CHAPTER VII

SCHIZOPHRENIC PROCESS AND THE REPERTORY GRID TECHNIQUE

It would be recalled from the contents in the initial chapter that there have been made four broad approaches towards operationally defining the psychiatric concept of thought disorder and subjecting it to experimental attack. These are: (1) Dissociation (Kretschmer, 1936), (2) Deterioration (Babcock, 1933), (3) Concreteness (Kasanin, 1946) and (4) Over-inclusion (Payne et al, 1959). All of these have been further studied experimentally by various authors, including the present investigator who has focussed his light of experimentation on the last two approaches in the preceding pages.

It has also been pointed out that all of these four approaches are limited in that they describe the schizophrenic condition rather than define the schizophrenic process. Ultimately, each approach rests upon some kind of constitutional or typological, or undefined organic assumption so that the question of causal factors is bypassed; by-passed, that is, if we accept the view that such assumptions are fundamentally tautological. Moreover, these explanations do not refer back to the clinically observed behaviour upon which the concept of schizophrenic
thought disorder was originally based.

In an attempt to utilise a theoretical orientation which would not only operationally define the nature of schizophrenic thinking but would generate hypothesis as to the causal factors involved and which would comment specifically on the broad behavioural manifestations of schizophrenic thought disorder, the work to be described was carried out within the framework of Personal Construct Theory as proposed by Kelly (68).

It has been pointed out earlier that there is a distinction between the condition and the process of schizophrenic thought disorder. By condition is meant the circumstances essential to the existence of thought disordered schizophrenics. When we describe the abnormalities of such a patient, we are describing the condition of the disease. However, process refers to the causal factors involved in developing such a condition. How the disease has progressed, what is its course of development etc. Thus one refers to the present status obtained in the thought disordered schizophrenics while the other refers to the course of development or the progress of the disease i.e. the causal factors involved in the development of the disease. Condition of schizophrenic thought disorder has been studied by various authors with the help of variety
of tests and scoring methods including the present ones.

For studying the process of schizophrenic thought disorder, Kelly's Personal Construct Theory is very helpful and one of the techniques of studying this process is the Repertory Grid Techniques. The theory and the technique are described below.

**Personal Construct Theory**

Kelly's theory is based firmly on the assumption that all men may be thought of as "scientists" in the sense that each is concerned with the prediction and control of his environment. Further, each individual seems to develop his own personal repertoire of constructs by means of which he structures (conceptualises) his world and tries to anticipate events. These constructs may be thought of as the elements of a system by which the individual codifies his experience. Thus, the psychology of personal constructs is concerned with the ways in which personal construct repertoires can be described in generalized terms, it accounts for the ways in which they develop and change and the ways in which they can be utilized in accounting for individual behaviour.

The theory involves postulating a personal construct system for each individual, a complex series of
related "goggles" through which an individual views reality. The notion of process hinges on the idea that construing is a biologically purposeful process whereby an individual seeks to anticipate events. A construct is not merely a label; it is in essence a prediction. To construe a business as profitable or a woman as affectionate is to predict future events in relation to the elements construed and predictions are inevitably validated or invalidated or events prove the prediction to be irrelevant, i.e., the events turn out to be outside the range of convenience of the constructs used. It is in the individual's reaction to the emerging validational situation that the theory expects the process of change to subsist.

The three elements of the term "Personal Construct system" stress firstly that individual differences (in terms of varying validational experience) must be postulated as an integral part of the theory and their parameters described, secondly that a construct (as distinct from older term concept) is a predictive instrument and thirdly that constructs are hierarchically related and systematized.

Repertory Grid Testing

Kelly defined a "construct" as "a way in which two things are alike and by the same token different from a third." In order to elicit and examine verbal constructs
he and his associates developed the technique of repertory grid testing. The assumption underlying all forms of repertory grid testing is that conceptual relationships can be usefully inferred from statistical associations in usage. Thus, giving a single extreme example, if a subject nominates 40 people personally known to him and categorizes each in turn as Moral (emergent pole) or Not Moral (implicit pole) and Honest or Not Honest and we find that the 20 designated as Honest are also designated as Moral and 20 designated as Not Honest are also designated as Not Moral, then we can infer a high positive relationship (which can be measured in terms of its binomial probability) between the concepts Honest and Moral.

A variety of forms of the repertory grid test have been devised and used, e.g. by Landfield (72) and Levy (74) but the particular elaboration of the basic technique used in the present work to be described was designed on the line of Bannister (5). The description of the technique used would be clear from the experimental procedure detailed below:

Sample

The total experimental population consisted of 101 subjects out of whom 23 were adult schizophrenics. At the time of testing these patients in mental hospitals, and
they were firmly diagnosed as schizophrenics and adjudged to be thought disordered by the psychiatrists in charge of these patients.

Another group consisted of 78 matched adult normals, (matched in terms of age, sex, education, socio-economic status) who have never been hospitalized for mental illness, nor treated for mental illness nor officially diagnosed as mentally ill. Both the groups were fairly representative of their populations because they were as randomly drawn as possible.

**Test Administration**

The subject was asked to write down on 20 cards the names of 20 adult people known personally to him. It was explained that they might be people of any sort, liked or disliked, present or past acquaintances, but they must have been personally known to the subject.

These 20 cards were thoroughly shuffled by the subject and numbered serially 1 to 20. The subject was then asked to put cards 11 to 20 on one side and spread cards 1 to 10 out in front of him with the names upwards.

The subject was then given a card with the word "likeable" written on it and asked, using the word in his personal sense, to write down the numbers (not the names)
of the 5 most likeable people out of the 10 before him. The experimenter had before him a grid with the numbers 1 to 10 along the top and numbers 1 to 10 down the side. Number 1 to 10 on the top represented the 'liked' numbered 10 cards, bearing the names of people being considered by the subject. Along the first row of the grid, the experimenter entered a tick in the cells of the 5 people out of the 10 nominated as most likeable.

The experimenter then presented the subject with the second card with the word "serious" written on it, and the procedure described in the previous para was repeated, the cards being divided half and half.

The experimenter entered a tick in the cell representing each person nominated as among the 5 most "serious" in the second row of the grid. This procedure was repeated with cards 1 to 10 for the emergent poles of 10 constructs as under:

(1) Likeable (2) Serious (3) Prejudiced (4) Good (5) Aggressive (6) Lazy (7) Sincere (8) Uneducated (9) Religious and (10) Unreliable.

The subject was now asked to put cards 1 to 10 on one side and scatter cards 11 to 20 in front of him. He was then asked to sort these using the ten emergent poles of constructs previously given to him, in exactly the same
way and order as described for the first set. The responses were recorded in identical manner on a second grid.

**Test Measures, Scoring and Rationale**

From each subjects' protocol the following data are first extracted and these represent the raw material from which the 2 test scores are derived. The procedure is exemplified by reference to table I, which represents the first 3 lines of grids A & B for one subject. X represents a tick and 0 represents a blank.

**Table I**

Sample Part of Recorded Grids

<table>
<thead>
<tr>
<th>Grid A</th>
<th>People</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 2 3 4 5 6 7 8 9 10</td>
</tr>
<tr>
<td>Constructs</td>
<td>1</td>
</tr>
<tr>
<td>Constructs</td>
<td>2</td>
</tr>
<tr>
<td>Constructs</td>
<td>3</td>
</tr>
<tr>
<td>Constructs</td>
<td>to 10</td>
</tr>
</tbody>
</table>

Grid B
People
1 2 3 4 5 6 7 8 9 10

Matching Score, Grid A

Each line in grid A (for people one to ten) is compared with every other line and a matching score noted - two ticks or two blanks coinciding (vertically) represent a match, tick and blank or blank and tick are no match. Thus in table I:

For line 1 - 2 Grid A matching score is 4
For line 1 - 3 Grid A matching score is 4
For line 2 - 3 Grid A matching score is 2.

Matching Score, Grid B

Each line in grid B (for people 11 to 20) is compared with every other line and a matching score is noted - matching criteria as for Grid A. Thus in table I:
For lines 1 - 2 Grid B matching score is 6
For lines 1 - 3 Grid B/matching score is 2
For lines 2 - 3 Grid B matching score is 4

**Total Matching Score**

The matching score for each pair of lines in grid A is added to the matching score of the equivalent pair of lines on grid B, and the deviation (plus or minus) from a chance expectancy of 10 is noted, i.e. by chance, null hypothesis of no difference or equal distribution of matched and unmatched scores, the expectancy would be 10 for each type of score out of 20 points in grid A and B. Thus, in table I:

The total matching score for lines 1 - 2 is
\[
\text{total matching score for lines 1 - 2 is } A + B \text{ observ- } \text{ Expect } \text{ -ed ed}
\]
\[
0 \text{ i.e. } (4 + 6 = 10; 10 - 10 = 0)
\]

The total matching score for lines 1 - 3 is
\[
-4 \text{ i.e. } (4 + 2 = 6; 6 - 10 = -4)
\]

The total matching score for lines 2 - 3 is
\[
-4 \text{ i.e. } (2 + 4 = 6; 6 - 10 = -4)
\]

**Split-matching Score**

The deviation of the matching score of each pair of lines on grid A from chance expectancy on grid A (that
is 5) is added to the deviation of the matching score of the equivalent pair of lines in grid B (i.e. 5) regardless of sign, and this addition represents the split matching score. Thus in table I:

Lines 1-2 split matching score is

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Observed</td>
<td>Expected</td>
</tr>
<tr>
<td>2</td>
<td>(4 - 5 = -1; 6 - 5 = +1; 1+1=2)</td>
<td></td>
</tr>
</tbody>
</table>

Lines 1-3 split matching score is

4 i.e. (4 - 5 = -1; 2 - 5 = -3; 1+3=4)

Lines 2-3 split matching score is

4 i.e. (2 - 5 = -3; 4 - 5 = -1; 3+1=4)

The difference between the two measures lies in the fact that a total matching score treats the two grids as a unit, and thus if the direction of the relationship is reversed (plus to minus), the relationship will tend to cancel itself out, while the split matching score treats the two grids as separate units and makes relationships in either direction (positive or negative) additive regardless of sign.

Thus, for each subject, initial raw data covering comparisons of the 45 possible pairs of lines is extracted
and laid out as exemplified in table II.

Table II
Sample Part of Raw Data (Table Derived from Recorded Grids)

<table>
<thead>
<tr>
<th>Matching score Grid A</th>
<th>Matching score Grid B</th>
<th>Total matching score</th>
<th>Split matching score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lines 1-2</td>
<td>4</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>Lines 1-3            to 1-10</td>
<td>4</td>
<td>2</td>
<td>-4</td>
</tr>
<tr>
<td>Lines 2-3            to 9-10</td>
<td>2</td>
<td>4</td>
<td>-4</td>
</tr>
</tbody>
</table>

Rationale of Matching Scores

The rationale of the type of matching score described is simple. If a subject describes one person as being both 'Good' and 'Sincere', we cannot, from this one sample of the subjects' behaviour, infer anything about the relationship between the terms 'Good' and 'Sincere' for him. However, if in describing a large number of people there appears a persistent tendency for him to describe 'Good' people as 'Sincere', then the binomial probability of this occurring by chance becomes increasingly remote and we are increasingly justified in inferring that for the subject there is some kind of conceptual relationship between the terms 'Good' and 'Sincere'. Thus, a matching score derived
from a number of yes-no categorisations in the manner described is a form of correlation coefficient (or more nearly chi square) measuring the tendency for the terms to be associated or to occur independently or for one to occur repeatedly in the absence of the other (negative association or correlation). From this tendency to association we infer structure and it is precisely the nature of this structure which Personal Construct Theory attempts to define and describe.

In this experiment each subject is supplied with the same 10 constructs and he sorts the 20 people known personally to him in terms of the ten bipolar scales suggested to him by the construct labels supplied. The use of matching techniques enables us to compare each pair of constructs in turn and to assign to the comparison a numerical value which ranges from no matchings (which means that two labels are exactly opposite) to matching around chance level (which means that there is no manifest relationship between the construct poles labelled), on to complete matching (which means exact equivalence for the subject of the two construct pole labels).

**Derived Measures**

In order to study the process of thought disorder, two other scores were derived from the above raw matching
scores. These are: (1) Scores for consistency of relationship and (2) Scores for intensity of relationship. The derivations are explained below:

(1) **Consistency of Relationship**

(a) Scoring: Reference to Table II shows that for each of the 45 pairs of constructs, 2 matching scores are available, one from grid A and one from grid B. For each subject, a Pearson Product-Moment Correlation Coefficient is run between the pairs of readings (matching scores) for the 45 pairs of constructs. The square of this correlation coefficient multiplied by 100 is the consistency of relationship score.

(b) Rationale: If matching scores derived in the manner described reflect structure, and if, as Personal Construct Theory suggests, a relatively stable structure is characteristic of construing systems, then we would expect a significant positive correlation between matching scores (structural pattern) on grid A and equivalent matching scores (structural pattern) on grid B. We could consequently expect failure to achieve such a significant positive correlation in test performance to be associated with pathological processes.

In fact, as will be seen when the results are
reported, of 101 subjects used in the main experiment, the consistency of relationship correlation coefficients of all were significant beyond the .01 level.

Since correlation coefficients are not linearly related they are unsuitable for direct use as scores. In view of this, for normalising, square transformation was resorted. Thus all scores have been squared and multiplied by 100 to give "variance in common" scores which are linearly related.

It should be noted that the coefficient of correlation derived here is not the equivalent, say in intelligence testing, of a test-retest reliability coefficient, since virtually no time elapsed between the making of the judgments recorded in grid A and the making of the judgments recorded in grid B. Nor does it resemble the split-half reliability coefficient since matching scores on grid A reflect comparisons made by the subject of the people on grid A and matching scores on grid B, separately and independently reflect comparisons made by the subject of the different people included in grid B. There is no equivalent here of the extraction say, of odd and even numbered questions from a unitary test, such as is commonly carried out in split-half reliability test. If the correlation used here has any kinship with correlations used
in standardizing intelligence tests, it is with the "equivalent form" type of correlation where two forms of intelligence test, equated as far as possible for difficulty level are given to the same subject often with the clinical aim of detecting pathological process.

The measure of consistency of relationship assesses something which might by many psychologists, be termed stability or even rigidity in conceptualization.

(2) Intensity of Relationship

(a) Scoring: The subject's intensity of relationship score consists simply of the total of his split-matching scores, the derivation of which has already been given with reference to table I and II.

(b) Rationale: The rationale of the intensity of relationship score is essentially the same as the rationale of matching scores themselves; the deviation of matching scores from chance level is taken to indicate relationships between constructs, by inference conceptual structure; the degree of this deviation is taken as an index of the strength of relationships and, by inference, strength of conceptual structure.

Hypothesis and Results

Working within the framework of a novel theory
and technique and attempting to discriminate between groups very broadly differentiated on a diagnostic basis, hypotheses are necessarily general. Although, Kelly proposed Personal Construct Theory as an elaborate description of normal behaviour he did make specific comments in the light of his theory about various psychological abnormalities and with reference to schizophrenia he suggested that it was characterised essentially by "loosened construing". A loose construct in terms of his theory is defined as a construct which leads to varying predictions but which retains its identity. It can be argued that the varying predictions of a loose construct are consequent upon the construct having weak relationships with surrounding constructs in the hierarchical system; its predictions are not made specific or focussed by a constellation of associated construing patterns.

Specific hypothesis and results are given below for each measure in turn.

Consistency of Relationship

Tables III and IV below show the results of the application of 't' test to test the significance of difference between two groups with respect to Consistency scores and Intensity scores respectively.
Table III

Consistency of Relationship

<table>
<thead>
<tr>
<th>Groups</th>
<th>Normals</th>
<th>Thought disordered schizophrenics</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mean</strong></td>
<td>28.48</td>
<td>2.52</td>
</tr>
<tr>
<td><strong>S.D.</strong></td>
<td>21.95</td>
<td>2.55</td>
</tr>
</tbody>
</table>

\[ t = 10.22 \quad \text{Significant beyond .01} \]

See Appendix for details

Intensity for Relationship

The hypotheses here were identical with that made for Consistency of Relationship measure.

Table IV

Intensity of Relationship

<table>
<thead>
<tr>
<th>Groups</th>
<th>Normals</th>
<th>Thought disordered schizophrenics</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mean</strong></td>
<td>152.88</td>
<td>137.13</td>
</tr>
<tr>
<td><strong>S.D.</strong></td>
<td>29.85</td>
<td>19.9</td>
</tr>
</tbody>
</table>

\[ t = 2.86 \quad \text{Significant at .01} \]

Here again thought disordered schizophrenics had relatively homogeneous scores differing in this respect
significantly from normals (.01 level).

Assessment of Results

As reported above two measures for differentiating thought disordered schizophrenics from normals were adopted namely - Intensity of relationship and Consistency of relationship. Consistency of relationship has been termed as kind of abnormality in the case of schizophrenics, while normals are always consistent and coherent in their thought processes. This has been justified in the consistency of relationship measure. The 't' is (10.22) and is highly significant which means that schizophrenics are inconsistent as compared to normals.

The second measure reflect the relationship among different constructs and the deviation of a matching score from the chance expectancy in one grid is the measure of this. It can be argued that the construing system and consequently the relationship among constructs will be looser in the case of schizophrenic group than that in normals. The obtained 't' between the scores in 2 grids (as explained above) is 2.86 and it is significant beyond .01 level which indicates that schizophrenics maintain a very poor relationship among constructs.

The Schizophrenic Process

Current theories concerned with schizophrenic
thought disorder were adversely criticised on the grounds that they are purely descriptive and do not suggest a mechanism for the condition which they describe. If we accept for the sake of argument that weak construct relationships in the sense in which they have been here experimentally demonstrated are central to schizophrenic thought disorder, then we can refer to construct theory as a whole for possible hypotheses concerning process. The line of thought which immediately suggests itself hinges on the idea that changes in construct systems are related to their validational history. For example, if the construing of a person as "loving" is invalidated, then the tendency may be to construe the person in the contrast pole as "hating", but the acquaintance may then exhibit behaviour more appropriate to the "loving" pole and we may duly shuffle him back to be construed under that pole. However, if invalidation occurs in this manner repeatedly, the tendency may be to regard the construct as in itself inadequate to subsume the elements (behaviour of the acquaintance) under consideration and may itself be, in some way, modified. This modification could take the form of loosening the construct, that is to say, weakening its relationships with other constructs, so that it leads to varying predictions (the definition of a loose construct). Thus loosely to construe a person as "loving" would not be automatically to anticipate from him "sincere" and "likeable" and so on in behaviour, since the
relationships between the constructs namely constellated with "loving" have been weakened. In this way, the construct would be damaged as a predictive instrument since it would lead to varying predictions, but it would be strengthened as an explanatory instrument, since it would be capable of covering events.

Naturally, this type of explanation will have to be elaborated to account for interaction effects once parts of a construct system had become weakened and to set up parameters for the change process as a whole. However, construct theory does appear to contain the postulates and terminology necessary for this kind of causal analysis. Since invalidation could be produced in a laboratory setting and since in Repertory Grid Techniques we have an instrument potentially capable of measuring construct changes of various kinds, hypotheses set up from this source should prove testable.

The Clinical Signs of Schizophrenic Thought Disorder

The characteristics of the talk of thought disordered schizophrenics which gave rise to the psychiatric concept of thought disorder in schizophrenia, have already been given in the terms used by Mayer-Gross, Slater and Roth (1954). In terms of loosened construing, as defined in the present work, can these particular characteristics
be at all accounted for? Let us examine.

(a) The first characteristic is "in consequential following of side-issues". As has already been pointed out, the whole idea of relevance seems to be related to the idea of structure and relationships in constructs. If we are talking about politics then we utilize the whole construct sub-system which we have developed to subsume elements normally thought of as political. If relationships between constructs and between construct sub-systems have been loosened, i.e. weakened, then the focussing and the restricting effect of the construct sub-systems will be lost and incidental features of construct symbols may lead us out of the field altogether.

(b) The next group of characteristics particularized were the tendencies for the thought to be directed by alliterations, analogies, clang associations, associations with accidents of the speaker's environment, symbolic meanings and the condensation of several (perhaps mutually contradictory) ideas into one and the use of words out of context. It can be generally argued that construct relationships are in fact what we usually refer to under the term "meaning" and tentative experimental validation has been given for this assumption. If, therefore, construct relationships are weakened, there is, ipso facto, a weakening in
meaning. Normally, our talk is firmly anchored in the meaning of terms, but if meaning grows weak, other more or less meaningful aspects of terms may begin to guide our talk. Clang associations, condensations and so forth, become important and begin to affect tenor and direction of thought, precisely because the anchoring effect of strong meanings is lost.

(c) The characteristic of "clinging to unimportant detail" is particularly interesting, since it obviously implied "important in normal thinking". The importance of details is a function of the super ordinacy in the hierarchy of the personal construct system of the particular constructs which normally subsume them. If a person's construct system has loosened, then subordinate/super ordinate relationships between constructs may have altered in direction, or at least been proportionately minimized. Thus, in the eyes of the schizophrenic, he is obviously not "clinging to unimportant detail" but persevering with a consideration of some aspect, within his loosened frame of reference, now occupies a relatively super ordinate position.

(d) The next two characteristics refer to vagueness and poverty of ideas, features which seem consistent with the idea of loosened construing. Again, if we construe loosening as "loss of meaning", the rich and intricate pattern of
significance produced from a complex and structured net
work of constructs will disappear under loosening and some­thing more nearly approaching noise in the guise of verbal
symbols may result.

(e) Finally, 'indications of thought blocking'
and 'indications of pressure of thoughts' are judged to be
the characteristic of the talk of thought disordered schizo­
phrenics. At a lower level of abstraction this could be
described as a tendency to produce either unusually rapid
talk or talk marked by pauses more frequent and longer than
usual. To explain this abnormality we must first consider
what governs the rate of production of thought in normals.
If we consider talking and by inference thinking, to be a
process of serial construing, then at the end of each "unit
of construction" a person is faced with a related net work
of constructs, relevant because they are structurally related
which he must scan in order to select the next "unit of
construction". It is the existence of this related net work
of constructs, which regulates speed of talk and thinking,
both insofar as the relationships ensure that further
channels for construing are available, thereby facilitating
continuance of thought. This net work of relationships is
definitely not a single continuous line. The net work of
relationships sets up optimal speeds of talk by presenting
a sequence of multiple choice situations. Once construing
is loosened, as for the thought disordered schizophrenic, the optimal and minimal speeds of construing are widened and greater variability can be anticipated, the weakening of constructs may also reduce the number of related constructs and thereby reduce the number of items in each multiple choice situation, this facilitates more rapid talk. At more severe levels of weakening by loosening, constructs may be produced which relate to virtually no others, thereby presenting not a reduced choice of channels, but no channels whatsoever, with consequent blocking.

This type of explanation designed to account for the specific characteristics of talk in thought disordered schizophrenics has, perhaps, little value without operational definitions and experimental realization, but it seems necessary to indicate that there are no obvious contradictions between the phenomena of thought disordered talk as it presents itself and the explanation in construct terms given for the schizoid condition as a whole.

Suggestions

In brief, an attempt has been made in the just preceding pages to study schizophrenic process with application of Repertory Grid Technique and the results are obvious. However, it should be noted that in the experiments described, the explanatory concepts and the techniques were deliberately stretched to their limit for "pilot"
purposes and until the work is replicated and extended. Conclusions can only be of a most tentative kind. However, three possibilities seem worthy of further examination:

(1) That Personal Construct Theory may prove a useful orientation for experimental work in psychology.

(2) That Repertory Grid Techniques may provide a useful mode of investigating aspects of conceptual relationships.

(3) That weakening of construct relationships as defined in the work reported, may be a useful explanatory starting point for an attack on the clinically observed phenomenon of schizophrenic thought disorder.