

The Mosaic Test

By Margaret Lowenfeld

The Mosaic test arose out of a desire to find means through which individual difference between person and person could be expressed in a standardised medium.

It was designed in the years directly following the 1914-1918 war at a time when I was in touch with people of a number of Europe nationalities and is based upon the colours and shapes used on European peasant design.

Study of such patterns showed that in the main they could be reduced to combinations of five fundamental shapes; the two commonest quadrilateral figures, the square and the diamond, and three triangles. These are interrelated with each other through a common length of side. It was hoped, and the hope has since been realised, that the five fundamental shapes which were adopted for use in the Mosaic test could be employed to construct patterns of great completion and aesthetic value.

The actual pieces adopted in the original equipment were selected out of a variety of material made for other purposes by a firm in Czechoslovakia and the original dimensions are: squares $1 \frac{3}{16}$ inch. in length; diamonds with sides of $1 \frac{3}{16}$ in. and angles of 45 degrees and 135 degrees; equilateral triangles with sides equal in length to the hypotenuse of the half squares (approximately $1 \frac{9}{16}$ in.); and scalene triangles which were half the size of the equilateral triangles. All pieces were $\frac{2}{16}$ in. in thickness.

The final sets of material were made on the Continent of Europe, of wood stained and polished to give it a pleasing surface. Since the 1939 war, this material has been replaced by similar material made of plastic. The colours are brighter and gloss is attractive, but for reasons of expense it has been found necessary to adopt a thickness of $\frac{1}{16}$ in.

The **number** of pieces was standardised in such a way that the number of pieces of each shape was sufficient to make possible the construction of the basic designs or fundamental patterns for that shape in every colour. The 'basic designs' are the simplest forms of patterns, which can be made with each type of piece. In the complete large box, these numbers are doubled, so that there are altogether here 456 pieces; 48 squares; 96 diamonds, 96 half squares, 72 equilateral triangles, 144 scalene triangles.

It was found that records of the patterns constructed could most easily be obtained by requiring the pattern to be made on a piece of paper. The tester would afterwards trace round the piece with a pencil. Much later it was found that the use of a framework provided by a standard sized **tray** (12 3/8 x 10 1/4 in.) upon which the pattern was made. (1) standardised tile construction; (2) limited the time taken in construction; (3) assisted the tester in interpreting the pattern.

To get scientifically comparable results it has been found essential to keep to carefully uniform instructions and a paper of instructions is supplied with each box.

The essentials of these instructions are:

- a. That the contents of the box be explained to the individual about to use it.
- b. That the pieces used for demonstration should be put back in the box so that they do not act as a suggestive starting point, and
- c. That the actual wording be varied to suit the age of the child. It is important to stress the point with shy children that there is no 'good' or 'bad' result and the test is not one of intelligence.

If the design which results appears to represent or suggest any concrete object, the maker should be asked if the design is intended to represent anything. In using the test with adults, it is wise to ask, after the design has been made, the following questions :-

Do you like this design? Are you satisfied with it? Is there anything you would alter if you had more time - different pieces, different designs or different conditions? The time usually allowed for routine testing is twenty minutes if the materials as being used as a test. In therapeutic use no attention is paid to time.

Record.

The quickest and most practical method so far found for recording patterns is that each piece is outlined quickly with a sharp pencil, the piece removed and the initial letter of the colour lightly written in the space, B standing for blue and BK for black. Parallel lines in a firm crayon in the requested colour filling in the piece makes a good method of recording.

Development of the Use of the Test.

The set once having been constructed, patterns were obtained from a large number of people of all types and ages and it was found that in spite of their apparent variety patterns made by normal people could be classified into five main groups: abstract patterns, with three subdivisions of compact, intermediate and spaced, representational patterns, and conceptual, and to these later an extra group was added of 'small patterns' for people who made several small patterns at one time. Finally, occasional instances were found where the maker superimposed the pieces on one another. Sometimes he laid out a whole sub

Finally, occasional instances were found where the maker superimposed the pieces on one another. Sometimes he laid out a whole subsidiary design on top of a larger one, like a raise badge. Some individuals piled pieces of the same shape upon one another; still others stood the pieces on their edges.

When, however, patterns were obtained from young children, and from neurotic and psychotic patients, additional categories were added. These were:-

A. Incoherent and Compact

1. The pieces are pushed together in a mass which as a whole is completely **incoherent** and lacking in design of any kind.
2. The mass contains small '**islands**' of design, but no over-all pattern.
3. The islands coagulate into large 'slabs', with the pieces to some extent fitting together geometrically; but again, no over-all design is achieved.

Any of these three types may cover the whole tray, or only part of it.

B. Incoherent and Spaced

1. Pieces are put down at random on the tray, either in complete isolation, or in twos and threes without any relationship to one another which is apparent to the outside observer. Study of patterns made by psychotics has shown that the isolated pieces can have a personal significance for the individual. This will be discussed in detail in the succeeding paper
2. '**Islands**' of pattern are scattered about the tray. The pieces in these islands fit together in a simple way, with spaces in between them, but each island has no relationship to any other that is apparent to the observer.
3. The islands may come closer and closer together, finally merging into category A(2).

C. Unsuccessful.

There may be a fairly coherent and integrated design, but with some degree of asymmetry (unless this had been intended), or in some cases with one half of the design missing (see Fig. 3c). This is called an 'unsuccessful' pattern because, when it is discussed with the maker, it becomes apparent that he intended to make a complete symmetrical design; that he is only partially aware of his failure to do so; or that he is unable to complete it successfully.

D. 'Small patterns'.

Here two or three patterns are made, which are not in themselves unsuccessful, but the maker is apparently unable to integrate them into a large pattern. This is not necessarily a sign of neurosis, but does indicate a failure of purpose or integration of character in the individual.

E. 'Intermediate'

(i) 'Corner and edge':

These are made only by neurotics; there are no corresponding patterns made by normal;

- (1) A small piece of pattern is made on one edge or in one corner of the tray.
Sometimes this may be quite a good design in itself, but is rarely so with the more neurotic individuals.
- (2) The pattern extends quite a long way along the edges.
- (3) The pattern extends all-round the edge of the tray.
- (4) The pattern grows out from the edges or corners extending towards the middle, as if attempting to get somewhere but not succeeding.

This type of pattern may merge into A(2) and B(3). The pattern may cover the Whole tray.

(ii) 'Frame and item':

In this type of pattern, there is a 'frame' of pieces (not necessarily coincident with the edge of the tray), and, separated from it, a group of pieces forming a design in the centre.

(iii) 'Hollow centre':

Here the design may be quite coherent and well-integrated, but its centre is empty

F. Representational

(1) The maker of the pattern is quite satisfied that it represents some real object, etc. but this is quite inappreciable to anyone else.

(2) The representation nature of the pattern is observable, but it is in some way grotesque, in shape, colour or arrangement (i.e. resembling somewhat a 'surrealist' picture).

(3) The subject of the representation is queer, e.g. 'a dragon with black boots'. The process by which these were produced, and their meaning to the maker, were discussed in the succeeding paper.

(4) The pattern is 'unsuccessful'.

In a further study by comparing the patterns made by the same individual adult on successive occasions, sufficiently far apart to eliminate the effects of practice and memory, the following fundamental characteristics of the test were discovered.

It was found that certain changes in the character of some of these individuals tallied with certain typical changes in their patterns. Thus, when the second pattern appeared to be better integrated than the first, or its parts more exactly differentiated (the 'good articulation' of the Gestalt psychologists), then the individual's functional powers in the use of his abilities had also improved. On the other hand, when the second pattern was less highly integrated, or more 'shapeless' than the first, it was found that his capacity to utilise his powers in his dealings with life in general had deteriorated.

It was also found that individuals who had maintained their emotional equilibrium and a stable relationship to society construct at different times patterns unchanged in basic form, although possibly altered in colour.

These conclusions were checked by studying the patterns of children. It was found that children of high I.Q. on the Binet test, but of poor educational attainments, tended to construct patterns using the same pieces as those which would be used by

children of the same age and intellectual ability, and of normal educational attainment. But the designs of the former were unusually limited and constricted. Thus it was deduced that such types of patterns characterised children who lacked energy to use their cognitive powers in a free and normal fashion. It was then found that if psychotherapeutic treatment was successful in bringing the educational attainments up to the level proper to the I.Q., by the release of inherent cognitive abilities, then there was a corresponding improvement of pattern. Further evidence was provided later by the comments of neurotic and psychotic adults who, after making very elementary patterns, said they had designed more complicated patterns 'in their heads' but could not find sufficient energy to construct them.

If, on the other hand, successive patterns were made by a normal subject not undergoing emotional stress or characterological logical change, a remarkable constancy of pattern appears. Experience shows that patterns made after the passage even of years maintain the same characters.

The question of the use of colours in construction of the patterns is interesting and there are a number of varieties.

1. There is a complete disregard of colour, i.e. the maker attends only to the shape of the piece with which he makes his design, and does not mind what colours he uses.
2. One colour only is used, or two strongly contrasting colours, such as black and white.
3. The pattern is banal as regards the shapes used, but the colours make it into a 'good' design.
4. The form of the design depends about equally on the shape and colours used.
5. The use of colour in relation to shape is highly original and artistic. Certain particular arrangements of (1) black, (2) red, (3) white, are characteristic of certain forms of neurosis or emotional instability which will be discussed in the succeeding paper.

Interpretation and Standardisation.

The essential feature of the Mosaic test which must be fully recognised before my attempt is made at interpretation of the mosaics, and further at the standardisation of interpretation, is that the pattern made by any individual must be considered as a whole from the point of view of what might be called its 'significant form'. It has been found that the pattern is a direct reflection of the balance between, or inter-relationship of, those qualities of the individual which can be expressed in pattern form. The same balance of qualities would manifest itself in any other work, such as painting, embroidery, etc. carried out by that individual, had he the technical skill to execute them. The Mosaic test obviates any difficulty in expression due to lack of technical skill. Thus, an individual who spontaneously makes a symmetrical pattern must- have a 'feeling' for symmetry' which has a definite and significant relationship to that individual's personality as a whole, and which would appear in his use of material other than the Mosaic material. However, aspects of the pattern such as symmetry cannot be considered in isolation but must be related to all its other aspects. And the process of evaluation of mosaics and the identification, from a large group of patterns of the same category, of the patterns made by a single individual, bear a close analogy to the procedure applied by art critics in the recognition of the work of specific masters earlier than those of the 18th century.

It is clear that no exact numerical scoring of the number of pieces of different shapes and colours used in a particular mosaic is of any value in interpreting the significance of the mosaic. Neither can the simple classificatory categories, compact, spread, etc., be interpreted in isolation from the other aspects of the shapes, colours and arrangement of the selected pieces.

All these factors must be observed in their formal relationships to one another, and my quantitative assessment, for instance of amount of incoherence, is irrelevant. Thus, the Mosaic test differs from the Rorschach test, the interpretation of which depends on the relationships between the numerical scores for different categories of response. Moreover, in both the Rorschach and Thematic Apperception tests, there are no overt formal properties of the response which can be directly perceived and evaluated.

It will be found that patterns made from time to time by the same individual will vary in detail as regards the exact pieces used, but will retain the same fundamental interrelationships between the different formal aspects of the pattern. In other words, the characteristic pattern of any particular individual is like a 'Gestalt' which can retain its essential form although all its constituent parts were altered — rather as does that of his handwriting. To test this fact, certain experiments were made to find the type of pattern that would be made with another set of geometrically interrelated pieces shaped differently from those of the standard pieces. For instance, hexagonal pieces were used. It was found that the general form of the pattern produced by any particular individual was the same as that made by him with the standard pieces.

Thus, the standardisation of the Mosaic test depends in the first place upon the establishment of the fundamental categories of pattern made by all varieties of people of all ages.

This process has been described in the preceding sections. Secondly, these formal categories and their inter-relationships must be associated empirically with certain consistent and inter-related qualities of the individuals who make the patterns which qualities are directly expressed in the forms of the patterns.

Procedure for the record and interpretation of Mosaic patterns.

A. First State.

The pattern should be:-

- (1) Drawn and coloured.
- (2) Particulars of the subject noted. (Name, age, sex: if an adult it is useful to note also occupation and hobbies, if a child, the class in school and the I.Q. if known, if a patient the condition for which referred.)
- (3) Classified according to the classes set out above.
- (4) Use of colour noted and described.

Comparison of 2 and 3 and experience with the use of the test will enable the observer at this point to put the pattern into the following provisional categories:

(a) 'normal', (b) 'defective' (c) 'neurotic', (d) 'psychotic'.

(These categories are in inverted commas because the second stage of examination may shift the pattern from one to another class.)

The material is now ready for more detailed examination.

- (a) Incoherent, edge, corner, frame, frame and item designs may belong to classes (b), (c) or (d).
- (b) Very small patterns, whether successful or unsuccessful may belong to (b), (c) or (d).
- (c) Well-constructed centred patterns may yet belong to (c).

B. Second Stage.

1. Patterns falling into Groups A and B need to be compared with age and intelligence record and with the remarks made by the subject about them. Example. If a subject with a mental age approximately equal to or above his age makes an incoherent pattern then the pattern moves from class (b) to classes (c) or (d). It may not be possible on a single pattern to get closer than that to an identification, but in many instances of designs made by psychotic patients the comments made by the patient concerning the design enable it to be placed in class (d).

Similarly with a simple edge design, it is possible for this to belong to (b); comparison with school achievement or I.Q. will enable the observer to place it in (b) or (c) and the clinical record of the patient to decide if it is (c) or (d) (the last is unusual).

2. Experience with patterns of industrial workers has shown that some perfectly normal individual with a satisfactory work record, but from a simple cultural

background, will make several small patterns. On the other hand, these are also made by children, defectives and neurotics. It is the quality of the patterns and the relation between the patterns which determines the class.

Detailed examination of the characters of the patterns of (A) and (B) and comparisons of patterns of (A) and (B) and comparisons of patterns made by the same subject at different dates enables a great deal of information to be gained about the nature of severity of the neurosis and to throw light upon the psychosis, from which the subject is suffering.

3. Centralised patterns can show an almost infinite variety – in deciding whether a neurotic or psychotic element is present the following factors have to be considered:-

- (a) Complexity of the pattern in relation to the intelligence of the subject.
- (b) The use made of colour.
- (c) The general form of the pattern.

Under this head a considerable list of different points has to be considered which need more detailed knowledge for their evaluation, but the following forms have been found definitely to indicate neurosis:-

Winged patterns.

Patterns made in the shape of a well-marked cross.

Patterns constructed in such a way that they would easily fall to pieces.

Heavy use of black for other than purely decorative reasons.

Patterns made with a serrated red edge. |

If a centralised pattern **in its form** suggests the presence of neurosis or psychosis, it is well to get on a near date a second pattern from the subject for comparison.

Use of the test in specialised categories of subjects

I. Mental Defective Individuals

As in the response to tests of intellectual achievement a close correlation is found between patterns made by young children and those of mental defectives of all ages.