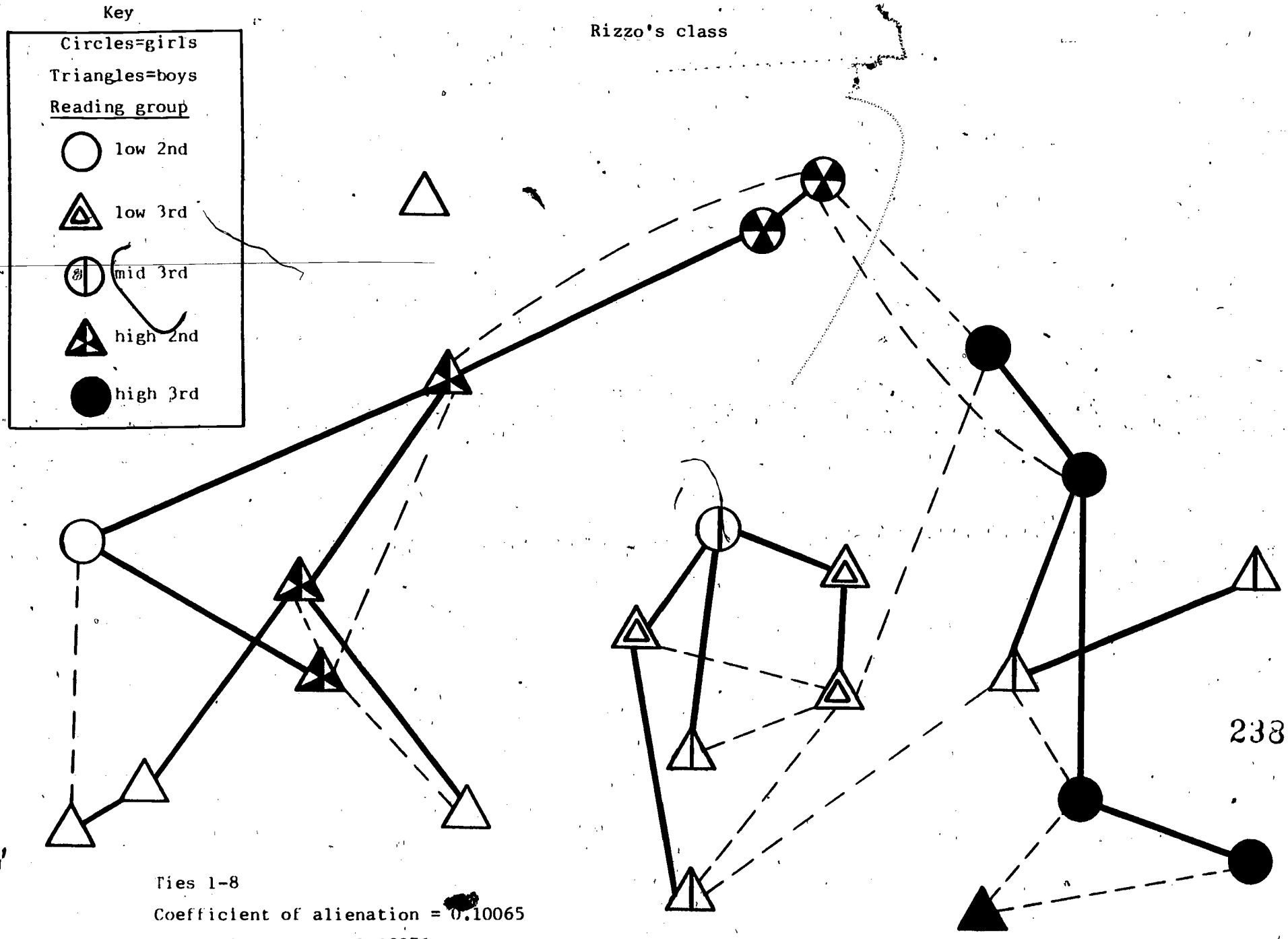
The pattern of activities differed markedly in the two classrooms. Students in Snyder's class spent a relatively high amount of time in large group activities and relatively little time in multi-task and non-academic class-task activities. The overall pattern of activities was quite similar to those in Bell's and Reed's classrooms. Students in Rizzo's class spent relatively little time in large group activities and a relatively high amount of time in multi-



Ties 1-8

Coefficient of alienation = 0.11871

Kruskal's stress = 0.09906



Ties 1-8

Coefficient of alienation = 0.10065

Kruskal's stress = 0.08376

task and non-academic class-task activities. The overall pattern of activities in this classroom was quite similar to that in Warren's classroom (and probably to that in Schultz's). The similarities in the patterns of the peer networks in Rizzo's and Snyder's classroom and the differences in this pattern with those in the classrooms which they resembled in terms of the activity patterns resulted fro in large measure:

1) the high degree of teacher enforcement of rules that students stay in their seats, and;
2) the fact that Snyder's and Rizzo's classrooms were multi-graded.

Opportunities for interaction. Both Rizzo and Snyder effectively enforced rules against movement about the classroom. This meant that most students' interactions were restricted to other students seated nearby. Snyder's students were seated by grade level around tables. The cliques closely corresponded to the seating arrangement and of course, to grade level as well.** Of all the strong ties, 88.2% were between children seated at the same table. When boys and girls were seated at the same table, and they were at three of the tables, they had high rates of interaction with one another.

**.Near the end of the observation periods the teacher rearranged the seating. Some tables had students from both grade levels seated at them. The observations did not continue long enough to assess the effects of this new seating plan.

Rizzo's students were seated in sets of rows with all the second graders on one side of the room and all the third graders on the other side of the room. Because they were seated in rows, students were not able to form as many strong ties as were Snyder's students who were seated around tables. Students around a table are seated face to face with all others at the table. They are able to carry on conversations without turning their heads and giving other obvious signs of being "off task." The teacher only has to glance at a classroom with children seated in rows to see who is talking. At best a child can interact unobtrusively only with students seated next to him or her in such a classroom. As a result of the seating arrangement, no cliques formed in Rizzo's classroom, but there was a clear division by grade level in the peer group pattern. Some of the cross-sex interaction that occurred in this classroom can be accounted for by the facts that students were limited to interacting with those seated close by and boys and girls were interspersed fairly evenly throughout the classroom.

The activities that the students in Snyder's classroom engaged in tended to restrict further their opportunities for interaction. They were engaged in large group activities for nearly a third of the school day. Interaction usually is limited during such activities. Students only spent about 10% of their time engaged in multi-task and non-academic class-task activities (and most of that time represents art activities). These types of

activities usually allow high levels of interaction. Although the students spent a relatively high proportion of their time engaged in academic class-task activities (29.7% of the school day), the teacher's rigidly enforced rules against movement around the classroom limited interaction during these times.

The students in Rizzo's classroom spent a relatively small proportion of their time (20.6%) engaged in large group activities and a relatively large proportion of their time (23.5%) engaged in multi-task and non-academic activities. They also spent nearly a quarter of their time engaged in academic class-task activities. In other classrooms this pattern of activities was combined with teacher permissiveness of student movement and interaction. This led to more cohesive peer groups. Rizzo attempted to keep students in their seats and on task all of the time, even during multi-task an non-academic activities. She was only partially successful in her attempts to suppress interaction. Students rarely interacted with others seated far away. Only one second grader had any strong ties with third graders. Yet students were not absolutely limited to interacting with those seated next to them. Just over half of all strong ties were with students who never sat directly next to each other. During multi-task activities students often talked (usually whispered) with others not seated next to them, although they were limited to interacting with

those seated nearby. Again, because they were seated in rows rather than around tables, no clear groups formed.

Interest, visibility, and reward structure. Limited opportunities for interaction cannot completely explain the peer network patterns in these classrooms. Bell effectively controlled student movement, yet the peer network in her classroom was centrally structured. Compared to Bell, Rizzo and Snyder might have been more effective in controlling interaction in their classrooms. Another important factor, however, was the rate of cross-sex ties. This rate was much higher in Rizzo's and Snyder's classrooms than in Bell's classroom. The peer group in Bell's class was composed of a chain of boys crossing a chain of girls. Each chain looked much like the total chain in Rizzo's classroom. There were more central and bridge students in Bell's class, in part because there were few boys and few girls who were bridges between the two groups. The boys and girls in Rizzo's class were interspersed along the chain, and there was no clear division between boys and girls. Snyder's students were bunched in small groups and, again, there was no clear division between boys and girls. Part of the explanation of why the peer group in Rizzo's and Snyder's classrooms had a chain like structure rather than a central structure is due to the relatively high rate of cross-sex ties in these classrooms.

Rizzo's and Snyder's classrooms were multi-graded. As in Gibson's and Casey's classrooms, grade level became a

competing characteristic with sex as an important basis of interaction. The pattern of activities ensured that grade level became a salient characteristic on which to base interactions. In both Rizzo's and Snyder's classrooms substantial amounts of time were spent in activities which differentiated students by grade level. In Snyder's classroom 32.1% of the time was spent this way and in Rizzo's classroom 16.6% of the school day was so spent. An additional 33.1% of the time in Rizzo's classroom was spent with some students grouped by reading level. Reading groups were homogeneous by grade level. Therefore, reading group membership reinforced grade level distinctions. (There were two second grade reading groups and three third grade groups.) Much of the students' work during multi-task and class-task activities were differentiated by grade level and, in Rizzo's classroom, by reading group.

As in Gibson, reading group membership in Rizzo's classroom became an important characteristic and base of interaction in its own right. Again as in Gibson's classroom, in Rizzo's classroom boys and girls in the same reading group and/or in the same grade level had good reasons to interact. The rate of cross-sex interaction was very high. This rate was somewhat lower in Snyder's classroom. In part this occurred because reading group

membership was not an important distinguishing characteristic that was separate from grade level.''

Grade level, then, was a highly visible and a salient characteristic on which to base interactions. Students had many reasons to interact with others in their grade level and, with the seating arrangements as they were, had the opportunity to do so. They had little reason to interact with students in the other grade level, and they had little opportunity to do so. Boys and girls seated near one another did interact. This contrasts sharply with the interaction patterns in Bell's classrooms where boys and girls seated near one another did not interact. With the restrictions on movement, these factors led to a chain-like structure of connections among students.

CONCLUSION

The relationship between classroom features and peer network patterns is complex. Activity structures, reading group membership, the amount of cross-sex interaction, seating patterns, and the teacher's rules about movement in the classroom, all combine to affect students' opportunities for interaction and their interests in interacting with

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''.All the first graders comprised a single reading group. The second graders were regrouped along with the second graders in other classrooms for a one hour reading period each day. They were subdivided into five different groups. As in Bell's and Reed's classrooms this practice tended to de-emphasize the visibility and salience of reading group membership.

certain others. These process variables, in turn, structure the patterns of the peer network.

The findings of this chapter show that the amount of cross-sex interaction, the relationship between reading group membership and student interaction choices, and the peer network patterns--the outcome variables in this study--are all related to one another. In the final chapter of this report, I sum and integrate the findings of chapters IV through VII. I present an overall picture of the relationship among classroom features, process variables, and outcomes.

Chapter VIII

CONCLUSIONS

I described two ideal-typical classrooms in Chapter I. In the first classroom there was a limited amount of cross-sex interaction, and there was a rigid hierarchy based on ability group assignments. A few students were centrally located in the peer network, while many students were peripheral or isolated. In the second classroom students interacted with a variety of others. There were many links between different groups and different types of children. Few students were isolated or peripheral, and no students dominated the peer group.

There are numerous reasons why the second type of peer structure is desirable. Such a structure promotes the social growth of students, avoids the creation of higher and lower status groups and children, and enhances the learning environment for all students in the classroom. The peer network allows information about work and rules to reach most students in the classroom. Different types of students learn positive forms of interacting with one another and in doing so they learn to respect each other.

I explored four types of associations relating to peer interaction patterns. They were: (1) the relationship between interaction ties and friendship choices (Chapter IV); (2) the amount of interaction among students in the same reading groups and in the same grade level in multi-graded classrooms (Chapter V); (3) the amount of cross-sex

interaction (Chapter VI); and (4) patterns of peer networks (Chapter VII).

I have tried to understand the process by which interaction patterns are created and maintained within classrooms. I delineated several key process variables, (such as opportunities for interaction and students interests in interacting with one another), which structure peer relationships. I then identified a number of classroom characteristics and classroom practices which have a major impact on these process variables. These classroom features are the primary influences on students' patterns of interactions. These findings can be used to structure classrooms in ways which will encourage the formation of peer groups which resemble those I described in the second ideal type classroom.

In each of the chapters in which data were presented (chapters IV through VII), I made links between classroom features and process variables, and between process variables and the particular outcomes examined in that chapter. In this final chapter I try to weave all these strands together. Figure VIII-1 shows the relationship among the critical classroom features, the process variables, and the outcomes studied. It is important to recognize that this figure represents a dynamic process. The process variables are interdependent and interactive with one another. Also, each classroom feature affects the process variables in different ways, and two different

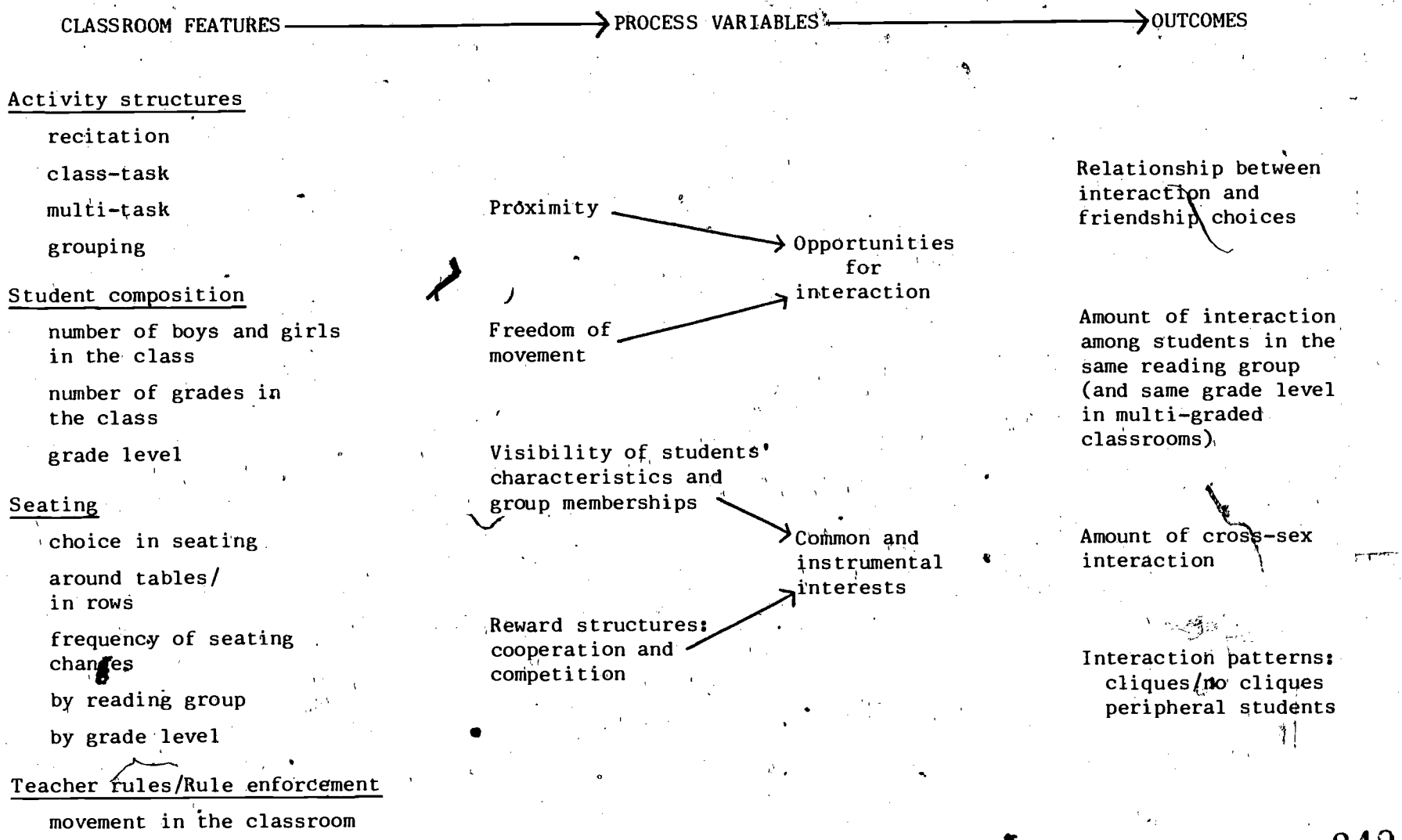

Figure VIII-1

features in the same classroom can have opposite effects on students' interactions. Furthermore, students engage in a variety of activities throughout the school day; seating patterns change periodically; and in general, classrooms, students, and students peer networks can change constantly (though there is more change in some classrooms than in others).

The recommendations presented at the end of this chapter flow from the total set of findings. The modification of any classroom feature must take into account the effects it has on all other classroom features and the process variables. In the next section of this chapter I describe the key findings which relate process variables to outcomes. In the following section I discuss the relationship between classroom features and process variables. In the final two sections of this chapter I make recommendations for classroom practice and for further research.

The relationship between interaction and friendship choices is worth noting before moving on to these sections. Many previous studies have assumed that friendship choices or other sociometric responses were indicative of actual interactions. This study shows that this assumption is not necessarily valid. Students had few or no interactions with many of their classmates whom they said were best friends. Some students who appear to be sociometric stars based on the high number of "best friend" choices received, were behaviorally isolated in their classrooms. Others, who

appear to be isolates based on the high number of "not a friend" choices received, had many non-negative interactions with their classmates. Friendship choices are probably useful as a measure of classroom status, but they do not always provide useful information about the amount and quality of interactions in classrooms.

FINDINGS: PROCESS VARIABLES AND OUTCOMES

A review of the literature suggested that three key sets of variables underlay friendship choices and interaction patterns. They are: opportunity for interaction; similarity (or perceived similarity); and the reward structure. I reorganized and relabelled these process variables in a heuristic model (see Figure 2 in Chapter II). This model contains two primary sets of components. The first set concern opportunities for interaction. Students can interact only with those with whom they have opportunities to do so. Their opportunities to interact with others in their classrooms are dependent on their proximity to them and their freedom of movement within the room. The greater the freedom of movement that students have, the less critical is proximity in influencing interaction patterns.

The second set of components concern students' interests in interacting with one another. Students are likely to choose to interact with others with whom they have mutual interests. Many different interests can lead to an exchange between students. These include friendship; a

desire for information about work, rules, or other classroom matters; and a desire for materials such as pencils, erasers, or books. Student characteristics such as reading group membership become bases of common interest (and hence bases for interaction) to the extent that they are visible and to the extent that the reward structure encourages cooperation with others of the same type and encourages competition with others who are different. Characteristics such as sex and race are primary bases of interest unless new sets of interests are created in the classroom which override these. These new commonalities must be visible and students must find some reward in interacting with children of a different sex or race.

The findings about the relationship between process variables and outcomes can be divided into two parts: those which occur when students have a high degree of freedom of movement about their classrooms and those which occur when students lack freedom of movement.

Freedom of movement. The data indicate that when students have the opportunity to interact with whomever they choose, the following are likely to occur:

1) Students will interact with those whom they perceive to be friends. This will be the case whether or not they are seated near those friends.
2) Students will interact with others in their reading group if reading group membership is visible and if it is in their interest to interact with one another.

High-group students are likely to have greater interests than low-group students in interacting with same group members because (a) cooperation with group members makes successful completion of assignments more likely and hence helps maintain membership in a high status and rewarding group; and (b) reading group time is an enjoyable and rewarding experience for high-group students and continued interaction with group members is associated with these positive experiences. Students in the lower groups have less interest in interacting with one another because: (a) even successful completion of assignments are unlikely to lead to upward mobility; and (b) reading group time is unpleasant and unrewarding for low-group students and continued association with other group members is associated with these negative experiences.

3) In multi-graded classrooms students will interact with others in their grade-level <u>if</u> grade-level membership is visible and <u>if</u> it is in their interest to do so. If teachers spend relatively high proportions of time working with groups of students from each grade level then: (a) opportunities for cross-group interactions are decreased; (b) opportunities for in-group interaction are increased; and (c) the visibility of grade level divisions is heightened. To the extent that teachers assign work by grade level, they create common interests among students in the same grade level. This

encourages within-grade level interactions and discourages cross-grade level interactions.

4) Students will interact with members of the opposite sex if there is good reason to do so. These reasons must be strong enough to overcome the powerful, socially-created barriers to cross-sex interaction. These barriers stem, in part, from the fact that children enter school having learned sex-typed modes of play. In addition, there often are costs in the form teasing and disapproval for extended cross-sex contact. New bases of common interests must be created in the classroom to overcome these constraints to cross-sex interaction. In classrooms where reading group membership provides a basis for common interests, boys and girls in the top reading groups are likely to interact regularly with one another. In multi-graded classrooms in which much of the work is assigned by grade level, boys and girls in the same grade level are likely to interact with one another. Although all instructional groups in these classrooms were based on ability or grade level, classrooms can use groups based on other criteria. In general, high rates of positive and cooperative in-group cross-sex interaction are likely to occur when group membership is highly visible and when interaction among same-group members is highly rewarding.

5) The structure of the peer group will be well integrated if there are several types of students in the classroom

who are mixed together in several different classroom groups. By well integrated, I mean that there will be few peripheral students and few exclusive cliques. Multi-graded classrooms in which boys and girls are evenly distributed into several reading groups are likely to have well integrated peer groups. In such classrooms, every student has at least one major interest in common with almost every other student. Classrooms which have heterogenous student populations in terms of sex, race and social class, and in which there are heterogeneous in-classroom groups, are likely to have well integrated peer networks.

6) The structure of the peer group will consist of a few large cohesive groups based on a primary characteristic (such as sex) if there are only a few student characteristics or classroom groups which create common interests. Thus, in single graded classrooms in which students have relatively free movement, the peer group is likely to consist of two sex segregated groups. Most students are likely to be well integrated into their respective group.

No freedom of movement. When students are not free to move around their classrooms, the implications for interaction patterns are as follows:

1) Students are limited to interactions with others seated nearby. Only students who frequently disobey rules will have high rates of interaction with others who do not

sit near them. Thus, most students will not interact with friends seated away from them.

2) Students will have a disproportionately high number of interactions with others in their reading group: (a) if reading group membership is visible; (b) if it is in their interest to do so (for example if work is assigned to groups which must be completed during non-group activities); and (c) if group members are seated nearby.

3) In multi-graded classrooms students will have a disproportionately high number of interactions with others in their grade level: (a) if grade level membership is visible; (b) if it is in their interest to do so; and (c) if grade-mates are seated nearby.

4) Students will interact with members of the opposite sex who are seated near to them only if there is good reason to do so. Proximity by itself is not powerful enough to overcome the barriers to cross-sex interaction described earlier.

5) Peer groups will be structured as chains of connected students and cliques of students if there are relatively high rates of cross-sex interaction. If there are low rates of cross-sex interaction the peer group structure will be centrally structured. In centrally structured groups a few students have interactions with a large number of their classmates, while many students interact with few of their classmates. In general, when students

do not have much freedom of movement, there will be numerous students who are peripheral to the peer group.

In sum, when students have freedom of movement they are likely to seek out others with whom they have common interests. When students do not have freedom of movement, they still interact most frequently with others with whom they have common interests, but are limited to others seated close by. In the latter case, many students or are peripheral to the interaction network and have contacts with only a few others.

FINDINGS: CLASSROOM FEATURES AND PROCESS VARIABLES

A variety of classroom features affect the process variables and thereby affect the outcomes relating to students' interactions. These features and their effects are summarized below. Each classroom feature can be thought of as a vector exerting a force which promotes greater or fewer opportunities for certain children to interact and creates common interests among certain children. Each classroom has a unique mix of characteristics. It is impossible to separate the effects of any one characteristic from the effects of the others. It is the particular mix of classroom and student characteristics that leads to the interaction patterns which emerge in each classroom.''

''. The strength of any characteristic will vary depending on other characteristics. It thus is virtually impossible to do an analysis which utilizes a "multiple

Activity Structures

Activity structures are composed of several components including: size of the group; division of labor; amount of pupil choice; publicness and comparability of rewards; the nature of the task; and grouping practices. Each component can affect the opportunities that students have to interact with certain others and create interests for certain students to interact. I will summarize the predominant effects of types of activities and will discuss the effects of the grouping practices. Grouping is a critical factor in the development of peer networks in classrooms, and it can modify the effects of the other activity structures.

Multi-task and non-academic class-task activities. Multi-task and non-academic class-task activities allow students the greatest freedom of movement in the classroom.** Even when teachers do not permit students total freedom of movement during these activities, students have many legitimate reasons for moving around the classroom (to get materials, to hand in work). Furthermore, teachers

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regression" mode of inquiry whereby the effect of each characteristic can be weighted.

**. Students have the most freedom to interact with whomever they choose during free time activities. Few students engaged in academic work during free time activities and hence there were no instrumental reasons for students within the same reading group or grade level to interact with one another. However, most of the free time activity in these classrooms involved outdoor recess. Sports and other games provided the basis for interaction. Since the ties I used as the basis for describing interaction patterns included only in-class time, the findings of this study do not reflect out-of-class patterns. Future studies would do well to look at such activities.

often work with individual students or small groups during these times and cannot monitor all activity in the room. Thus, during multi-task and non-academic class-task activities students frequently can interact with others seated in distant parts of the room.

Rewards and performance are neither public nor comparable during multi-task activities. Therefore students are encouraged to cooperate with a variety of others. Work assignments and grouping practices will have a powerful effect on which students choose to cooperate with each other during these activities. However, since students are engaged in different tasks, most students will have a basis for working with most of their classmates at one time or another.

Large group activities. Students have the least amount of freedom of movement during large group activities. All students are expected to focus their attention on the activity and not interact with peers. Teachers can observe all students in the group during the activity. They are likely to reprimand students who are talking with one another to limit disruptions to the activity.

Rewards and performances are highly public and comparable. This tends to foster competition among all students. To the extent that this competition creates a hierarchy within the peer group based on achievement level, such divisions will affect interactions which occur during other times.

Academic class-task activities. Academic class-task activities can provide opportunities for freedom of movement. Certainly they provide more opportunities for movement than do large group activities. However, teachers vary on the extent to which they permit movement during these activities. Individual teachers often permit more movement during some class-task activities than during others. For example, Casey did not allow her students to interact during a daily half hour of quiet reading, but she did allow them to interact freely during most other class-task activities. In contrast, Rizzo rarely allowed students to interact during any class-task activities.

Rewards and performances are moderately public and comparable during class-task activities. These activities thus foster some competition but also a fair degree of cooperation.

During academic class-task activities, factors other than activity structure have particularly strong effects on peer interactions. Teachers' rules about movement, grouping procedures, and the amount of competition and cooperation fostered by other activities, will affect peer interaction patterns during these activities.

Grouping. The amount of time some students spend in groups influences opportunities for within-group or cross-group interaction. If students spend high amounts of time in groups, group membership becomes highly visible. To the extent that teachers assign work by group, cooperation with

other group members becomes rewarding and thus creates common interests for in-group interaction. Hierarchical grouping based on achievement reinforces cooperation among high-group students and encourages competition with students in lower groups. The result is an exclusive and elite echelon within the classroom.

Student Composition

Student composition refers to proportions of students with certain permanent characteristics. I focussed on sex and grade level in this study.[4] Other characteristics such as race, ethnic background, and physical and mental abilities of children in classrooms which have mainstreamed children, also should be considered in studies of interaction patterns.

Sex. Most public school classrooms contain both boys and girls, and sex is a highly visible student characteristic. Boys and girls have common interests with others of the same sex, and there are many obstacles to cross-sex contacts. The amount of classroom cross-sex interaction will be low unless other classroom characteristics create good reasons and opportunities for boys and girls to interact. Opportunity by itself is not

[4]. Reading group membership is a characteristic assigned to students in the classroom. I view this as a characteristic which is created by the activity structures rather than as part of the composition of the student population. Potentially, it is a characteristic which could change frequently during each school year. Student characteristics which I have included in Student Composition are those which will not change during the school term.

powerful enough to overcome barriers to cross-sex interactions. In classrooms where boys and girls were seated next to one another but had no incentives for interacting, cross-sex rates of interaction were low.

Grade level. This study found that mixing two grade levels in the same classroom does not necessarily lead to high rates of cross-grade interaction. In three of the four multi-graded classrooms students had a disproportionately high number of interactions with their grade-mates.

Grade level is a characteristic assigned to students by the school. Increasing status accrues to children as they move up in grade level. Curriculum planners have decreed that certain types of work and subject matter should be mastered at each grade level. For these and other reasons, grade level is an important identifying characteristic of students, and students in the same grade level come to have many common interests.

In multi-graded classrooms the salience of students' grade levels for their peer interactions depends on a variety of other features of the classroom. In part, this is because students' grade levels are not as visible as their sex. Visibility of grade level is heightened when students of the same level are seated together and when teachers spend relatively high proportions of class time working with groups of students from one or the other grade level. The more work that teachers assign by grade level, the greater incentives students have for interacting with

their grade-mates. Rates of in-grade level interaction are further increased if reading group membership coincides with grade-levels. Students within the same reading group (and hence within the same grade level) will have even more reasons to interact with one another.

Seating

Several aspects of seating can influence interaction patterns. Students may or may not be able to choose their own seats. If they cannot choose their own seats, the seating arrangement may affect with whom students can and cannot interact on a regular basis. Furthermore, patterns of seating can emphasize or de-emphasize the extent to which student characteristics such as grade level become important bases for interaction. Some of these aspects of seating and their effects on the process variables are discussed below.

Choice of seating. When students have the freedom to choose their own seats, they are likely to sit next to others with whom they share interests. In classrooms in which students have little or no choice in seating, the influence of seating arrangement on interaction patterns depends on how much freedom of movement they have. If high proportions of time are spent in multi-task activities and students are permitted to move about during these activities, assigned seats only will have minimal effects on the interaction patterns. In classrooms in which students must stay in their seats for most of the day, seating arrangements will have a strong impact on the structure of

the peer network. In these classrooms students are likely to have a disproportionately high number of interactions with others seated nearby. However, students do not necessarily interact with all students seated near them. For example, boys and girls seated next to each other will interact on a regular basis only if they have some reason to do so, such as membership in the same reading group or grade level. Thus, students are most likely to interact with those seated nearby with whom they have common interests.

Frequency of seating changes. In classrooms in which students are assigned seats the frequency of seating changes will influence the interaction patterns. When seating changes are infrequent, students are likely to build relationships with those seated nearby and fail to establish relationships with those seated further away. When seating assignment changes frequently, students are placed into proximity with a wide variety of their classmates. They have the opportunity to develop relationships with many others.

Seating patterns. The two primary types of seating patterns used in these classrooms were rows of desks and several large tables. Students seated around tables are in face to face contact with all others at their table (particularly when they are seated at round, as opposed to square or rectangular, tables). It is very likely that these students will enter into interactions with table-mates. These interactions are less easily noticed by the

teacher (and therefore less easily controlled) than interactions among students seated in rows, who have to turn around or turn their heads to interact with neighbors. Furthermore, students seated at tables are relatively isolated from students seated at other tables. Each table forms a distinct and visible subgroup within the classroom. Teachers may even name these groups. Thus, interaction patterns of students seated around tables are likely to mirror the seating assignments.

When students are seated in rows, seating arrangements do not create distinctive subgroups. Interaction patterns in classrooms where students are seated in rows and have little freedom of movement are likely to resemble chains of connected students or will be centrally structured with many peripheral students.

Seating by distinct groups. Assignment to seats by any group membership increases opportunities for interaction among group members and decreases opportunities for cross-group interaction. Furthermore, such assignments heighten the visibility of group membership and thus make distinctions among groups quite clear. In two of the four multi-graded classrooms (Snyder's and Rizzo's) teachers assigned students seats by grade level. In the other two multi-graded classrooms (Casey's and Gibson's) students were not assigned seats by grade level, and there were many cross-grade level ties (although there were still a

disproportionately high number of ties between students in the same grade level).

Teachers' rules about movement in the classroom

Teachers' rules about movement in the classroom and their enforcement of these rules modify the effects of other classroom characteristics on the interaction patterns. The effects of activity structures and seating patterns are especially sensitive to variations in such rules. When teachers strictly enforce rules about staying in seats at all times, the high amount of student movement which usually occurs during multi-task and non-academic class-task activities is substantially reduced. Only students who most frequently break rules will have wide ranging contacts in these classrooms.

When teachers do not create or enforce rules which keep students seated, seating assignments have relatively little impact on interaction patterns. Students in these classrooms are likely to have the same freedom of movement during academic class-task activities that they have during multi-task activities. Interests becomes the predominant factor in structuring peer relations.

RECOMMENDATIONS

The recommendations that follow flow from the findings of this study. They are designed to move classrooms in the direction of the second ideal type of classroom.

Heterogeneity. The composition of classrooms should be as heterogeneous as possible. The more groups that are

represented and the more differences among the students, the less visible and salient will be any one group or characteristic. Students will have something in common with most other students in their classroom, even though they differ in other ways. Thus, students will be likely to cross barriers such as sex, race, ability level, and grade level in their interactions with classmates. Even if students only cross one of these barriers, the resulting peer group structure is likely to well integrated.

Reading groups. Alternatives to homogeneous reading groups which meet in the classroom should be explored because homogeneous groups encourage the formation of exclusive and elite groups in the classroom. Possible alternatives include:

--Individualized reading instruction. Many effective reading programs and kits currently are available. Students can progress at their own rate and are not locked into the rate of progress of other group members. Individualization decreases the visibility of achievement differences and discourages the creation of group identities. Furthermore, teachers are not likely to even inadvertently label groups.

--Heterogeneous reading groups. Children at different levels of achievement can be grouped together. Potentially this is academically advantageous in both high and low achieving students. Low achieving students are in contact with those who can give them help. High achieving students, in explaining the work to others, are likely to achieve a better understanding of the material. Also, they are able to use the knowledge they have obtained in a meaningful way.

--Regrouping students from several classrooms. Regrouping students from several classrooms for a regular reading period lessens the visibility of group membership. If no work is sent back with the group, there will be no extrinsic reasons for students in the same group to interact once they return to their classrooms. This regrouping alternative is the least desirable because it

still supports a status hierarchy, based on achievement, among the students.

Other groups. It is desirable to encourage classroom groups based on characteristics other than achievement or grade level. Homogeneous reading and grade level groups do create common interests based on which boys and girls interact. But in so doing they create status hierarchies or rigid divisions by grade level. The creation of common interests that cross these barriers can be encouraged in many ways. For example:

--Heterogeneous groups can be formed for many purposes. Grouping for science, art, and social studies projects will create many reasons for grouping members to cooperate with one another but will not create a status hierarchy in the classroom.

--Learning centers. This encourages the creation of self-chosen groups based on common interests in particular subject areas. Students may form groups around interests in mysteries, computers, math games, poetry writing, art projects and so on.

Freedom of movement. Students should be allowed as much freedom of movement as possible. Without freedom of movement it is unlikely that an integrated peer group will develop. As students' freedom of movement increases, the number of isolated and peripheral students are likely to decrease. Furthermore, when students have freedom of movement, information can flow freely through the peer network. Students are able to cooperate with many others in many different activities.

Seating arrangements. Seating around tables encourages cooperation among those seated together and minimizes disruptions to the rest of the class by those interacting

together at the same table. Free choice in seating encourages the development of a fluid peer network. Students are able to continually re-form into new groups as their interests change.

Activities. Multi-task and non-academic class-task activities are most likely to lead to cooperative forms of interactions among many segments in the classroom. Students are likely to have changing interests and thus are likely to interact with a variety of others who share those interests. Therefore, there probably will be many bridge students and few isolated and peripheral students. Free movement around the classroom will not be disruptive to others. Communication among students (to help one another, to discuss projects, etc.) also will not be disruptive to the rest of the class.

No one of these recommendations by itself will lead to an integrated peer network of students who are learning to cooperate with one another. The effects of each of these suggestions can be muted or reversed by various classroom conditions. For example, classrooms in which students have freedom of movement but in which homogeneous reading groups prevail are likely to have even more rigid hierarchies than classrooms with homogeneous reading groups in which movement is restricted but where students from the different reading groups are evenly dispersed throughout the room.

It also is possible that some practices and classroom characteristics which normally lead to rigid hierarchies or many student isolates can be effectively counterbalanced by other measures. For example, classrooms which use homogeneous reading groups can counter, somewhat, the effects of those groups on the peer network by utilizing heterogeneous groups in other areas.

Every classroom is qualitatively different and has its unique blend of students, teachers, and resources. Therefore, there can be no standard plan which can be implemented in all classrooms to create a positive social climate. Yet, understanding how various classroom practices and characteristics affect students' interaction patterns makes it possible to plan programs which encourage children to interact with many others in a positive manner and which discourage the creation of hierarchies based on sex, race, social class or assigned ability levels. To the extent that such programs are successful, the learning climate for all children will be enhanced.

FUTURE RESEARCH

This study was based on data collected for a larger project, one which had a somewhat different focus from mine. Furthermore, many of the central questions of my study grew from the observations in the classrooms. Thus, the data for the key research themes explored here were often incomplete or were not collected as systematically as would be desirable for a more definitive analysis. My research does

suggest how the interrelationship between a set of key classroom characteristics and a set of process variables affects student interaction patterns. One profitable line for future research would be to select classrooms for study which systematically vary along several of the key classroom characteristics identified here. This type of selection would make it possible to gain greater insight into the processes which create various patterns of interaction.

Grouping by achievement, particularly for reading groups, is a classroom characteristic that should be singled out for more extensive study. Homogeneous grouping often leads to the creation of exclusive and elite sub-groups within the classroom. Several questions need to be answered by further study. Why does this occur? Under what circumstances is the creation of hierarchies more or less likely to occur? What effects does this have on other aspects of classroom life, including effects on the educational achievement and advancement of students? To what extent do peer interaction patterns outside of the classroom mirror group placement inside the classroom?

I examined the amount of cross-sex interaction, in-reading group interaction, and cross-grade level interaction in multi-graded classrooms. The concepts and techniques developed here could be applied to studies of desegregated classrooms. Typically, sociometric measures have been used as indicators of the success or failure of desegregation as far as cross-race interaction is concerned. My study makes

it clear that actual interaction patterns must be studied. Questions that might be explored include: Do the process variables operate in the same way for cross-race interaction as they do for other types of interaction? How much cross-race interaction does occur? Does the notion that more heterogeneous student populations decrease the salience of any one characteristic in students' choices of interaction partners hold true for multi-racial and multi-ethnic classrooms? Are the ongoing use of contrived groups suggested by the work of Cohen (1976), Slavin (1978), and Aronson et al. (1975) really necessary to achieve positive cross-race interactions or could the manipulations of other classroom variables achieve the same effects? (Indeed, my work suggests that even with the types of groups used by these researchers, other classroom characteristics must be altered if desegregation is to be successful.)

Most of the classrooms studied here were primary grades. There only was one fifth-sixth grade classroom in the study. Differences by age and grade level certainly need further exploration.

Patterns of non-negative interactions were the basis of the networks described in this study. Other types of interactions need to be examined. For example: What are the patterns of negative interactions? What are the patterns of helping behavior? How do other patterns of interaction relate to the patterns found in this study? How

do classroom characteristics and process variables affect those patterns?

Finally, the techniques developed for this study usefully could be adopted to many other types of studies of peer groups and networks. The use of the concept of ties and the adaptation of small space analyses (the MINISSA program in this study) for mapping networks is a particularly useful technique.

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APPENDIX 1

PROPORTION OF SCHOOL DAY SPENT IN VARIOUS ACTIVITIES

Warren's Classroom

		Proportion of school day
TRANSITION		
	Total	19.2%
FREE TIME		
	Total	15.4%
LARGE GROUP ACTIVITIES		
Non-academic subjects		
show and tell	student participation	1.0
information	student participation	.5
information	no student participation	2.0
game	student participation	1.3
unknown	student participation	.4
unknown	no student participation	.7
	Total	5.9%
Academic subjects		
	student participation	12.0
	no student participation	6.8
	mixed type, some students grouped by ability level	.5
	mixed type, some students work in small groups	1.7
	Total	21.0%
CLASS-TASK ACTIVITIES		
Non-academic subjects		
art	students work individually	1.3
art	students work in small groups	1.8
art	mixed type, some students grouped by ability level	.2
	Total	3.3%
Academic subjects		
	students work individually	11.9
	students work individually, work assigned by ability level	1.8
	mixed type, some students grouped by ability level	6.1
	Total	19.8%

Warren's classroom (continued)

		Proportion of school day
MULTI-TASK ACTIVITIES		
Academic subjects		
	students work individually	2.1
	mixed type, some students grouped by academic ability	13.3
	Total	15.4%

Bell's Classroom			Proportion of school day
TRANSITION			
		Total	22.0%
FREE TIME			
		Total	4.9%
LARGE GROUP ACTIVITIES			
Non-academic subjects			
show and tell	student participation		8.1
game	student participation		5.1
unknown	no student participation		.3
		Total	13.5%
Academic subjects			
	student participation		.8
	no student participation		1.7
students regrouped for reading	student participation		3.1
students regrouped for reading	mixed type, students in one group engaged in large group activity		9.8
students regrouped for math	student participation		2.0
		Total	17.4%
CLASS-TASK ACTIVITIES			
Non-academic subjects			
art	students work individually		3.7
		Total	3.7%

Bell's classroom (continued)

CLASS-TASK ACTIVITIES			Proportion of school day
Academic subjects			
	students work individually		26.3
students regrouped for reading	students work individually		.6
students regrouped for reading	students work individually, work assigned by ability level		2.4
students regrouped for math	students work individually		5.5
		Total	34.8%
Subject, activity, and form unknown		Total	3.7%

Reed's Classroom			Proportion of school day
TRANSITION			
		Total	23.4%
FREE TIME			
		Total	5.5%
LARGE GROUP ACTIVITIES			
Non-academic subjects			
show and tell	student participation		2.7
information	student participation		1.0
information	no student participation		.2
game	student participation		4.6
art	student participation		.2
unknown	student participation		.7
unknown	no student participation		.9
		Total	10.3%
Academic subjects			
	student participation		5.0
	no student participation		3.7
students regrouped for reading	student participation		.6
students regrouped for reading	mixed type, students in one group engaged in large group activity		14.8
students regrouped for math	student participation		1.4
		Total	25.5%

Reed's classroom (continued)

			Proportion of school day
CLASS-TASK ACTIVITIES			
Non-academic subjects			
art	students work individually		14.0
		Total	14.0%
Academic subjects			
	students work individually		13.1
	students work individually, work assigned by ability level		1.2
	mixed type, some students grouped by ability level		.4
students regrouped for reading	students work individually, work assigned by ability level		1.2
students regrouped for math	students work individually		.9
		Total	16.8%
MULTI-TASK ACTIVITIES			
Academic subjects	students work individually	Total	1.4%
Subject, activity and form unknown		Total	3.2%

Gibson's Classroom			Proportion of school day
TRANSITION			
		Total	13.4%
FREE TIME			
		Total	8.0%
LARGE GROUP ACTIVITIES			
Non-academic subjects			
show and tell	student participation		2.7
information	student participation		.3
information	no student participation		2.7
game	student participation		.4
unknown	unknown		.3
		Total	6.4%
Academic subjects			
	student participation		2.0
	no student participation		1.2
	mixed type, students in one grade level engaged in large group activity		10.4
		Total	13.6%
CLASS-TASK ACTIVITIES			
Academic subjects			
	students work individually		17.4
	students work individually, work assigned by grade level		2.3
		Total	19.7%
MULTI-TASK ACTIVITIES			
Academic subjects			
	students work individually		15.4
	mixed type, some students grouped by ability level		23.5
		Total	38.9%

Synder's Classroom		Proportion of school day
TRANSITION		
	Total	24.9%
FREE TIME		
	Total	4.2%
LARGE GROUP ACTIVITIES		
Non-academic subjects		
show and tell	student participation	3.4
information	student participation	2.7
information	no student participation	.2
game	student participation	1.3
art	no student participation	1.9
unknown	student participation	1.8
	Total	11.3%
Academic subjects		
	student participation	1.4
	no student participation	5.7
	mixed type, students in one grade level engaged in large group activity	6.5
students regrouped for reading	student participation	1.0
students regrouped for reading	mixed type, students in one grade level engaged in large group activity	5.2
	Total	19.8%

Synder's classroom (continued)

			Proportion of school day
CLASS-TASK ACTIVITIES			
Non-academic subjects			
art	students work individually		5.5
art	students work individually, work assigned by grade level		.7
art	students work in small groups		.5
unknown	students work individually		1.4
		Total	8.1%
Academic subjects			
	students work individually		10.1
	students work individually, work assigned by grade level		14.3
students regrouped for reading	students work individually, work assigned by grade level		5.3
		Total	29.7%
MULTI-TASK ACTIVITIES			
Academic subjects	students work individually		2.0
		Total	2.0%

Schultz's Classroom			Proportion of school day[1]
TRANSITION			
		Total	3.1%
LARGE GROUP ACTIVITIES			
Non-academic subjects			
show and tell	student participation		1.3
information	student participation		.9
information	no student participation		.8
		Total	3.0%
Academic subjects			
	student participation		2.4
	no student participation		.3
		Total	2.7%
MULTI-TASK ACTIVITIES			
Academic subjects			
	students work individually		2.0
	mixed type, some students grouped by ability level		22.1
		Total	24.1%

[1]Observations were conducted only in the mornings. Percentages are based on the total school day. The perc entages reported here indicate the minimum amount of time spent in these activities.

Rizzo's Classroom			Proportion of school day
TRANSITION			
		Total	22.7%
FREE TIME			
		Total	8.5%
LARGE GROUP ACTIVITIES			
Non-academic subjects			
show and tell	student participation		1.5
information	no student participation		1.4
art	student participation		.4
game	student participation		1.0
unknown	student participation		.5
unknown	no student partcipation		1.4
		Total	6.2%
Academic subjects			
	student participation		2.3
	no student participation		.8
	mixed type, students in one grade level engaged in large group activity		11.3
		Total	14.4%
CLASS-TASK ACTIVITIES			
Non-academic subjects			
art	students work individually		4.9
		Total	4.9%
Academic subjects			
	students work individually		4.6
	students work individually, assigned work by grade level		5.3
	mixed type, some students grouped by ability level		14.8
		Total	24.7%
MULTI-TASK ACTIVITIES			
Academic subjects			
	students work individually		.3
	mixed type, some students grouped by ability level		18.3
		Total	18.6%

Casey's Classroom			Proportion of school day
TRANSITION			
		Total	12.5%
FREE TIME			
		Total	7.0%
LARGE GROUP ACTIVITIES			
Non-academic subjects			
show and tell	student participation		1.0
information	student participation		13.8
information	no student participation		2.0
		Total	16.8%
Academic subjects			
	student participation		9.1
	no student participation		.2
		Total	9.3%
CLASS-TASK ACTIVITIES			
Academic subjects			
	students work individually		12.6
	students work individually, work assigned by ability level		6.1
	students work individually, work assigned by grade level		.9
	students work in small groups		6.5
		Total	26.1%
MULTI-TASK ACTIVITIES			
Academic subjects			
	students work individually		20.8
	mixed type, some students grouped by ability level		6.3
	mixed type, some students work in small groups		1.2
		Total	28.3%