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METHODS FOR RESEARCH ON INTERACTION
IN GROUPS

By the ONR-MTL Research Team:

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December 12, 1952

Foreword

This document presents as briefly as may be possible a number of research methods. These methods are our means for studying group process, personality dynamics, and "psychological subgroups" in their interrelations with each other. The basic inquiry, operationally defined by these methods, is into the various shifting qualities of group experiencing.

Back of any inquiry and guiding its creation of methods, is a more or less formulated set of intuitions about the nature of the phenomena being studied. In our work, these intuitions represent a philosophical position: that the primary characteristic of experiencing is interaction; that interaction is controlled by the total patterning of circumstances in the universe studied; that the individual is the locus of a modifiable pattern of directional influences; that the "total" situation" is a state of the group culture, complete with conscious and preconscious agreements; that individual's behaviors presented to the group are symptomatic of processes of integration of immediate experiencing in the present group with habits and learnings from previous experiences in other groups (and cultures); and that affiliations among individual represent interdependent reinforcement of channels for (need-meeting) action.

In operation, this position requires a continuously "wholistic" view; emphasis upon dynamics (e.g. emotional and motivational processes) and purposes (i.e. quality of experience sought); and a tendency to think of the group as a system of inter-relationships among individuals who are themselves sub-systems.

More specifically, as applied to method, a number of relevant features, in order of their appearance in this document, may be pointed to:

1. The elimination of the cognition-emotion dichotomy in favor of the "work-emotionality" continuum (after Bion).

2. The perception of this pattern as descriptive both of group culture and of individual participation, and the notion that the description must be given sequentially rather than cumulatively. (This is the definition of the "situation".)

3. The perception of verbal content as symptomatic only; and its use to check inferences about the quality of experiencing rather than its use as the basis of such inferences.

4. The recognition that a changed quality of group experiencing must also mean a changed pattern of participation; and the use of this principle for objective unitization of meetings.

5. The recognition that the building of group culture must proceed through the integration of varied qualities of experience (which, among them, provide opportunities for all to participate); and the development of means to represent and study these shifts from unit to unit.

6. The description of individual "personality" in the same terms as the definition of the group interaction, with consequently greater power of predicting individual contribution to group process.

7. The recognition that interpersonal affiliations may be actually based on shared subcultures oriented around core conflicts (e.g. dependency-counterdependency), and the use of self-perceptual data to identify such factors within the group.

This document is in effect a first draft of a more detailed work on methodology (to be completed, hopefully, by Feb. 15, 1953). Its various sections were written by different members of the research team, but all of us shared in the thinking. Our thinking is better for the help of other members of the staff of this Laboratory, colleagues in the Education and Psychology Departments, colleagues in other Universities, and staff members of the National Training Laboratory in Group Development.

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Preliminary Report: Research Methods for Studying Groups

Saul Ben-Zeev, Ida Heintz, Bill Hill, Dorothy Stock, Herbert Thelen

The purpose of this summary progress report is to communicate to other researchers a number of methodological developments in the study of groups. More detailed reporting of procedures and of substantive findings will be the concern of subsequent papers.

The methodological developments here reported have been "on the way" through continuous research activity in the Human Dynamics Laboratory since 1947.¹ They have been delivered through the help of a contract with Human Relations and Morale Branch, Office of Naval Research.² They have been contributed to by Ph.D. students in the departments of Psychology, Education, Human Development, and Sociology. The present research team was formed in April 1951, and consists of Ida Heintz, Bill Hill, Saul Ben-Zeev, Dorothy Stock (Project Director) and Herbert Thelen (Principal Investigator).³

The data through which and on which the methods were developed pertain to four "laboratory training groups" at the Fifth Summer Laboratory (1951) of the National Training Laboratory in Group Development.⁴

Each group contained about 15 members plus a "trainer" and a "training associate". Two observers from the research team were present at all meetings of each group. The "curriculum" of the training groups was the solution of problems arising during the course of their own operation. This type of group

¹Notably through Ph.D. dissertations by Bob DeHaan, Joe McPherson, Dorothy McPherson, Bettie Sarchet, John Midewell. Dorothy Stock's Ph.D. contributions were made prior to her association with the Laboratory.

²Navy National Training Laboratory Project I; Contract number, 3-5650-20-1/44.

³In addition, Bob Rodgers, Paul Hare and Joseph McPherson were members of the group during its first six months, or data-collecting stage.

⁴The research was initiated by decision of the Policy and Planning Committee of the National Training Laboratory in Group Development, and was supported by them through September 1951, at which time ONR help became available. Thelen is a member of the Policy Group and this research in one sense is part of the continuous stream of research from the National Training Laboratory.

was selected for study because in the normal course of their business they produce much data, including interpretations of feelings and member-perceptions. Moreover, these groups devote considerable energy to the diagnosis of "what is going on" and the development of "scientific" means for diagnosis is a major objective of the research. Such identity of interest facilitates considerably the collection of data and the assimilation of observers in a group.

To begin our report, we wish to set the context of our methodologies by indicating first, several current and distinguishable lines of approach to the conceptualization of group phenomena; second, several major problem foci which pose the questions to be investigated; and third, the bases for choosing the approach we adopted.

Four Approaches to the Study of Group Phenomena.

(a) Individual Clinical Approach: The investigator is chiefly concerned with the question "Why did A's friendly question lead to B's defiant assertion, C's flight into intellectualization, and A's sullen comment?" The explanation sought is an answer to the questions: "at time t, why was it B who replied, and why did he reply in the manner he did?" In effect group life is seen as a stimulus-response chain centered in overt verbal behavior. As each person talks the rest of the group is seen as his social environment. The concepts utilized tend to be in the domain of individual personality study, particularly with reference to threat-defense mechanisms and individual need structures. Sociometric tests, self-perception data, and projective tests are among the bases for theorizing.

(b) Sociological approach. The dynamics of the group are seen as representing the effort to deal with intergroup conflict. The basic assumption is that each person is the carrier of the culture, folkways, and the ethos of his class, caste, occupational, ethnic, religious, etc.,

groups. In the group being studied, his behavior is seen as the protection or enhancement of his various group affiliations, and his methods of operation are assumed to be guided by the norms of his various internalized groups. The explanation of group process is sought in terms of the relative homogeneity of the group with respect to statistically located dimensions of prestige, loyalty, conflict areas, and the like.¹

(c) Force field approach: Any set of conditions of the groups is maintained by a balance of forces, which are in dynamic "quasi-stationary" equilibrium. These "forces" are psychological influences and tend toward facilitation of or resistance to specified changes. The relative magnitude of the forces is modified by the gestalt, or total group situation. Group members are seen as having various degrees of agreement about such things as their ideologies, expectations from each other, goals, limits to activity, procedures for problem-solving, and the like. At any particular time, lack of agreement with regard to certain of these dimensions sets up forces or stresses on the group; these forces are brought into balance through processes of group decision-making; - the central concern of "group dynamics".²

(d) Interactionist approach: The central concept is one of the struggle and balance between conflicting impulses of the group. These impulses are directed toward problem-solving work (cooperative) on the one hand, and towards maintenance of emotionalized non-growth states of being (ego-centric) on the other hand. "What happens" is seen as the acting out of this struggle. It is assumed that the entire group is party to this struggle, that different individuals

¹To these structural or positional factors, there is now being added some account of mobility factors, with consequently greater power of explanation.

²Kurt Lewin is generally recognized as the chief developer of this approach.

contribute individually to it, that all individual contributions are modified by and interpreted within the preconsciously shared group frame of reference. In this view, the "leader" at any given moment is created by group need; he is the person, idea, or object about which the dominant pattern of impulse can be mobilized and expressed.

The existence of these approaches (and others less well developed) calls our attention to a variety of factors which are clearly important:

- a. The biases and needs brought by the individual into the group, and the channels within group life available for dealing with these personal concerns.
- b. The relationship between an individual's behavior and his overlapping group memberships; the problem of development of social community structure through interaction among individuals.
- c. The ways in which the struggle between the group need for conformity and the individual need for self-realization result in a "field of forces"; the nature of these forces as internalized within individuals.
- d. The actual quality of group interaction itself a process, and its explanation in terms of intra-personal and inter-subgroup interaction.

As referred to methodology, awareness of such factors translates itself into criteria for judging and comparing methodologies:

- a. What account does the methodology take of emotional expression? Is emotionality judged directly or is it interpreted as a theory to "explain" the observed behavior?
- b. What assumption is made about the acting unit within the group. Is the individual, the total group, or the subgroup seen as the actor? Or, does the method assume the actor unit will vary from time to time?
- c. What account does the method take of the problem of determinism of behavior; the impact of cultures; of group composition, of leadership, of the situation itself? At what points and in what ways does the method reveal the relative dominance of these influences at each moment in group life?

After consideration of these problems, we set up a series of requirements for our methodology:

1. It must take account of expressed feelings, not as something to be inferred from other behavior, but as observable affective behavior.
2. It must give us a sequential picture of group interaction, not a series of summaries over long periods of time.
3. It must describe individual and group "personalities" within a common conceptual orientation; there is to be as little "translation" as possible in moving from discussion of individuals to discussion of the group.
4. It must provide systematic and definite cues to the "depth", comprehensiveness, and nature of interpretation required for "explanation" at each point in group life.
5. While pointing systematically to the "significant" problems for interpretation, the method must also process the data in such a way that any degree of elaboration is possible--- from the study of a single statement to the characterization of a week of group meetings.

Such a method has been developed, and the rest of this report deals with it. We shall first state the basic assumptions (the metatheory) behind the method, and then describe the various procedures which constitute the operational definition of the methodology.

Frame of Reference in Theory

The theoretical approach we have adopted for this study takes the formulations of W. R. Bion of Tavistock Institute, London, as its point of departure. Bion is a Psychiatrist who developed a theoretical approach to groups out of a great deal of experience with therapy groups. In the course of observing such groups Bion came to see that the group would at times exhibit behaviors which were related in a special way. They were related not because everyone was behaving identically, but because the group could be described by saying it was acting "as if" it were operating on a single basic assumption. He called the whole complex of behaviors which the group was exhibiting at such a time the "culture" of the group. He identified four such cultures, each with its own basic assumption. Bion's

four cultures are the three emotional cultures of dependency, fight-flight, and pairing, and a work culture. The basic assumption in the dependency culture is that the group exists in order to be sustained by a leader on whom it depends for nourishment and protection. In fight-flight the basic assumption is that the group has met to fight something or to run away from it. That is, these are the two ways the group has of avoiding whatever is before it. In the pairing culture the group has met for the purpose of establishing intimate pair relationships. In the work culture the group has met to perform some task.

The work culture and the three emotional cultures differ in character from each other. Participation in the emotional culture "requires no training, experience, or mental development. It is instantaneous, inevitable and instinctive". (W.R. Bion, "Group Dynamics: a Re-View" Inter J. of Psycho-analysis, XXIII, Part II, 1952) Work, on the other hand, is related to reality, uses rational methods and requires training and sophistication on the part of group members.

Work and the emotional cultures are related in a special way. The activities of work may be obstructed, diverted or supported by one or another of the emotional cultures. A typical situation in the group is for one of the emotional cultures to occur together with work to suppress the other two.

Bion feels that the on going development of a group can be described in terms of these cultures. That is, at any given time the group is operating in one or another of the emotional cultures combined with work, or it is in a transitional stage in which one emotionality is being replaced with another.

Bion's concept, "valency", is important because it indicates the ways in which individuals may contribute to the culture of the group. Valency, Bion says, is "a term I borrow from the physicists to express a capacity for

instantaneous involuntary combination of one individual with another for sharing and acting on a basic assumption". (Ibid) That is, each individual possesses certain propensities or preferences for operating in terms of one or another of the basic assumptions---propensities which will find behavioral and attitudinal expression in the group. Moreover, the acting out of the propensity requires relationship with other individuals in the group,

Bion's orientation is especially suited to our purposes because it includes in it not only cognitive but emotional aspects of group life and indicates a way in which these may be related. In addition it suggests a way in which individual personality may be related to total group process. It utilizes a limited number of concepts which can be made operational and which provide a basis for making dynamic interpretations of what is going on in the group. A further advantage is that we have been able to apply these same basic concepts to many levels and aspects of group life. That is, we have been able to examine total group process, individual personality, subgroups and individual behavior, all in terms of dependency, pairing, fight-flight, and work. This has permitted us to examine relationships between these various aspects of the group in very direct terms.

Our specific application is to training groups rather than therapy groups, and our concern is with a microscopic individual level as well as the macroscopic, total group level which Bion emphasizes.

What we have done in this study is to take Bion's basic concepts of work, dependency, pairing and fight-flight and apply them to an exploratory investigation of group process and the relation of the individual to the group. In order to pursue this investigation we developed three basic techniques or procedures. We have made use of these concepts to describe statement by statement behavior in the group; we have incorporated them into a Sentence Completion test by means of which we can assess each member's valencies toward the various cultures; and we have developed

Q-Sort which can tell us something about the composition of the group and the character of phenomenological subgroups.

In developing each of these measuring devices it was necessary or desirable to introduce certain extensions of basic Bionic Theory. In the case of the rating system, for example, four work levels were distinguished. Instead of rating a statement merely as work, we were able to make judgements about the character or quality of the work contained in the statement. In constructing the Q-Sort items it was convenient to make use of the concepts "counter-pairing" and counter-dependency", which are excessive resistances to pairing and dependency, respectively.

As a result of our exploratory study we have found that we disagree with some of Bion's statements about the nature of group process, although we adhere to his theory in most respects. As an example of a point at which we differ, we find that, although a certain period within a group can be described globally as pairing, when it is analyzed on a more microscopic level the emotionalities expressed may be quite mixed in character. Some of our differences are probably due to the fact that Bion was dealing with disturbed groups and that he dealt wholly on quite a global level. In any case we expect, as a result of this study, to present a careful re-examination of Bionic Theory and to restate it in terms which will be more specifically and directly applicable to normal groups of the type we studied.

In the rest of this report, however, we shall be concerned with methodology rather than theory. This brief sketch of the theoretical approach we have adopted is intended to provide some context for the detailed discussion of methodology which follows.

Methodology for Interpreting Group Interaction

A. The Data Collected

As required by the adoption of the basic assumptions just given, we were forced to form judgments about the "work" and "emotionality" content of the discussion. The unit to be judged was taken as the complete contribution of one person in between contributions of other people. Thus three words or three minutes of talk could constitute one unit. In cases where a marked change occurred during the statement, additional ratings could be given.

In addition, the code number of each speaker was recorded, as well as the gist of what he said, insofar as the observers could record it. Furthermore, time was recorded every minute. If a person talked out of one minute into the next, the ratings were repeated. Thus the record on each minute was a complete inventory of contributions.

Gestures were not noted except in the case of non-oral inter-member interaction, which tended to be noted as symptomatic of either "pairing" or "fight".

The two observers assigned to each group were given freedom to establish their own arrangements for recording the data. Thus in two of the teams both observers collected all the data, and then later on the same day discussed any differences of ratings and made the most reasonable decision. The other two teams divided the job between recording content and making ratings. In one team the observers alternated their jobs; in the other one person always collected the same data. It was agreed to collect ratings for approximately half the time, and "anecdote" the unrated periods.

The observers were trained for three months before going to Bethel, and then used the first of the two three-week laboratories for practice. All the data utilized in this research were collected during the second laboratory.

Data were also collected from members by means of a variety of post- and pre-meeting questionnaires. Some of these will be described in connection

with other parts of this report.

B. The Ratings of Work.

The ratings of work were based on the operational definitions of work developed by the research team. The following postulates guided our thinking about the nature of the ratings and the kinds of interpretations that could be based on them:

1. Work is always present in some amount or kind. The fact that the work task is harder to identify at some times than at others can be used as a distinguishing characteristic between at least two possible qualities of work.
2. There are distinguishable varieties of "work". We see qualitative differences.
3. "Work" may be thought of as an aspect of group activity, but it has to be judged within the context of total activity.
4. The categories of work can be arranged sequentially to represent typical phases of group growth or typical phases of problem-solving activity. In other words, the sequence of work-phases during the solution of a problem represents on a small scale the same kind of advance and regression that is observable during a long period of group growth. In general the sequence of categories represents increasing group maturity and increasingly insightful phases.
5. Work has to do both with problem-solving and with group development, or with both process and achievement problem-solving. Any category of work represents a typical relationship between these two types of combinations of affective and cognitive elements.
6. The judgment of work is a process of interaction between the nervous system of the observer and the contribution to be judged; and this judgment is made within the context of the total group milieu. This means that the observer can be asked to respond to a combination of (a) affective elements, (b) formal and cognitive elements, (c) specific behaviors symptomatic of the various categories.
7. As the group grows over the course of three weeks, we can expect shifts in the three type of elements. For example, there will be greater skill in summarizing, collecting data, making decisions, etc. Insofar as possible, we want categories that show how the energy is distributed in various sorts of productive and non-productive ways, regardless of the skill shown in being productive or non-productive.

With this rather formidable array of requirements, a set of categories, or "work levels" was devised. Table I shows the relationships of these levels of work to group growth, to process problem-solving, and to achievement problem solving. Table II shows a variety of symptoms agreed to be typical of the four kinds of work. As required by statement (6), above, the symptoms refer to affective, cognitive, and functional characteristics of behavior.

The work levels were arbitrarily weighted 1, 2, 3, and 4. The sum of the weighted ratings was found for each minute, and this number was then plotted on the Sequential Analysis graph. In addition, in the margin of the graph, the breakdown of actual ratings was entered for each minute.

During a twenty-minute test run on a group not otherwise used in the experiment, the eight observers cumulated ratings for each minute had an average intercorrelation of 0.90 (Hill).

C. The Ratings of Emotionality

The ratings of emotionality were based on the operational definition of emotionality developed by the research team. The following postulates were developed as the basis of the rating system and to guide our thinking about the kinds of interpretations that would be appropriate to the data:

1. Emotionality may or may not be present in a contribution. To be present, there must be a recognizable feeling response in the observer. Response thresholds will differ from emotionality to emotionality and from observer to observer. We can probably realistically aim for development of consistency within each observer, rather than for inter-observer reliability.
2. There are distinguishable varieties of emotionality. We shall accept Bion's conceptual categories of Fight, Flight, Pairing, and Dependency. (We decided to distinguish between Fight and Flight, rather than lumping them together)
3. Emotionality is felt emphatically, but to decide what category is present requires that the observer interpret why he feels the way he does. This interpretation must take into account the total context of the contribution, both as an immediate expressive response and as an evaluative comment on the group state of affairs.

Table I - LEVELS OF WORK

June 20, 1951

TASK Continuum	LEVEL			
	1	2	3	4
	Apparent unconcern for having a goal	a. Acceptance of need for goal b. Grouping for goal (c. Implies utili- zation of ex- perience)	Testing a specific goal possibility (direct ? vicarious experience)	Integration of conclusion from exper- ience into culture (group closure)

Group
dynamics

Group
growth

PROCESS Continuum	LEVEL			
	1	2	3	4
	Apparent unconcern for being a group a) No energy available for group maintenance b) Indiv. energy against being a group.	a) Mobilization of support for points of view b) Suboral success- ment of organi- zation (group self con- sciousness)	Maintaining Groupness in a goal direction a) Adaptive b) Using re- sources c) Role differ- entiations	Orientation at group's self- concept level b) Generalization of experience at social level c) Unself-conscious- ness

Table II - Symptoms Typical of the Work Levels

June 18, 1951

Level 1	Level 2	Level 3	Level 4
a. Apathetic, dull, desultory, compliant (low energy level) b. Low work level - energy bound up in emotionality which has disintegrative rather than supportive quality c. Inhibiting d. Self Consciousness e. Fear of loss of composure, disruption of pleasant but unrealistic self concept f. Fear of getting into something too threatening g. Defensive h. Exhaustion i. Time killing j. Ritualistic k. Compulsive, unmotivated	a. Attempt to define task as a response to felt need for a task, any task b. Felt necessity to move c. Attempt to get group involvement d. Has form of looking for problem e. May use techniques not clearly learned to problem solving f. Putting out feelers g. Easily broken down into impatient dependent, expression h. Concern that we move together i. Inhibition of individual initiative in problem solving - may be strong effort by individual to take over	a. Real, goal-oriented alternatives b. Operational (visualized action) terms c. Consideration of implications of visualized alternatives d. Acceptance of expert resources, building on previous work e. Growing interpersonal support - helping each other bring out points of view f. Differentiation of role - accepted g. High degrees of involvement in work task h. Individual effort to reorganize, test past experience i. Individ. initiative in accepting group assignments j. Stable goals - agreement on what we accomplished k. Confidence-building through experimental minded l. Self congratulation - sense of real accomplishment	a. Individual freedom of expression b. Shared feeling of solving problems c. Enthusiastic response to alternative which they perceive as insightful and meaningful d. Ideas lead to other equally meaningful ideas e. Diagnoses made & used causally-illustrative, internalized f. Flexibility g. Feeling of creativity h. Great ego-strength - withstand shock, accident i. Reflective, endurance
		Goal oriented work	Group creativity

Shared anxiety that we find a task and get moving

on available energy to work

4. The categories of emotionality are to be seen as having no necessary arrangement with respect to each other, since relationships among categories is to be an object of investigation. The observer must ~~guard against~~ the tendency to assume that when a fight period has been established each contribution will necessarily show fight (for example)

Similarly, there is to be no assumption of a necessary relationship between emotionality categories and work levels.

5. Emotionality can be focused specifically on a given target, or it can be a diffuse "floating" expression of anxiety. Targets may be the self, other members, the leader, the group, the task, the procedures, absent people, ideas, institutions, and the like. Moreover these targets can exist at any level of reality or fantasy.
6. The response of the observer is to affective elements only, conditioned, probably by pre-consciously held theories about the public and private agendas of the group. It is unrealistic to expect the observer not to be forming hypotheses as he goes along; but he must guard against detecting feeling that doesn't "exist" but which may be required by such hypotheses.
7. As the group grows over the course of three weeks, we can expect shifts in the type of emotionality expressed and in the responses (consequences) of these expressions to group members and observers. Thus we should expect that the detection of feeling would be altered by such things as better feelings of membership and experience which has taught the group that fight (for example) can be dealt with (greater feelings of adequacy). The fact of this shifting norm will render difficult between-group comparisons and comparative emotional inventories over a period of time; on the other hand, because of this unavoidable phenomenological orientation, such ratings will provide useful basis for realistic interpretation of dynamics in the group.

The problem of communicating how any given modality could be recognized is a difficult one. One can only talk about feelings, he cannot talk feelings directly. Observers were trained primarily through practice, followed by discussion of differences in ratings; and in this process observer sensitivities were developed. In addition to this experience, the observers had also read and internalized the whole theoretical orientation insofar as possible, and had worked on the projective sentence completion test which is built on these same emotional modalities.

A distinction was made between "large" and "small" expressions (designated respectively by capital and lower case letters), and these were weighted 2 and 1, respectively. In addition, the rating "or e" was sometimes used when the emotionality was too complex for more particular characterization.

Average interobserver reliability (8 observers) in rating in the four emotional categories during a twenty minute run on a group otherwise not observed, was .60 (1111). Actual agreement within the two teams in which both observers rated emotionality is estimated at 80 % (this has not been checked yet).

Table III lists some of the criteria we found helpful in guiding our judgments of the various emotionalities.

Table III - Descriptive Characteristics of Emotionalities Components

<u>Flight</u>	attacking, rebuking, punishing, dividing (the group), warning, threatening, defending self, expressing hostile resistance, self-justifying, self-aggrandizing (at expense of others, scapegoating, ridiculing, anticipation of hostility)
<u>Flight</u>	Observer feeling of lessened involvement, marking time indirectness or incoherence of expression, light-veined humor, jocularity, fantasy, over-intellectualization, over-generalization, withdrawal, statements out of context emotionally, inappropriateness, tension releasing laughter, dealing with trivia, sensitivity to distraction, panic
<u>Pairing</u>	side remarks to neighbor, expression of intimacy toward individuals, warmth or supportiveness, exchanges which exclude others, unusual friendliness, reference to understanding shared with one or two others, unusual responsiveness to another.
	Pairing can be "on the side" or across the group. It can involve oral statements, eye interaction, or gestures.
	Group: pairing: Similar to above, but addressed to the group as a whole. Such expressions are commendatory, enthusiastic, committing, and warm.
	The group as a whole can engage in pairing as a sort of protection of their wish to perceive that they are cohesive and friendly. In this case there is a feeling of irreality and formal politeness in the expressions.
<u>Dependency</u>	Undue attention to the leader, looking for leader approval. Trying to get leader to say what to do, hostility against leader, looking up notes on group, citing outside irrelevant authorities, demanding unnecessary instruction, expressing group weakness, expressing fear of trying things.

D. Making the graph

The amount of work, the frequency of observed emotionality, and the number of contributions are plotted at the end of each minute, thus making a three line

graph. The code numbers of all contributors are entered in the left margin, the breakdown of modalities and work levels is entered in the right margin. Content is entered, and finally, tentative interpretations. In our study, all this was completed on the same day as the meeting--- a large task.

Figures 1 and 2 present samples of the graph for one group.

E. Interpretation of the graph:

The graph is the basis for "microscopic" interpretation of short periods of 20 minutes or so. (For longer periods than this, it is helpful to summarize the data). After one has had some experience with the graph, he can tell a good deal about the meeting just from the three lines. An interpretation guide is yet to be worked out, but it will present the following sorts of ideas:

(a) The rate of interaction (contributions per minute)

1. If low, as compared with group average), may mean:

much inhibition in group
Group working hard on difficult problem
Group under domination of one person (who may be giving instructions, for example)

2. If high, as compared with group average, may mean:

Group is excited
Group is running away from any work
Members cannot be listening to each other
Group may have broken down into individual activity.

3. 2-4 minute peaks tend to suggest that the group is "together" since a lot of bunched contributions suggest many people reacting to approximately the same stimulus situation.
(as in testing feeling)

- a. If interaction rate on each side of peak is low, it suggests that group has good control of itself
- b. Peak can suggest a two person argument, in which case group involvement is likely to be high.

(b) If work, interaction, and emotionality rates are in phase, rising and falling together, it suggests:

- 1. A "steady state" or continuously maintained mood in the group. Fluctuations are then seen mostly as affected by difficulty and interest of the achievement problem.

- (c) If work, interaction, and emotionality rates are out of phase, it suggests:
1. The achievement or content is being used to work out process problems---provided the period of the emotionality cycle is much longer than that of the work cycle.
 2. Individual anxieties are being discharged without disruption of work, provided the emotionality cycles are shorter than the work cycles
 3. The group is having troubles with process, provided the emotionality rate peaks across the work or interaction rate lines.
- (d) If work is high and emotionality low, with average interaction, and some peaks, the group is probably working efficiently.
- (e) If work is high and emotionality low, with high interaction, the group is probably doing trivial work, or flighting.
- (f) If work is low and emotionality high, with average interaction, the group is probably making feelings explicit---it may be diagnosing its process, for example.
- (g) If work is low and emotionality high, with high interaction, the group is probably out of control.
- (h) If work is low and emotionality high, with low interaction, the group is probably inhibited and frustrated.

As a result of experience to date, we have found that it is useful to think of the process of interpreting our data as a series of steps:

First, general characterization of the period being studied, making use of generalizations such as the above. This in effect describes the "situation" in which the group members operated.

Second, Identification and characterization of phases or distinguishable qualities of interaction during the period studied. In this step, detailed knowledge of the E and I ratings is used.

This gives us diagnosis of "what was happening" at the group level. This is the level of interpretation that the group leader or trainer might find most appropriate. It is also the level possibly most useful in studying group growth.

The validation of the interpretative diagnosis is not easy. In this study we used "hypotheses checking" questionnaires at the beginning of each meeting to check our specific hypotheses about the preceding meeting.

By carrying the analysis further into steps III and IV validation can be accomplished without special checking of daily hypotheses formed in situ.

Third, The most microscopic level of analysis takes account of the sequence of individual contributions, and attempts to "explain" these behaviors partially as individual need - meeting and partially as group need meeting. To operate on this level requires certain information about individuals. We expect to get this information from blind analysis of two instruments described further on in this report.

At this level, what we come out with is a series of characterizations of the kind of contribution made by each participant in turn.

These characterizations are made without knowledge of what was actually said; they are, in effect, predictions of the content. As such, they can be checked point by point against the recorded content. Close agreement indicates that the preceding analysis are "valid".

This microscopic level of analysis is the one most appropriate for study of individual roles in the group.

Fourth, Comparison of microscopic characterizations (step III) with recorded content, and judgment of the extent of agreement. This is a rather easy judgment to make; criteria are being set up for indicating several ranges of agreement.

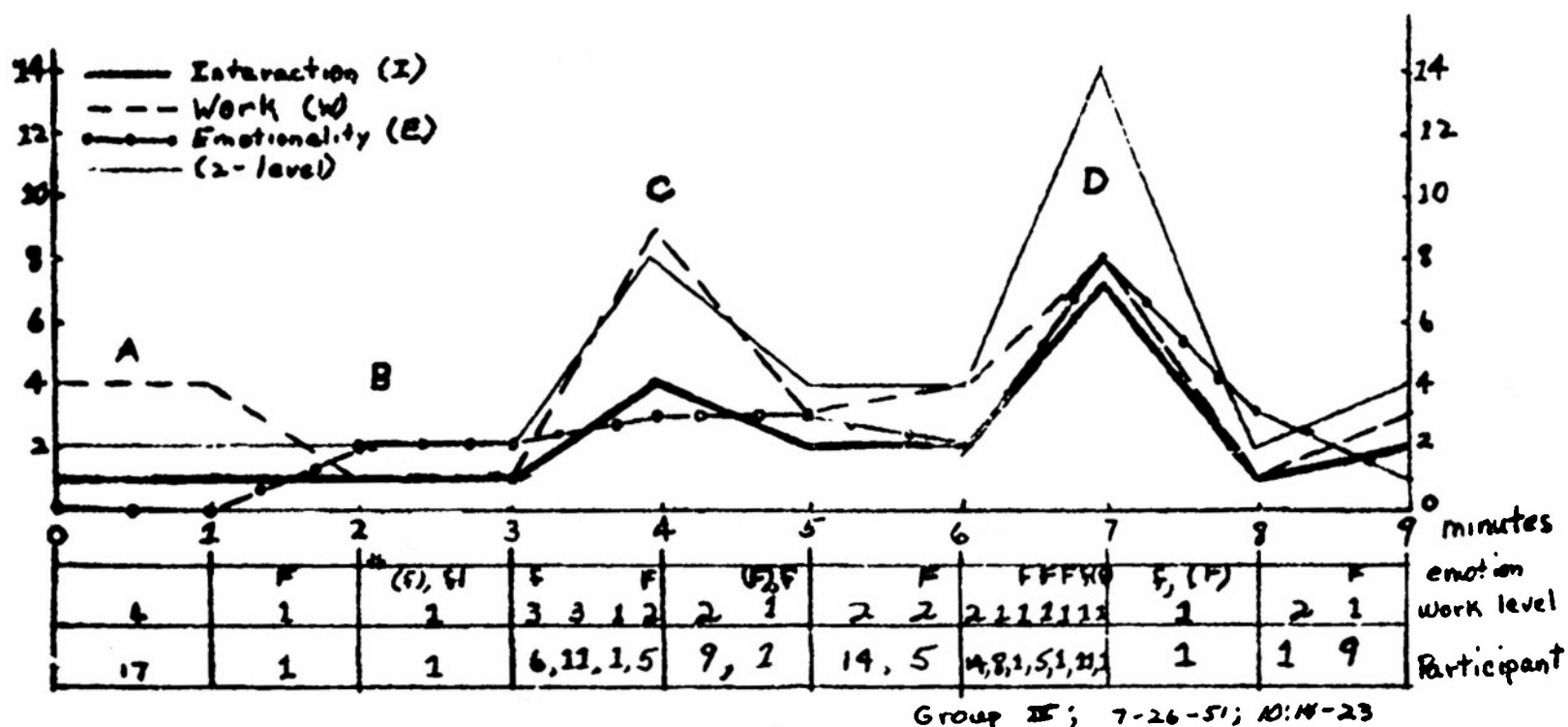
The reader can follow these steps of analysis through Illustration I and Illustration II. The recognition and clarification of these levels of analysis and the use of content record as a check rather than as the primary data for interpretation are central features distinguishing this method of analysis from others.

Preliminary work on "valency sub-grouping" suggests a level of interpretation based on concepts of and sub-group dynamics. This will be studied

Finally, the analysis and interpretation of the effects of leader interventions is expected to shed light on the policies of leaders that help and hinder group operation.

For analysis of group growth over a three week period, and for cross, systematic differences in conditions for individual and sub-group participation, we need to find a systematic method of breaking down group meetings into rational units, phases, or homogeneous sections. This has been accomplished by Saul Ben-Zeev.

Example 1 - Illustrative Steps in Analysis of Sequential Record



I. Quality of Group Interaction: From graph alone.

(Interpretation based on generalizations about relationships between E, W, and I)

In general: This period represents a shift from group-problem orientation to non-task focussed individual expression.

Specific points:

1. Continuous increase in the expression of E. (This suggests either a releasing of more and more emotion or the weakening of task requirements as boundaries or limits to the expression of feeling)
2. Rate increase, decrease of work per contribution, combined with increase in E (indicates the shift in the direction of highly charged egocentric expression)
3. Relative slowness of interaction (greatest number of statements per minute is seven). (This suggests that some work is being done--e.g., listening--even though the particular task is lost.)

II. Phases of Interaction: Graph plus detailed E and W (in margins)

(Additional interpretation based on definitions of emotionality and work levels)

Phase A: High level (integrative, interpretive) problem discussion by person A. (4-level work, no emotionality)

Phase B: Two-minute personal, emotional, defensive reaction (probably to the interpretation contained in the preceding statements) by person B. This long statement ends on a note of flight. (1-level work, gross expressions of F with (f) and fl).

Phase C: Reality testing (group work) reaction of several people to person B. (2-level work suggests speaking as group members rather than as individual; emotionality involved in the responses indicates that there is concern or anxiety over the issues focussed by B; increased rate suggests that B got people involved.)

*(F) or (f) indicates fight which has a defensive quality.

Phase D: Strong fight reactions of several members to the problem represented in C; the problem itself is lost sight of; the group orientation is lost. (work level is 1; fighting is probably intermember argumentation, but it might be something else--e.g., the common scapegoating of an outside target.)

III. Microscopic Analysis: Above plus participation record (in margin)
(Additional Interpretations in the form of predicted characterizations of each person's contributions--to be checked in the next step. In this illustration observer knowledge of the individuals is used; in next research step we shall work blind from the Modality Participation Test and self-perception (-Sorts.)

Phase A: Minutes C-1

17 (the leader) makes a high level interpretation

Phase B: Minutes 1-3

This statement raises the anxieties of 1 (the co-leader) who replies in a highly emotional, individually oriented statement. (It is a blend of counter-dependent hostilities directed to the leader and to the group, and a defense of the self). The statement ends in an attempted flight.

Phase C: Minutes 3-5

6 replies to 1, probably turning the discussion back into a problem for the group
11 is made anxious that this conflict problem is opened up for the group--and probably expresses this anxiety
1, capitalizing on this anxiety, but not with a direct attack--probably an intellectualized rationalization (can't be direct because there is no emotionality expressed)
6 counterattacks, probably with an attempted return to reality
9 makes a statement in line with 6's attitudes
1 counterattacks (in hostile, counter-dependent fashion, probably blaming the group)

(Transition: Minutes 5-6)

14 agrees with 1, supports 1, or accepts the blame. (This is actually attacking the group under the guise of supporting someone else)
5 emphatically rejects the 1-14 argument

Phase D: Minutes 6-9

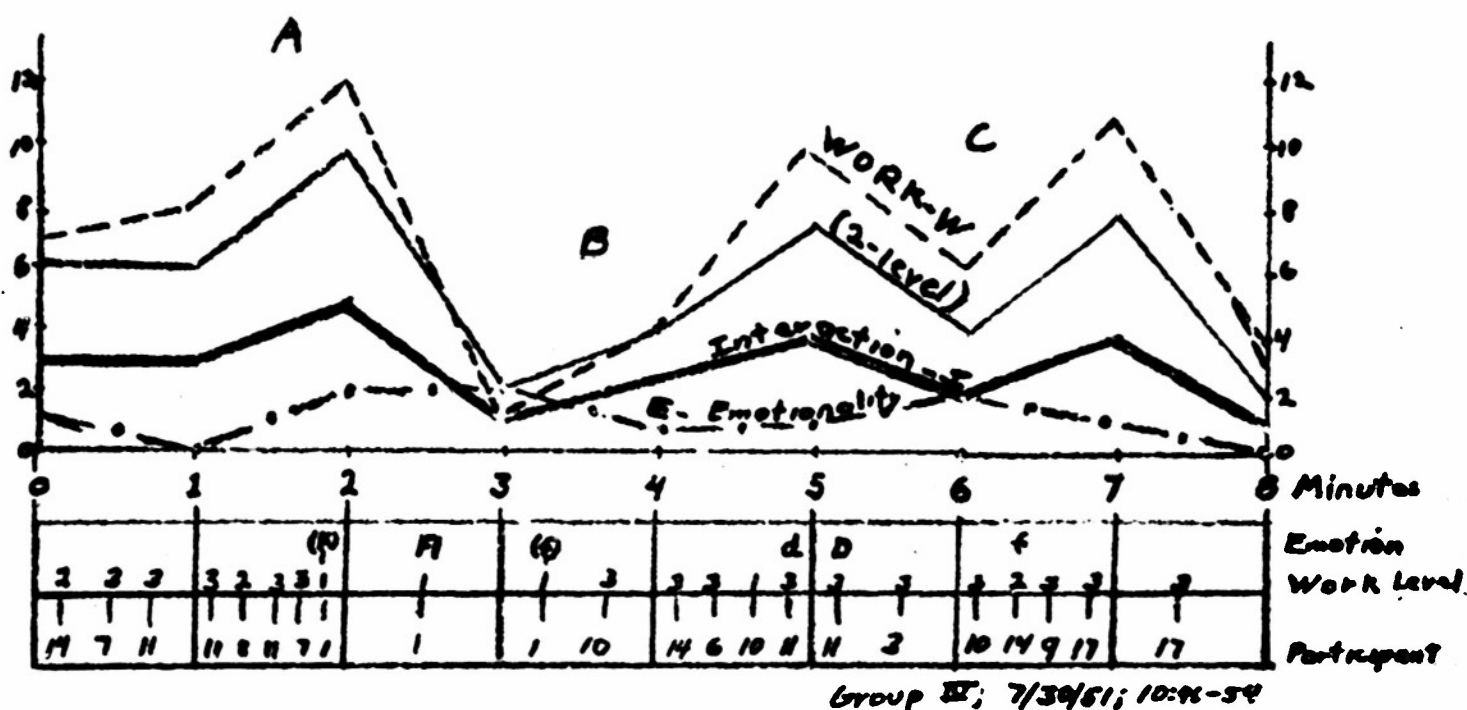
In this open conflict situation and in the absence of task definition all the participants up to this point (except the leader) blow off individual fight reactions. A new participant, member 8, capitalizes on the situation to express, indirectly, her own hostilities. (In view of what happens next, 1 feels himself to be the target of much of the hostility.)
1 replies in a long, emotional self-oriented statement
1 then goes on talking in a more group-oriented way
9 expresses a fight reaction

IV Validation of Step III: the actual discussion as recorded by the observers.
(Ideally--e.g. in future research--all interpretations to this point would be made solely from the information given by the sequential arrangement of observer ratings plus test data on the individuals. Validation could be obtained by checking the microscopic analysis (Step III) against actual content of the discussion. Ideally also, the content would be recorded by machine to eliminate observer selective biases. In this illustration the following are the observer's notes, written during the meeting

- vv 17- Permissiveness can be a trap. When you have something to fight you may get a lot more involvement. And then there are hazards along with that. Things may get destructive. The question is how to get involvement along with permissiveness.
- vv 1- What is permissiveness? Allowing people to get away with anything isn't permissiveness. (Long intellectual analogy about playing checkers.)
- v 8- The way I feel, I, you're not permissive with us--there are more to groups than formulae. There is a fragility about groups. That's what has kept us from--
- W 11- Are you dissatisfied with us?
- vv 1- (Denies it but his dissatisfaction is obvious)
- vv 5- One;
- vv 9- One, you're dissatisfaction is showing!
- vv 1- You're saying I'm insensitive. I'm used to dealing with people who express feelings more directly.
- vv 14- You were feeling an undercurrent we weren't willing to face.
- vv 5- One has been dictatorially pushing us into democracy.
- v { 14- I'm not sure.
8- I agree with 5.
1- (not noted)
5- No more lectures about checker-boards
1- ok
11-(not noted)
- vv 1- I will volunteer to be the scapegoat. My personal anxieties are that the things I want to express are premature for this group and this looks heavy handed to you.
- (9 gets up)
- 1- What happened, 9?
- v 9- I just wanted to see how permissive you'd be. I've been concerned about how concerned One is.

Of the twelve statements for which specific predictions were made, ten were well supported by the content. In the case of two statements, some predicted elements occurred but others also appeared which were not predicted.

Example 2- Illustrative Steps in Analysis of Sequential Record



I. Quality of Group Interaction: From graph alone.

(Interpretation based on generalizations about relationships between E, W, and I)

In general: The group is doing reality-oriented work that is meaningful to it.
Specific points:

1. High W (greater than 2-level); slow (serious) interaction
2. Continuous E (but released into problem-solving activity rather than "containing" or overwhelming the work task)
(assimilated into work to steer work realistically, in terms of member need)
3. E and W out of phase (suggesting that assimilation is not complete integration but is absorption of stress; stress also suggested by lowest interaction rates when E is highest)

II. Phases of Interaction: Graph plus detailed E and W (in margins)

(Additional interpretation based on definitions of emotionality and work levels)

Phase A: Measured steady interaction with high level of work.

Brought to a close by one person's strongly defensive (anxious) statement.

(The "togetherness" implied in such group-oriented work has raised anxieties in a person who cannot tolerate that degree of "togetherness")

Phase B: Expression of strong personal flight by one person- non-work oriented.

Phase C: Group recovers immediately, goes on working at same level as phase A. One strong D and 2 smaller d and f stresses are assimilated (and thus act to give group further direction)

Climate is permissive, supportive - as shown by the variety of emotions expressed ((f), d, E, f)

- III. Microscopic Analysis: Above plus participation record (in margin)
(Additional interpretations in the form of predicted characterizations of each persons contributions-- to be checked in the next step. In this illustration observer knowledge of the individuals is used; in next research step we shall work blind from Modality Participation test and self-perception Q-sorts)

Phase A: Minutes 0 - 2

The wide variety of people (representing several known different psychological orientations to the group) indicates that a high degree of "togetherness" must be present. Developments may be as follows:

- 14 responds to previous interaction (not shown) in a way which results in 7's clarification (probably) and redefinition of the problem. The problem, couched so incisively, makes 11 anxious.
- 11 expresses his anxieties (in a problem-oriented way) ((Hunch from further knowledge of 11: they are discussing dominance and status versus permissiveness and "democracy"))
- 8 probably indicates that she is adequate to deal with anxieties like 11's
- 11 elaborates his anxieties further
- 7 tries to clarify and resolve problem as posed for group by 11.
- 1 begins speech of phase II

Phase B: Minutes 2-4

- 1 reacts defensively (to the felt "togetherness"), but initially in terms of 7's clear contribution). He goes on to flight from the problem, and ends on a self-defensive note.
- 10 responds to the defensiveness of 1 in a protective accepting way, but as a problem for the group, without expressing much affect herself.
(Accepts 1's anxiety by turning it into a problem for the group)

Phase C: Minutes 4-8

- 14 agrees with 10, and may introduce a note of blaming the group for 1's disturbance. (She may compete with 10, and over-react)
- 8 explains, tests, or reinterprets 14's comment
- 10 reinforces her previous position
- 11 gives a personal anxious reaction to this problem (probably reacting primarily to 14's statement). He communicates feeling of personal inadequacy.
- 8 reassures 11, but stays on group problem level
- 10 pushes the problem further on group task level (work level 3)
- 14 comes in competitively, expressing hostility to the group rather than to 10
- 9 returns to 3-level work
- 17 (the leader) makes a long statement attempting to summarize positions and probably to get closure for the group.

- IV Validation of Step III: the actual discussion as recorded by the observers
(Ideally -e.g. in future research-- all interpretations to this point would be made solely from the information given by the sequential arrangement of observer ratings plus test data on the individuals. Validation would be obtained by checking the microscopic analysis (Step III) against actual content of the discussion. Ideally, also, the content would be recorded by machine to eliminate observer selective biases. In this illustration, the following is the observer's notes, written during the meeting)

14- not noted

✓ 7- Can a group member isolate himself by his own inner feelings? In trying to make us more sensitive he (#1) hasn't been sensitive to us.

✓ 11- Do we have the right to shove #1 against the wall? He has given us an answer. He can accept this or reject the content but we have to accept that he said it.

8- not noted

- 11- not noted
- 7- does this isolate us from the group?
- w 1- value system - What is our goal? To what extent can an individual be sensitive to the whole group? People have to be upset before they can move. You're saying I was too rough and immobilized you, then I struck out.
- w 10- We put you out (of the group) as an observer before we knew you. We asked you to be the observer, which took you out of the group before we knew who you were.
- w 14- Good point, #10
- v 6- (ditto)
- w 10- I'm sorry now that we did.
- w 11- It's conceivable the group may pounce on another #1. What's happened to him can happen to me when the leader is gone (during the next hour). Is this holding us back? What protection is there for the individual?
- w 8- What could happen to #1 could happen to me. It has.
- w 10- If we stop talking about #1, they may talk about one of us.
- w 14- Aren't we ready to go on? We're stymied on this point. Haven't we all gone as far as we can go?
- w 9- #1's leadership during the 3rd hour (the next hour, during which the leader was to be absent and #1 take over) may clear up a lot of this.
- w 17- (the leader). The dangers which you talk of, #11, are real dangers if there is free-floating hostility to be directed at vulnerable points. If it's reality, if #17 (a slip—he meant #1) has done something we need to look at, then (we are entitled to do so without anxiety..)

Of the 14 statements for which specific predictions were made and where enough content was noted to test the prediction, 11 predictions were upheld by the content. There are two major needs for energy: 1) in building agreement and internalization of the group problem; and 2) operating reflectively and integratively within this structure. In this illustration, only the second need is present: the structure is already established. Our errors of interpretation stemmed from not realizing the extent to which structure had been established,

Possible further steps of analysis- to be studied

- V- Analysis of subgroup dynamics as related to Q-sort factor analysis.
- VI- analysis of trainer role, as the control of subgroup dynamics.

F. Unitizing group interaction¹

The study of sequences of events of group activity would be aided greatly by a method which would sub-divide sequences into natural behavioral units, each of which exhibits internally homogeneous behavior which is clearly different from behavior in the preceding and following units.

Unitization could presumably be accomplished on different levels and with respect to many types of data. The content of individual contributions might be unitized, for example, on the basis of logical relevance or on the basis of hidden undercurrents and satisfaction of different group or individual needs.

Our method of unitizing is predicated upon the assumption that in each different unit different sub-groups form to express the different needs, concerns and interests of the group. If we are to find a series of several minutes during which one part of the group participates, followed immediately by a series of minutes during which another subgroup participates we should assume that another approach to the problems of the group, or another need or interest is beginning to be expressed at the point of change. We shall call such a point of change in the activity of the group a Turning Point.

Upon glancing at the different speakers appearing in successive minutes we discover that only rarely can we immediately discern Turning Points. We should be able to do that only when the participation of one subgroup is followed by the participation of a totally different subgroup without transition and without interference from members of the larger group who do not happen to belong to either of the two subgroups. But the subgroup structures and participation patterns of groups are usually much more complex

¹This method for unitizing meetings was developed by Saul Ben-Zeev.

than that.

It is possible that turning points might be assigned by a process of trial and error. But this method should be our last resort. We decided to develop a procedure with well defined operations which would minimize the number of hunches, judgments and trials which a unitizer would be required to make.

The first step in the procedure is to determine how many different participants there are between any two minutes in a sequence of minutes, no matter whether the minutes immediately succeed each other or not. In order to do this we count the number of different speakers who participated during each minute. We make a note of it and then proceed, beginning at each minute independently, to add to the original number each new contributor participating in succeeding minutes. For example, if speakers 8, 3, and 12 participate during the first minute, 8, 1, 6 in the second minute, 1, 6, 3 in the third, and 12 and 13 in the fourth, our chart would appear as follows:

Minute	Speakers	Accumulations			
		Minutes			
		1	2	3	4
1	8,3,12	3			
2	8,1,6	5	3		
3	1,3,6	5	4	3	
4	12,13	6	6	5	2

Observe the accumulations for minute #1. Three speakers have participated during the first minute. In the second minute speakers number 1 and 6 are added, raising the total to five.

In the third minute no new speakers are added, and the total number remains five. In the fourth minute speaker 13 is a new speaker and the total becomes six. The Accumulations for minute #2 begin at the second minute, neglecting the speakers of the first minute. And so on in the succeeding minutes. If we want to know how many different speakers have participated between minutes one and three inclusive we should look at the Accumulations Column for minute #1 and follow it down to minute three, where we see that five different speakers have participated. Similarly, four speakers have participated between minutes 2 and 3 and six between 2 and 4.

The numbers of any Accumulations Column are bound to reach a limit. The theoretical limit is, of course, the total membership of the group. Upon reaching this limit the numbers must repeat themselves. However, in almost all sequences which have been utilized there have been Accumulation Columns which have series of repeating numbers at much less than the theoretical limit (The theoretical limit is about 16). This may be called a Vertical Repetition. Accumulations Column #1 in the following diagram exemplifies Vertical Repetition

Minute	Speakers	Accumulations Columns									
		1	2	3	4	5	6	7	8	9	10
1	1,6,7	3									
2	1,3,8	5	3								
3	3,9	6	4	2							
4	1,4,9,10	8	6	5	4						
5	4,10,12	9	7	6	5	3					
6	4,10	9	7	6	5	3	2				
7	3,10,12	9	7	6	6	4	4	3			
8	3,4	9	7	6	6	4	4	4	2		
9	8,10	9	7	7	7	5	5	5	4	2	
10	6,7,11,16	11	11	11	11	9	9	9	8	6	4

The number 9 repeats itself five times in this column. It means that from minute #1 to minute #5 new speakers join the participation from minute to minute, but from minute #5 to minute #9 no new speakers enter. Therefore this indicates the following:

1. The entire period from minute #1 to minute #9 is generally more homogeneous than periods where no such repetition occurs, for each person who speaks after minute #5 has already spoken before minute #5.

2. The number of speakers participating during the period between minutes 5 and 9 is either equal to or less than those who participated in the preceding period.

3. The number of speakers who participate between minutes 5 and 9 is five (as indicated in Accumulations Column which begins at minute #5) This means that:

(a) That the participating subgroup decreases in size.

(b) Since there are fewer people in the second 5 minutes than in the first 5 minutes, it is likely that this second period is somewhat more homogeneous than the first (although less homogeneous than the entire 9 minutes period). This is borne out further by the fact that there are some repeating numbers in the Accumulations Column beginning at minute 5.

Generally, we can say then that if the number of speakers between the beginning and end of the repetition is much less than the number being repeated and if the period during which the repetition occurs shows some indication of being homogeneous (i.e. - a slow build up and repetition of numbers) the point at which the repetition starts might be a Turning Point. We cannot be certain of this, though, for two reasons.

Firstly, we have no knowledge that the participation preceding the repetition is also homogeneous (so that the turning point represents a real break of the pattern).

Secondly, we have as yet no way to tell whether the preceding unit begins at number 1, 2, or 3, because the patterns in the columns beginning at these times is essentially similar. In other words, we are not yet able to identify the period whose homogeneity is to be tested.

To deal with these questions we make use of the fact that Horizontal Repetitions exist. In the diagram above Horizontal Repetitions are exemplified in the horizontal row at the ninth minute. Let us look at the repetition of 7's in that row. The repetition begins at the Accumulations Column which starts in the second minute and ends at the Accumulations Column which starts at the fourth minute. This indicates that there must be some speakers who participate both in the period between minutes 2 and 4 and the period between minutes 5 and 9. This is taken as evidence of homogeneity of the period between minutes 2 and 9.

We shall accept then that the period beginning with the minute whose Accumulations Column makes the first contribution to the Horizontal Repetition and ending with the minute at which the Horizontal Repetition occurs is homogeneous.

So far we have shown that both Vertical and Horizontal Repetitions indicate certain aspects of homogeneity of a period. There is a particular combination in time of vertical and horizontal repetition which enables unequivocal identification of the turning point between units. We shall now discuss this combination and how it can be used to determine the beginning and endings of units.

The combination we have referred to is one in which the Horizontal Repetition occurs at the beginning of the Vertical Repetition (rather than at the end of the Vertical Repetition in the example given).

This establishes that the periods preceding and following this Primary Turning Point are internally homogeneous and are different from each other.

There exist Primary Points in about ninety percent of all twenty-minute sequences which have been examined. (When the sequence is short, very much less than twenty minutes, the likelihood of the appearance of a Primary Point is lessened.) See chart on page 32

We have found that for our purposes a block of repetition of three by three is the minimum required for identification of a Primary Point. When the Primary Point is established the task becomes much easier for now we have a point from which to start.

The point at which the Vertical Repetition ends and the Accumulation of new speakers begins, would appear to mark the end of a unit. Such a point we shall call a Secondary Turning Point.

The preceding unit, which ends at the Primary Point, begins with the column furthestest to the left in the Horizontal Repetition. This represents another type of Secondary Turning Point. See chart on page 32

There can occur False Primary Points. Such a point would appear with a Vertical and a Horizontal Repetition but the accumulation of speakers between the beginning and end of the Vertical Repetition has a value close to value of the repeating number. This would mean that exactly the same speakers have participated after the Primary Point as before it.

We should not then be justified in calling that point a Turning Point. However, this information indicates that the period between the two Secondary Points is homogeneous and we should be justified in considering that period a natural time unit.

The unitising operations are, then, as follows:

1. Calculation of the Accumulations Columns.
2. Determination of Primary Points.
3. Determination of Secondary Points.
4. Elimination of False Primary Points and automatic definition of natural time units.

A Sample unitization of a twenty minute sequence

Min.	Speakers	Accumulations Columns																			
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	1,3	2																			
2	8,17	4	2																		
3	17	4	2	1																	
4	17	4	2	1	1																
5	17	4	2	1	1	1															
6	8,9,17	5	3	3	3	3	3														
7	5,9	6	4	4	4	4	4	2													
8	5,8,9,16	7	5	5	5	5	5	4	4												
9	9,16	7	5	5	5	5	5	4	4	2											
10	2,5,11,14	10	8	8	8	8	8	7	7	6	4										
11	5,9,17	10	8	8	8	8	8	8	8	7	6	3									
12	17	10	8	8	8	8	8	8	8	7	6	3	1								
13	17	10	8	8	8	8	8	8	8	7	6	3	1	1							
14	15	11	9	9	9	9	9	9	9	8	7	4	2	2	1						
15	1,8	11	10	10	10	10	10	10	10	10	9	6	4	4	3	2					
16	3,7	12	12	12	12	12	12	12	12	12	11	8	6	6	5	4	2				
17	7,12	13	13	13	13	13	13	13	13	13	12	9	7	7	6	5	3	2			
18	12	13	13	13	13	13	13	13	13	13	12	9	7	7	6	5	3	2	1		
19	6	14	14	14	14	14	14	14	14	14	13	10	8	8	7	6	4	3	2	1	
20	6,12,17	14	14	14	14	14	14	14	14	14	13	10	8	8	8	7	5	4	3	3	3

← A Secondary Point. This is the minute whose accumulations add up to form the first number in the Horizontal Repetition of the block of repetitions under consideration (Refer to the shaded area)

← A Primary Point. Here a block of repetitions starts (shaded area).

← A Secondary Point. Looking at Accumulations Column for minute 11 (which is the minute at which we have assigned a Primary Point) shows an increase in the rate of accumulation. Also this point is near the end of the Vertical Repetition.

Validity of the "Subgroup Method" of Unitizing.

The observers of one group "unitized" the meetings themselves. To do this, they took account of emotionality humps, work humps, changes of subject-matter discussed, diagnosis of hidden agenda periods and the like. They confirmed their impressions of phases of the meetings by discussion with the trainer of the group. A year later, the meetings were studied intensively and re-diagnosed. At this time about a fifth of the unitizing decisions were changed on the basis of more adequate theorizing.

We regard the units so defined representing as wise a set of decisions as is currently possible. To check the validity of this simpler, objective "subgroup" method, the units selected blind-- by it were compared unit for unit with those selected by the observers.

The comparison, for meetings VI, VII, XI, XII --- the first 4 meetings unitized objectively, is as follows:

	Observers' Theory		Subgroup Method
Number of minutes unitized	316		316
Number of end points given	9		9
Number of Turning Points found	28		37
Number of possible perfect agreements on Turning Points		27	
Number of found agreements on Turning Points (within one minute)		17	
Percent Agreement of judgments of Turning Points		63%	
Number of units found	37		46
Number of units possible to agree upon		36	
Number of found agreements on periods (one or more units)		26	
Percent agreement on identical periods (one or more units)		72%	
Average length of unit	8.6 min.		6.9 min.
Average length of agreed upon periods		12.1 min.	

The results show that: 63% of the possible judgments made as to the ending of units agreed within 1 minute. 72% of the possible periods identified by both methods had the same starting and ending points. The disagreements were due to differences in the way those agreed upon periods (average 12.1" long) were further broken up into smaller units.

In view of the uncertainties of the "theoretical" bases, in which selecting breakpoints to the nearest minute is often sheer luxury, it is felt that this objective, blind method, based only on knowledge of who talked when, should be adopted.

It is also believed that the major theoretical assumption can be taken as proved: with each change of quality of group experience, there is a new pattern of participation.

G. Summarising the data for interpretation of dynamics during a meeting.

In line with the basic theoretical assumptions, the most significant information about the group as a whole is the change in distribution of energy into emotionality and work. At the macroscopic level of a two-hour meeting, it is changes in the group as a whole that we would first be concerned with. The job of interpretation is to explain why these changes happened.

To prepare for interpretation, each unit of interaction is plotted on a graph of average work vs. emotionality per contribution during the unit. The units are numbered in chronological order, and connected by arrows so that they can be followed more readily through the work-emotionality field.

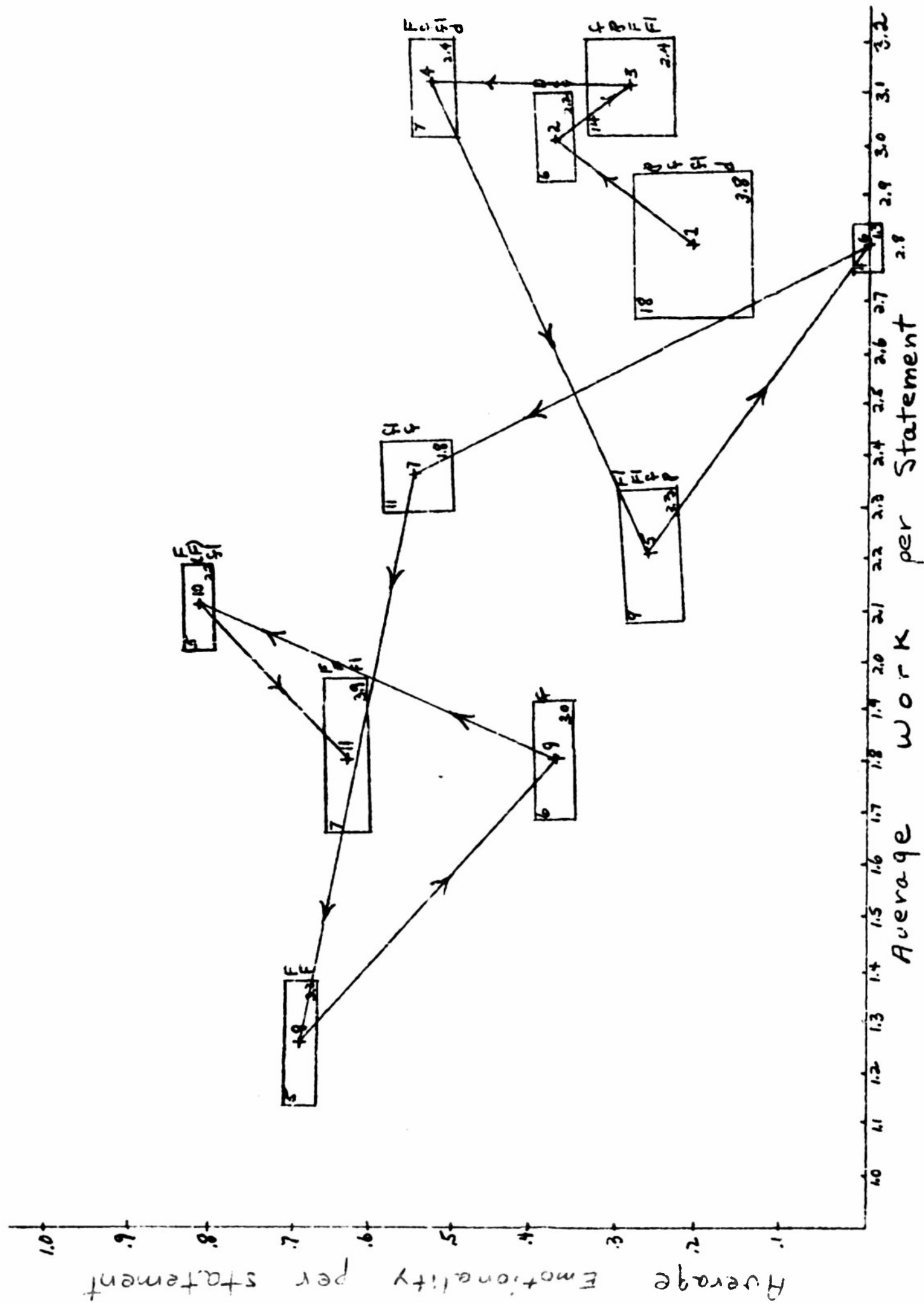
Each unit is located as a point in the center of a rectangular box. The width of the box is made proportional to the rate of interaction, and the height of the box is proportional to the number of minutes duration of the unit. The area of the box thus shows how many contributions are summarized within the unit.

Additional information is to be placed alongside the boxes, after we have decided on the method of classification. Such additional information might include the specific emotions expressed, the participants, "central" individuals, etc.

In addition to this graphic summary a summary of content for each unit is helpful.

One of our basic assumptions is that variations in work, emotionality and interaction rate are crucial. Different combinations of high or low work, emotionality and interaction rate reflect dynamically different situations in the group. Variations in these three basic factors can be represented graphically, as described above and illustrated on the following page.

Work, emotionality, and interaction rates for eleven natural units identified for Meeting 9, Group IV



The graph on the preceding page represents the ninth day of Group IV and is presented here as an illustration of the manner in which natural units may be represented graphically and used as the basis for interpreting group process on a macroscopic level. 92 consecutive minutes were rated during this day. Application of Ben-Zeev's unitizing method yielded 11 natural units. The interpretation which follows is based on information contained in the graph only.

A general inspection of the graph suggests that the meeting can be thought of as consisting of an opening phase (units 1-6), a brief transition (unit 7), and a second phase (units 8-11). The first phase is characterized by relatively high work and low emotionality, while the second phase is characterized by lower work and higher emotionality. The transitional unit--7--is crucial to this meeting. We can assume that during unit 7 the group was faced with some problem which it could not handle and which precipitated a movement into low work and high emotionality from which the group could not recover.

To discuss these units in more detail:

Units 1-3 represent a consistently high work level with emotionality relatively low and interaction rate moderate. These units represent high level, steadily maintained work which (probably) involves integrated and supportive emotionality. During these first three units there is a slight but steady increase in work together with some evidence of a heightened expression of emotionality and a reduced interaction rate. This suggests that the group is building commitment to the problem with which it is concerned--that this is an emotionally real problem for the group.

Unit 4 maintains the same high level of work and shows a further increase in emotionality. During this period the group can tolerate (and assimilate) greater expression of emotionality without losing its work orientation. Work and emotionality are well integrated and mutually supportive.

Unit 5 represents a breakdown from this highly integrated level: both work and emotionality sharply decrease and the interaction rate goes up.

Unit 6 represents the attempt of a few persons to recover a work orientation which does not require the integration or expression of emotionality. This is an attempt to check the direction in which the group is going. That is, it represents an attempt to move the group away from either the highly integrated work and emotionality represented in unit 4, or the reduced work and emotionality represented in unit 5, in the direction of a more abstract, less emotional, but work oriented manner of handling the problem.

Unit 7 represents a movement back to a greater expression of emotionality and lower work. The attempt to change the direction of the group (unit 6) has failed. Moreover, something happens during this unit to precipitate the group into

Unit 8, which represents a period of highly individually oriented expressions of emotionality (fight). This is a period of intermember attack and counter-attack. The moderate interaction rate does suggest, however, that the group is not out of control. Members are still listening to each other but have lost their group orientation and are expressing individual hostilities.

Unit 9 shows an attempt to recover by reorganizing the problem as a group rather than an individual concern. The decrease in emotionality suggests an attempt to deal with the problem on a more abstract or intellectual level.

Unit 10 indicates that this attempt fails. However, unit 9 has had some effect—it opens the way for the group to deal with the problem in a more group oriented way, while at the same time expressing emotionality freely.

Unit 11, the final period, again shows the group reacting in the direction of lowered work and greater emotionality. The group has not yet been able to recover its equilibrium after the impact of unit 7, nor has it been able to find a way of handling the situation presented in unit 7. The high interaction rate in unit 11 suggests that members are piling in with affect-laden statements quite freely.

In the following section we shall present, very briefly, a summary of the content of this meeting, so that the reader can see how content is related to the interpretations presented above and the position of each unit on the graph.

Unit 1: General discussion in which most group members participate: we each need to be understood; we need to be able to recognize and handle our own feelings; are we as a group afraid to handle emotional problems?; can we handle emotional problems?

Unit 2: Member 16 introduces a personal problem: "I used to be concerned about my status in the group. Now my contributions are conditioned by the needs of the group." The group reassures 16 that this is certainly movement in the direction of maturity.

Unit 3: The group as a whole accepts the need to "behave maturely" as a problem for the total group. "We ought to be able to handle our emotional problems in mature ways." They ask themselves if they can rely on the leader to handle emotional problems for them, and agree that such problems must be handled by the total group.

Unit 4: This seems to be a reaction to the seriousness and intensity of the preceding unit. The theme here is "Why do we get so involved? Do we really want to get so involved, and place ourselves in a position in which we have to handle emotional problems?"

Unit 5: The group answers its own question, not by saying "yes" but by accepting such a problem as a legitimate one for the group. Member 12 introduces a personal concern: "My problem is that I haven't felt involved enough." The group begins to deal with 12's problem.

Unit 6: The leader suggests that the group might want to role play. He is in effect offering the group a way of dealing with such emotional problems on a more abstract, less real (and consequently safer) level.

Unit 7: The group does not respond to this suggestion but returns to a direct discussion of 12's problem. Before the group is well started on this, however, Member 1 comes in with a long (two-minute), intellectual, and unrelated comment to the effect that "permissiveness and creativity are very close together....." (Some background is required here: 1 is the associate leader; in past meetings he has frequently made long, intellectual, hostile interpretations which have irritated the group but with which the group has been unable to deal.)

Unit 8: This is a period of attack, defense, and counter-attack between Member 1 and several other members of the group.

Unit 9: Member 9 introduces the problem of the way in which various roles become stereotyped. He offers himself (a preacher) as a case in point. This appears to be an attempt to handle the problem of Member 1 in an off-target, abstract way.

Unit 10: Member 1 again introduces a hostile interpretation: "You people are satisfied with this group yet some people feel withdrawn. I question the effectiveness of a group in which individuals don't feel involved." This time, in the face of attack, the group rallies and expresses its own strength: "We're involved in a way which is satisfying to us."

Unit 11: With this expression of strength, group members each express their own feelings about Member 1: "You feel things differently"; "You're reducing our feelings to formulae." etc. After this rush of expression there is a long, tense silence and the period ends in a mass flight out of the room.

The Prediction of Individual Behavior in the Group

Since the situation in the group is characterized in modality terms, the most useful information for prediction of individual performance would be information about how the individual reacts to the modality situation. For example, when the group is fighting, does he tend to fight, run away, become immobilized, etc.

Besides knowledge of the attractiveness of each modality for the individual (valency), we needed information about how likely and in what ways an individual would translate impulses into overt behavior in the group.

To give this information, a sentence completion test was constructed.¹ Each item portrays an emotionally-tinted incident or condition in the group, and implies a problem to be solved. The way an individual responds to the problem within its group-emotional setting, should presumably be an index to his behavior in similar real situations in an actual group.

Description of the Text

The test includes 44 incomplete sentences. Most of these present a well-defined problematic situation in a group and require the subject to project his reaction to the incomplete situation. 28 of the item stimuli were constructed so as to present one or another of five categories or modalities.

In the remaining 16 items, the stimulus is less clearly defined and is purposely either ambiguous or includes more than one identifiable modality. These 16 items are especially for purposes of "qualitative" analysis. The use of the modalities is illustrated in these examples:

¹A revision by the research team of a test described in *SSR Issues*, VI, 2, 1950, pp. 12-20.

Pairing

6. Since Jack liked some members more than others, he _____

Fight

9. when he realized he was angry at Phil, Charles _____

Dependency

13. when the leader offered to help him, Pete _____

Flight

21. when my attention wandered from the discussion, I _____

Work

7. When Sam said "let us get to the problem", I _____

A semi objective scoring system was devised, particularly to rate the 26 items constructed with the pure Bionic stimuli. The items are scored along three dimensions:

1. Accept-non accept. That is, whether the individual accepts or rejects the stimulus presented to him. Acceptance of the stimulus means that the subject operates to maintain the modality.

When the subject is presented with a fight stimulus and he maintains the fight, we say he has accepted the stimulus. An example: "When the group disapproved of his idea, Frank shouted at them." However if the subject had answered "became silent" or "looked to the leader for help" we would say that the subject had not accepted the Fight modality.

2. Overt-covert. In accepting or rejecting a particular stimulus, subjects may give evidence of an additional qualifying modality. For example these two statements would be rated acceptance of Pairing, yet they are different partly because of the accompanying overt modality:

When Len turned to me, I felt good
When Len turned to me, I was glad that we were going to be a team against the others.

The first statement was a simple maintenance of the pairing modality; whereas the second statement is acceptance of Pairing for the purpose of fighting the other members.

The covert column in the sentence completion system refers to a modality that is indirectly expressed or communicated by the individual. Reliability of such judgments may be difficult to attain because the expression is indirect and the judgment involves some inference.

e.g., When Harry said we needed help, Martin, "felt we should discuss the theoretical implications of group diagnosis first." This is a Dependency stimulus which would be scored Non-Accept of D with Overt, Work, and Covert Flight.

3. Manner of responding. That is, whether the subject responds with feeling, action, ideation or ambiguity. This enables us to tell whether the subject is liable to be an active participant or not. It also furnishes data on whether the subject will be active or introversive in regard to a particular modality.

The scoring system provides a semi-objective means of ranking or comparing subjects with regard to their behavior in the group situation. It serves as a first "sensitizing" step to "deeper" interpretation. It also provides a continuing check on any qualitative analysis that is made because it sets some limits on extravagant interpretations.

The scoring system was subjected to a test of reliability between scorers in a preliminary study by Bob Rodgers. The average per cent was found to be 86.2% for the accept-non-accept judgments; 78.8% for the Feeling, Action, Ideation configuration. The percentage agreement on the covert-overt judgment was much lower, ranging from 30-50% agreement.

Relationship between test scores and observed participation:

The relationship between the scoring system and the rating system of the group observer can be seen by the following example. A sentence completion test was given to five subjects and scored "blind". These five appeared later in a group-choice experiment. The following prediction of behavior for one member was made from the scoring system alone (a more refined analysis of this individual's behavior appears in the Sentence Completion Manual²):

In terms of the test totals, P., I., and F. appear to be the more important modalities this individual will exhibit in the group. However, only I. and P. can be expected to appear most important in this person's overt behavior. Most of the F appears to be contributed by the covert column. This means the F is less perceptible, more indirect in behavior. It is possible this indirect F may be perceived by a trained observer, but probably not by a naive observer or member of the group--at least at first. Pairing and Work are further strengthened as his characteristic modalities by the fact that the greater part of their total score comes from the modality initiated column. We believe that it takes more energy for an individual to initiate a modality than to accept the modality which is "set up" for him. Of the other modalities, it seems that FI appears occasionally; dependency is relatively unimportant. However there is another modification to be made: With such a large quantity of F in the covert column, some of this might be expected to spill over into the behavior of the person and possibly be overt when the subject is under externally stressful conditions. Generally, however, the data seems to indicate that these indirect expressions of F are likely to appear in conjunction with another modality.

The configuration of modalities this individual expressed in the group is seen in the following totals (Table 3). It appears that the rating by the observers follows the same pattern as shown by the sentence completion.

A validity study in which the individual described above served as one of five subjects is being completed.³ Hospital Clinicians

² Prepared by Dorothy Stock and Ida Heintz

³ By Phillip Gradolph and Ida Heintz

and Bion's clinicians (i.e., people familiar with Bion's framework) described each subject by sorting Q cards along a "most like" to "least like" continuum. Their only source of information was the Sentence Completion Test.

The Q sort utilized a factorial design based on the Bion's modalities. The factorial design had both overt and covert expressions of each of the modalities built into it, and thus permitted a fairly refined interpretation. For example, the overt and covert elements in the responses of the subject described above were most frequently characterized as a PF combination. That is, the clinicians saw overt pairing and covert fight as most characteristic of this individual.

Observers who had been present at the group choice experiment in which these five subjects participated (and who had rated the meeting) also described each member by throwing the Q cards. These observer descriptions constituted the reality criteria with which the clinicians' sorts were compared. This constituted a highly rigorous test of the predictive capacities of the Sentence Completion Test, since the clinicians were required to predict actual behavior in a specific situation, for which precise validity criteria were available; in addition, the instrument used permitted strict statistical comparison.

The results indicated that a good diagnostic clinician could predict to the .001 level the major modality that the individual is most likely to express and that modality least likely to appear for 4 out of the 5 subjects. This not only increases our confidence in this Sentence Completion Test as a predictive instrument, but also may be interpreted as a further indication of the importance of the

personality variable or individual valency in group interaction, since prediction of the type used in this experiment is dependent upon dominance of the personality configuration as a determinant of behavior in the group.

Table I Test Scores And Behavior Ratings of One Individual

Modality	Stimulus Accepted	Initiated	Covert	Total	Behavior Ratings
W	3	7	-	10	37
P	3	7	-	10	39
.	1	-	9	10	28
PI	3	2	2	7	10
U	2	-	-	2	3

The Composition of the Group: "Valency" Sub-group

The foregoing discussion approaches an understanding of group behavior from knowledge of the personality characteristics of individual members. We would like to outline another approach. In this approach we are concerned mainly with the alignments and affinities---the inter-relationships---which exist between and among members. We eschew the term sub-groups for describing these associations of members in favor of "patterns of inter-relationship" because the term sub-group connotes a permanence of structure and awareness on the part of it's members that does not necessarily characterize these inter-relationship patterns. If we were aware of the nature and the bases of these patterns we could understand with greater clarity and insight the activities and processes of group life.

When we proceed to explore such a problem within a Bionic theoretical framework the concept of valency becomes central. By valency we mean, (a) the propensity of an individual to be attracted to a modality state and (b) that individuals with similar propensities will operate together in some fashion to sustain that modality state. Thus by our definition we have indicated that members with a similar valency for a modality should enter some pattern of inter-relationship to foster this modality.

The balance of this paper will be concerned with a discussion of the techniques utilized and the types of data they reveal.

We have used the Sentence Completion Test to obtain valency data on group members. This test can give us either a quantitative score of valencies or it can indicate more qualitative information,

While we have some confidence in the validity of these measures of valency, the test itself does not provide us with a picture of the valency relationships among members in the group. We are interested in devising a way to study the communalities of valency which may exist among members. To deal with this problem we utilized the Q Sort technique. A Q Sort designed by Dorothy Stock and David Rosenthal was administered to two of the groups at Bethel (Groups I and IV). The instrument contains 60 items descriptive of common group situations. The group situations were classified under the modalities---fight, flight, dependency, and pairing---and two additional opposing states, counter-pairing, and counter-dependency. There were ten items for each of the six categories. An example of the items in each category is here included:

Dependency - "Liked to appear in a good light in relation to group leader".
Counter-Dependency - "Inclined to assume a directive role in the group."
Pairing - "Enjoyed personal interchanges with one or two particular members."
Counter-pairing - "Felt that social relationships were too intimate."
Fight - "Critical of other members."
Flight - "Tried not to show his true feelings."

The group member was asked to sort these items in a specific distribution which ranged from items he thought to be most like him to those that were least like him. In analyzing these data each Q Sort was examined to determine how the individual was inclined to see himself: this is taken as an index of his valency. Our purpose however was to discover the valency inter-relationships in the group. Consequently we employed the standard Q technique of Stephenson and inter-correlated the individual Q Sorts then factor analyzed the correlation matrix and rotated the factors. The results of these statistical manipulations are shown in Figure 1 and Figure 2. An examination of these Figures shows that the two groups differ in the character of their

factor distributions. The most obvious difference is that in Group IV nearly everyone is found on factor "A" and it emerges as a sort of general factor or "g". In fact there are only two persons who are not on "A", and one of them, #5, has a negative correlation (-1). We would expect that there is, within such a group, a well formulated set of behavioral biases. In Group "I" we do not find any such "g" but rather a random-looking distribution. Even at this first stage of analysis we can see that the Q sort is demonstrating some sort of differences between the two groups.

The next step is to organize these data into homogeneous groupings which we call clusters. We select out all persons who are on factor "A" exclusively and put them in a cluster, then we select out all who are on both "A" and "C" and put them in a cluster and so forth. The first two columns of Figure 3 and Figure 4 give us this information. The differences between the two groups now become more apparent. In Figure 3 we see that over one third of the group are exclusively "A" factor people and that two of the clusters have only one person in them. We see, also, that all the combination clusters---two factor clusters---have "A" as one of the factors. When we inspect group "I", however, we find that instead of one factor heavily populated we find that each factor has equal representation, there being four persons in each of the "A", "B", and "C" clusters.

In the two factor clusters it is interesting to note that there is no one on the "AB" cluster. This leads us to surmise that the "A" and "B" factor for this group may be in some way antithetical.

The next step in the Q technique is to identify the nature of these clusters. This is done by comparing the individual Q Sorts of the members

of any cluster. By so doing one can discover which items have contributed to the communality which led to the emergence of the clusters. Since all the items are coded for modalities we can readily determine the modality characteristics of the cluster. This is indicated in Figure 3 and 4 for the two groups. In addition, by inspecting the content of the items which contribute to the communality, it is possible to make an interpretation of the nature of the common self-concept in each cluster. A thumbnail description is given in the same table. The interpretations possible are more extensive than indicated here.

In respect to the last two columns for Group "IV", Figure 4 we see that the "A" factor which has been identified as Counter-pairing along with Flight and Dependency is operating in all clusters but one. The "A" factor is interpreted as a concern over emotionality in a group situation and a preference for control. A mechanism for dealing with emotionality is the maintaining of group centered orientation. While 14 of the people exhibit factor "A", only six of them are exclusively "A". The "AB", "AC" and "A-C" people tend to exhibit some modification in self-concept. The "AB" people manifest some resistance to conformity. The "AC" people have greater tolerance for emotionality than the pure "A", whereas the "A-C" people are more highly traumatized by emotion than the pure "A". The "B" person and "AC" person are both unique in the group. The latter is able to handle emotionality and is actively leader-aspiring in his self-concept whereas the "B" person is confused and has no resource or style for handling either his own emotion or that of others in the group.

We might summarize the analysis of the group by suggesting that it is mainly concerned with aspects of counter-pairing.

When we look at Group "I" we see that cluster "A" is made up of people who consciously attempt to be central people in the group and have some conflict around their relation to the designated leader. The "B" people are aggressive towards those making leadership bids and try to circumvent this by pairing against such persons. This means that the "A" and "B" clusters are incompatible in their self-concepts. The "C" persons are quite traumatized by emotion and are neutral in their position and passive in their outlook. Going along with the leadership represents the path of least resistance for them. The significance of the presence of "AB" cluster is heightened by the foregoing statements about "A" and "B". The "AC" people and the "BC" people have some overlap of self-concept but the "AC" cluster has as members persons who are concerned lest they lose status in a power struggle and are willing to accept the leadership to maintain the status quo and their positions in the group. The "BC" people like the "C" are upset by emotionality but see themselves as reacting to their discomfort. When we examine items classified as "Least Like" for "AC" and "BC" people we find that the "AC" people have in common as "Least Like" what is "Most Like" for the "B" cluster---that is to say, Fight is seen as least characteristics of them. In the case of the "BC" cluster the items "Least Like" for them are "Most Like" for the "A" cluster---that is, they see as least characteristic particularly counter-pairing and counter-dependency. This last observation tends to add internal consistency to the structural analysis that we have attempted. In summary we would say that the leadership aspirations of the "A" cluster could be the central problem for the group and that the other clusters indicate how they react to

such a situation. This then would be what we might call a dependency-counterdependency group whereas Group IV was primarily a counter-pairing-pairing group.

The analysis of data obtained from the Q Sort technique constantly forces on the reader the speculation of whether any of this communality of self-concept material has reflection in the actual group situation. This has yet to be rigorously investigated but we do have two findings that give us confidence that such is the case. The first finding is that the central people in the group I are the same people who are in cluster "A". In fact one of these people was the designated leader. When adding up the participation---the number of contributions---of the members for the three week period it emerged that the "non-participants" ie. those who contributed the least---were the members of (The Flight people which we termed passive) cluster "C". The actual figures on this are; Average number of contributions for C -62, Average for A -189 and the group average was 134. We would of course be interested in investigating many other hypotheses which are logically derived from the structure of the group as derived from the Q Sort. In particular we would wonder if the B people did tend to fight the A people and whether they tended to pair with the others. Would the A people tend to be followed by the B people? Would the C people only participate in very "safe" situations?

Techniques for investigating such hypotheses have already been suggested. Ben-Ze'ev's method of unitizing is in fact determined by stability of participation patterns. If we consider Thelen's method of graphic analysis we note that each box represents a behavioral unit. (P.36)

For this unit we can determine who are the participants, what was the nature of the modalities expressed and from the content we can categorize the nature of the topic. With such information it should be possible to test hypotheses like those above. Should we find that the self-concept data bears a relationship to group behavior then we feel that we have opened up the possibility of understanding the dynamics of groups as the interplay of dominant valency patterns and affiliations.

Figure 1

GROUP I

Factor Loadings*

Code No.	Factor A	Factor B	Factor C
1	-.39		.60
2	-.64		.40
3		-.45	
4			.34
5			.50
6		-.72	
7		-.63	.44
8	-.64		
9			.5
10		-.53	.48
11	-.30		.41
12		-.45	.33
13			.58
14		-.58	
15	-.53		
16		-.44	
17	-.70		
18	-.50		

*Loadings below .20 omitted.

Figure 2

GROUP IV

Factor Loadings*

Code No.	Factor A	Factor B	Factor C
1	.32	.48	
2		-.55	
3	.50		
4	-.24		.53
5	.54		.55
7	.31		.54
8	.42	.35	
9	.54		
10	.72		
11	.50		.42
12	.30		-.33
13	.14		-.45
14	.63	.65	
15	.37		
16	.65		
17	.32		

*Loadings below .20 omitted

Figure 3

GROUP IV

CLUSTER	MEMBER CODE NUMBER	MOST LIKE MODALITY	INTERPRETATION
A	3,9,10,15,16,17	C-P, Fl. D	Controlled, conforming - avoidance of emotionality.
AB	1,8,14	Ft. (A Factor)	Some resistance but acceptance of A Factor.
AC	6,7,11	F, Ft. (A Factor)	Desire to Pair but acceptance of A Factor.
A-C	12,13	C-P, (Fl. & A Factor)	Withdrawal from emotion and interaction with others more than A Factor people
-B	2	Fl., F., C-P	Confused fear of emotion
-AC	5	C-D, Ft., F.	Active, leader aspiring

Figure 4

GROUP I

CLUSTER	MEMBER CODE NUMBER	MOST LIKE MODALITY	LEAST LIKE MODALITY	INTERPRETATION
A	3,15,17,18	D, C-D, (C-P)	Ft.	Leader aspiring, conflicted regarding designated leader.
B	3,6,14,16	Ft. (F., Fl.)	C-P	Fight leader aspirants and pair with others against them.
C	4,5,9,13	Fl. (D)	C-D	Avoids emotionality, passive, neutral, accepts leaders.
AC	1,2,11	C-P (C-D, Fl. D)	Ft., F.	Concerned with own role in group. Accept leaders to preserve status quo.
BC	7,10,12	Fl. (C-P, D)	F., C-P, C-D	Actively try to prevent disharmony.

Next steps in research.

The two major objects of research are development of methodology and formulation of theory. The latter subdivides into the successive redefinition of concepts in terms of their relations to each other, and the production of substantive generalizations useful for guiding conduct: of leadership, training, organization, and the like. The most appropriate required developments arise from the problems and opportunities opening up through prior research and from the reformulated definitions of goals.

With the development of the above described methodology and findings, a large number of possible problems become clearly identifiable as realizable objects of inquiry. Some of these are listed below. The asterisks indicate the problems we intend to work on next.

1. The rigorous application of the method of sequential analysis--microscopic level---of group process to much untreated data in hand.

- a. To establish the personality variables most useful for prediction of individual role in situations defined by relationships among F, W, and I
- *b. To identify types of "central persons" and the functions they play under different conditions of F, W, and I.
- c. To describe the character of interventions by trainers, and to describe the assumptions on which their training policies appear to be based. To describe the effects of the group of various types of leader behavior in a variety of group-task conditions.

2. The rigorous application of the method of sequential analysis--macroscopic level---to much untreated data in hand

- *a. To discover conditions prevailing during major shifts of units with respect to W and E dimensions.
- b. To study relationships between W and F versus interaction rate, using the latter as an index of available energy

- c. To study further the relationships between the participation of "psychological subgroup" versus various W and E conditions.
- d. To describe the functions performed for the groups in relation to problem-solving by pure factor, and two factor, subgroups
- e. To ascertain the extent to which the dynamics of group operations can be adequately perceived as essentially the result of shifts in inter-subgroup cooperation and conflict.
- *f. To study the W and E conditions affecting the rate of build up, stability, and rate of disintegration of subgroups as uncovered by the subgroup method of utilizing.

3. The analysis of the development of group culture through further use of the 4 sort-factor method (Further experimentation)

- a. To ascertain the relationships between initial factor pattern and probable directions of change.
- b. To ascertain the extent to which consistently applied training methodology influence the development of the factor-pattern culture.

*4. The development of methods for composing groups for maximum efficiency in training, learning, action, etc., in limited task situations (Further experimentation)

- a. To test the implications of the "temperamental protagonist" or milieu therapy idea.
- b. To test the implications of the "central person" theory in relation to emergence and distribution of "natural leadership"

5. The exploration of the development of relationships between individual modality preferences (personality), the formation of "psychological" subgroups (4 sort factor), and sociometric sub groups.

- *a. Through comparisons of group structure as induced from their various approaches
- b. Through study of interpersonal feeling (tole) recorded by participants during the meeting in defined task situations
- c. Through study of interpersonal feeling reported by participants using Bloom's method of stimulated recall.