HALLUCINATIONS AS A DISORDER OF GESTALT FUNCTION

By

FRANK FISH, M.B., M.R.C.P., D.P.M.
Senior Lecturer

ALISTAIR FORREST, M.D., M.R.C.P., D.P.M.
Lecturer
Department of Psychological Medicine, University of Edinburgh

and

E. MACPHERSON, M.A.
Senior Clinical Psychologist
Royal Edinburgh Hospital

THE authors wish to describe and discuss a patient suffering from a sub-acute organic psychiatric syndrome, who appeared to have visual hallucinations. One of us (F.F.) had been interested in the attempt of K. Conrad (1953a, b) to apply Gestalt Theory to the psychiatric syndromes due to coarse brain disease. When he heard of this case, he felt that the psychological approach of Conrad would explain the patient's unusual symptoms. The case was under the immediate care of Dr. A. Forrest and psychological testing had been carried out by Mr. E. Macpherson. The three authors decided that the case merited publication in view of its considerable clinical and theoretical interest.

The patient, D.B., a 69-year old gardener, had enjoyed good health until January, 1957. One night, while reading the newspaper, he found that the letters were turning upside down, and although he could see the print, it made no sense to him. He was seen by an ophthalmologist and his eyesight was reported to be satisfactory. Coming home from work one evening in April, 1957 he found that he was unable to grip the handlebars of his bicycle with his left hand. He staggered while walking, his speech became slurred and he complained of pain in the back of the head. He spent ten days in bed and during this period his speech became normal and his grip improved. He began working during the second week of June, 1957 but after a few days he again lost the power in his left hand and became confused. He was admitted to Roodlands Hospital and was transferred to the Eastern General Hospital, Edinburgh, on 6 July, 1957 under the care of Dr. J. A. Bruce. Examination at that time revealed weakness of palatal movement on the left side, weakness of the left hand, nominal aphasia and apraxia affecting both hands. He was euphoric but also irritable. Lumbar puncture on 8 July, 1957 revealed a clear fluid under a pressure of 180 mm. The protein content was 152 mg. per cent., cells were within normal limits, the colloidal gold curve was 2333444311 and the Wassermann reaction was negative. Repeat lumbar puncture on 15 July, 1957 revealed clear fluid with a protein content of 300 mg. per cent. A diagnosis of

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degenerative cerebral vascular disease was made, the patient made steady improvement and was discharged home on 31 July, 1957.

On 10 August, 1957 the patient had an epileptic fit, on 13 August, 1957 he had another fit and on 18 August, 1957 he had two further fits. Later during this day he was re-admitted to the Eastern General Hospital and a week later had a further fit while in hospital. This was a classical grand mal seizure. He then passed into coma, was pyrexial and incontinent for twenty-four hours. On 27 August, 1957 he was seen by one of us (A. Forrest) at the request of Dr. J. A. Bruce. As he was confused, restless and difficult to manage in a general hospital ward his admission to the West House division of the Royal Edinburgh Hospital was arranged.

On admission (2 September, 1957) he showed no abnormality on examination of the nervous system. Impaired percussion note and diminished air entry was noted over the right lung base. Mental examination revealed that he was pleasant in manner and co-operative during interview. He sat quietly, spoke clearly and at a normal speed. He had marked difficulty in naming objects and used paraphasic expressions. For example an ash-tray was described as "a thing for cigarettes". He perseverated at times. He understood and carried out both written and spoken commands. He was able to repeat words but made many mistakes in writing to dictation. He was emotionally labile but his general mood was one of euphoria. His orientation for place was correct but not for time. Memory for recent events was poor. He tended to interpret events in the ward in military terms. Thus on one occasion he said he was going to be put on a charge for striking another patient and usually referred to patients walking in the grounds as "the squad". He was unable to do simple calculations but could repeat four digits forwards and four digits backwards. Probably the most outstanding feature was his paraphasia. Thus he referred to one of us (Dr. Forrest) as Notts Forest (a football team) and to another colleague (Dr. S. G. Laverty) as "the Italian sounding in upper London". It should be noted that Dr. Laverty has a Southern English accent.

The patient was referred to Mr. E. Macpherson who reported "When first tested on 11 September, 1957 the patient was cheerful and co-operative but exhibited short bursts of irritability. The Wechsler Bellevue Scale (Form I) showed a Full Scale I.Q. of 95 with Verbal and Performance I.Q.s of 103 and 78 respectively. The patterning of sub-test scores reflected a rather marked degree of intellectual impairment. His raw scores in Digit Span were F-6, B-3. In the Arithmetic sub-test he succeeded in only the first five items. He experienced considerable difficulty in all Performance Tests except picture completion. He failed to obtain any credits in either the second or third items of Object Assembly. In the third item (the hand) he remarked at the end of three minutes 'I think it is a cemetery but I can't put it together'. This might suggest some degree of failure in the organization of perceptual experience, of a type frequently encountered in organic states. The Bender Gestalt raw score was 129. The forms which he reproduced were recognizable but showed the sort of gross distortion seen in coarse brain disease."

The euphoria and paraphasia continued for about three months but meanwhile a new feature emerged towards the end of September, 1957. The patient claimed that he could see messages written on the outside wall of the hospital and on the wall of the ward corridor. From his own ward he could see across to the Female Wing and saw the words "Hearts Football Club" on the wall and nearby, where several small windows lie close together, the words "Free Church". He saw his own surname written on the door of the ward kitchen and

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on the adjacent corridor wall. He could be persuaded that these were misinterpretations but was not really convinced. Later (in the middle of November, 1957) he no longer saw the words but remained more or less convinced that he had seen them in the past. His paraphasic speech disturbance slowly improved and by the beginning of December, 1957 he was very well and had complete insight into his illusions, which he now called "hallucinations".

Meanwhile extensive laboratory investigations had been carried out in an attempt to elucidate the aetiology of his illness. In brief, haematological examination revealed no abnormality, blood urea nitrogen was normal, the blood Wassermann reaction was negative and liver function tests gave normal results. X-rays of skull and chest revealed nothing apart from a slight elevation of the right diaphragm and reduced translucency at the right lung base. This condition was thought to be inflammatory and was treated with antibiotics. Two further specimens of cerebro-spinal fluid were examined and found to contain persistently high protein values, the last figure (28 October, 1957) being 144 mg. per cent. An EEG revealed an excess of slow activity (4–5 c./sec.) from post-central, temporal and frontal regions. Some low voltage delta (3 c./sec.) was recorded from both temporal regions. On the basis of these investigations a diagnosis of cortical thrombo-phlebitis was made.

Psychological tests were repeated on 29 October, 1957. The psychologist reported as follows:

"When the Bender Gestalt was re-administered the form distortions were again seen but a new feature also emerged. Whereas previously he had made a good attempt at Card 2* he now reproduced the columns as one continuous line, using instead of the circles, the letters GOD. These letters were repeated twelve times and extended from one side of the page to the other. It seemed, therefore, from this second examination that not only was perceptual organization disturbed but that a restructuring of the perceptual field had occurred, resulting in a misinterpretation of visual experience."

Detailed clinical examination was carried out on 12 November, 1957. The paraphasic disturbance was found to be quite marked but variable. He was able to name five out of seven common objects, but when shown a calendar he said "An almanac—you shift the dates for yourself". In conversation he often used military terms instead of the appropriate word, thus he referred to the ward as the camp. He was orientated for time but could not give the name of the hospital, though he knew it was a "nerve hospital". His memory for events in the acute phase of his illness was very poor but he could give a good account of events in the two weeks prior to testing. He was able to recall accurately an address and telephone number after three minutes. He understood written and spoken commands and carried them out correctly. He was able to write to dictation and copy a written sentence. However he had difficulty in reading from a typed sheet as the words moved about and lost their meanings.

He was discharged on 24 December, 1957 and was followed up as an out-patient. When last seen on 16 February, 1959 he was very well and had no complaints about his health. He was working part-time as a gardener and admitted to no subjective difficulty in speech or memory. Detailed clinical testing revealed no abnormality apart from a patchy amnesia covering the acute phase of his illness (July–October, 1957). The Bender Gestalt test was administered at this time. The psychologist reported "The Bender Gestalt now gives results which are within normal limits (raw score 25)".

* Thirteen columns, each consisting of three circles, placed at an angle from the vertical.

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Although the authors can find no similar case in the literature, Bartlet (1955) has described a patient, who had attacks of dysphasia, visual perseveration and metamorphopsia due to a left-sided parietal or temporo-parietal lesion. This author regarded the visual perseveration as a confabulation, the content of which was determined by the Law of Prägnanz. He suggested that in his patient, at least, difficulties in figure ground differentiation were dependent on the left temporo-parietal region. Thus although Bartlet's patient did hallucinate, he did so in attacks in which other visual and dysphasic phenomena occurred. This is quite unlike the case described here.

The psychological disorders which occur in psychiatric illnesses due to acute, subacute and chronic brain disease have not been discussed very much in English literature except in so far as they may be due to focal lesions. In the German literature there has been considerable discussion of the psychopathology of the amnestic syndrome. As this syndrome is the expression of subacute damage to the brain it is likely that any psychological theories applicable to it might be applicable to psychiatric conditions due to subacute brain damage which are not typical amnestic syndromes.

Although the memory disorder is quite prominent in the amnestic syndrome, other psychological disorders occur so that from time to time it has been suggested that the memory disorder is one aspect of a more general disorder. Pick (1915) pointed out that the amnestic patient rigidly holds on to ideas which contradict one another, so that once a train of thought is produced it continues despite contrary information from without until some powerful internal or external stimulus forces it into another track. Grünthal (1923 and 1924) agreed with Pick's findings but claimed that there was also an inadequate formation of relationships between current percepts, presentations and thoughts on the one hand and total experience on the other. He regarded this as a disorder of set (*Einstellung*). Thus the patient is unable or has difficulty in getting away from a given train of thought and is unable to form relationships with ideas which lie outside this train of thought. This leads to new material being registered only with difficulty and even if it is registered recall is difficult. Thus for Grünthal the classic disorder of impressibility may be partly due to the more general disorder of comprehension.

Bürger Prinz and Kaila (1930) extended the idea of a disorder of set and also pointed out that the patient with an amnestic syndrome is easily satisfied in his attempts to find a meaning or, as Bürger Prinz puts it, there is a defective need to find meaning (*Sinnfindungsbedürfnis*). Thus these patients are unable to make adequate constructions out of details which are presented to them either spatially or in a temporal sequence.

Van der Horst (1932) has claimed that in the amnestic syndrome the temporal signs of the individual memories are lost, so that the patient is unable to recall the memories because of their lack of chronological arrangement.

In all these theories one can see one common idea, namely the fragmentation of experience and the lack of temporal or spatial organization of experience. Grünthal, Bürger Prinz and Kaila have both stressed the disorder of comprehension, and the latter authors the formation of false constructions due to the defective need to find meaning. The illusions in our patient could be understood as a disorder of comprehension of details and the formation of a false construction. However, we feel that this interesting symptom can be better understood on the basis of the theory of disordered "Gestalt Function" of Conrad (1953a, b). This author considers that there is a "Gestalt Function" which is the most general basic property of psychic life. There are two psychological

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operations of this "Gestalt Function" which are closely connected. There is the operation of integration by which a new content of experience is integrated with the total trace field and then there is the operation of differentiation by which an integrated part of the total trace field is brought into prominence when required. In brain disease the ability to form new effective gestalten, the ability to extract individual contents from the total field and to encompass the total field at any one time may all be disordered to some degree.

In the operation of impression or registration the new material must be organized into the total trace field. It must also, where necessary, form a paired gestalt with the material which precedes or follows it. When there is a disorder of "Gestalt Function" then this integration into the total trace field and the formation of paired gestalten is also disordered and presents as a disorder of impression. In this case the new memory lingers on for 40–50 seconds when it fades or if a new impression follows within 50 seconds the first memory is extinguished by retroactive inhibition. Conrad has called this type of memory defect "Minute Memory".

The disorder of Gestalt Function affects other psychological activities such as perception, comprehension, intellectual productions, reproduction of remote memories and so on. In the operation of comprehension the patient may only be able to grasp details and is unable to comprehend whole gestalten. He is liable to enumerate details, fasten on a detail then falsely interpret the detail thus forming a new false gestalt. The disorders of comprehension can be seen as disorders of different sets of figure ground relationships. There is a series of grounds which in their turn become figures against the ground of a higher order. Thus there is Ground 1 which is the ground against which the figure stands out, when an individual is observing a test picture. Then there is the total visual field which as Ground 2 forms the background for the test picture as a whole. Then the total visual field forms the figure against Ground 3 which is the total current psychic functioning of the individual. This total current functioning is experienced against the background of Ground 4, which is the temporal sequence of the whole of the subject's life. Finally there is Ground 5 which is the objective system of relations in which all knowledge is experienced. Thus for example, the knowledge that the picture is a part of a psychological test introduced by a given psychologist for a certain reason.

In coarse brain disease the figure ground relationships may be disordered in all five of these grounds. Thus in Ground 1 the disturbances are usually slight and the disturbances become more severe with the increase in complexity of the ground.

In Ground 1 many details may be successfully enumerated although the total gestalt is usually not recognized. Details may be incorrectly comprehended. In Ground 2 the disturbance is greater and a false orientation may be built up out of critical details. Thus one of Conrad's patients made up a false orientation of a restaurant on the basis of a sign post in the hospital grounds and a terraced garden. The extraction of the figure from the ground is even more difficult in Ground 3 and shows itself in the total spatial disorientation and a similar disturbance in Ground 4 shows itself in a temporal disorientation. The construction of a correct system of relations in Ground 5 is rarely possible. Thus the most severe disorder is in the extraction of a given content from the total field present at any given time and the construction of the correct system of relations in connection with it.

It is natural to pass on from the disorder of comprehension to the disorder of intellectual production which is usually present in subacute organic states.

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Conrad asked one of his patients to give him the names of all the trees he knew. He produced several names, repeated the same names but he did not know why he was doing so. Thus he was unable to remember the nature of his task but continued to do it. In more difficult tasks such as telling the story of Adam and Eve he failed completely.

This disorder of intellectual production might help to explain the peculiar speech disorder which occurred in our patient and is well known in organic psychoses, especially in Korsakoff states (Clarke, Wyke and Zangwill, 1958). This consists of misnaming, paraphasia, discursiveness and, in some cases, bizarre forms of expression. Owing to the disorder of Gestalt Function the extraction of the appropriate thought content is difficult so that the verbal expression is likely to be approximate. A pre-verbal image may well be treated in the same way as a detail in a picture and only an approximate name attributed to it. Apart from this the consciousness of the task may disappear as in Conrad's patient. This would lead to a fairly correct beginning to the task but as the patient proceeded with it the progress of thought would be determined by a very vague consciousness of the task and there would be a tendency to derailment but the vague consciousness of the task would prevent a complete deviation, thus giving rise to paraphasia. However, this in itself does not explain the paraphasic thought disorder as Conrad's patient did not show it well. There obviously must also be a marked inner drive (*Antrieb*) which keeps the train of thought going.

The Block Design Rotation Effect can also be fitted in with Conrad's ideas. Shapiro has shown that the designs made with Kohs Blocks are often reproduced in a rotated position and the degree of rotation is greater in brain-damaged than in normal subjects (Shapiro, 1951, 1952, 1953; Shapiro and Tizard, 1958). However, if normal subjects work with a cue reducing mask and on a table covered with black felt then the rotation effect is much greater. Thus it seems that the brain-damaged patient cannot take advantage of cues such as the table edge, the graining of the table surface and so on. In other words the patient cannot encompass the total gestalt but deals with the card and its reproduction as if they were isolated details. Rotation would be expected to take place in accordance with Gestalt laws of perception so that one would expect a figure to be produced with the best symmetry and pregnance. This is in fact what happens. Thus the misinterpretation of detail and the rotation of block design can both be understood as a failure to relate figure to ground and the formation of a new partial gestalt in accordance with Gestalt laws of perception.

On the basis of this theoretical background we believe it is possible to understand our patient's interesting symptom. He misinterpreted details occurring in his visual field. The irregular marks on the outside wall and scratches on inside walls and doors were seen as words. A new Gestalt was formed out of a few details. The patient's disorder of the appreciation of form was clearly shown in the Bender Gestalt test. His difficulty in reading typewritten words also confirms his Gestalt Function disorder. It will be remembered that words seemed to move about, or in other words details of his perceptions did not maintain a reasonably firm relationship to one another. One can understand that they might therefore have formed false relationships to one another. Once the new Gestalt had formed, the difficulties of encompassing the whole field at any one time would make it difficult for the patient to correct this false simple Gestalt and he would naturally be reluctant to relinquish the tiny piece of order which he had extracted from the chaos around him. The presence of these

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illusions for several weeks is probably also related to the patient's inner drive. He was euphoric and somewhat restless during the time he had the illusions and looking back he admits to being puzzled about his surroundings. It could thus be argued that this patient had a marked inner drive (*Antrieb*) which could lead to a greater positive misinterpretation of the environment than many other patients with subacute brain disease.

The content of the illusions can be understood as arising from the patient's preoccupations. He was a keen football enthusiast and was interested in the results of all Football League matches. This probably accounts for his paraphasic misnaming of Dr. Forrest as Notts Forest. The subject of football was probably frequently brought to his mind by the daily visits of Dr. Forrest. It is, therefore, not surprising that when he was in a situation which permitted the formation of an illusion, he saw the words "Hearts Football Club" which referred to the well-known local football team, the Heart of Midlothian Football Club. When last seen the patient said that when he was in hospital, he was frequently puzzled about his surroundings and could not understand why he was detained. The idea of becoming free was probably uppermost in his mind. This would partly account for the illusion "Free Church". In the society to which he belongs the word "free" is frequently associated with the word "church". It is possible that in this case the grey stone walls of the hospital reinforced this association. As the patient was frequently asked his name it is reasonable to assume that his name and identity were often in his thoughts. This would explain the repeated illusions when he saw his name written on walls and doors.

His mistake on the Bender Gestalt test when he wrote "God" for "o" is very interesting. The phrase "Oh God" is frequent in prayers and is also often uttered in hopeless desperation. The patient appears to have partly retained some idea of the task he had been set, namely that he had to write down a series of letters, but owing to a paraphasic derailment he wrote the word "god" instead of the letter "o". It will be remembered that he wrote the word "god" repetitively across the page although the series of "o"s were in columns at an angle to the vertical. The isolation of the part from the whole may have led him to write the word "god" across the page instead of at an angle to the vertical.

Summary

A subacute organic state, probably due to cortical thrombo-phlebitis, is reported. The patient saw various words written on walls and doors and referred to this phenomenon as hallucinations. This symptom is explained as an illusion based on a disorder of Gestalt Function. Conrad's theory of disorder of Gestalt Function in organic psychoses is discussed.

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