**Some workmen can blame their tools: artistic change in an individual with Alzheimer’s disease**

**Sebastian J Crutch, Ron Isaacs, Martin N Rossor**

Visual art is in essence a creative activity concerned with the generation of new designs and ideas. Acts of creation such as paintings capture our imagination, not simply because we are able to explore their nature, but also because they reflect the nature of their creator. It is this relation that makes the examination of artistic and creative talent in the context of illness so revealing.

Through comparison with premorbid creative ability, the work of several notable artists has been closely examined for traces of neurological or psychological illness. Experts have suggested that from 1988 onwards paintings by Willem de Kooning, who was diagnosed with Alzheimer’s disease in 1989, began to lose their coherence. Mark Rothko’s increasing use of deep, dark colours has also been suggested to reflect the artist’s growing depression.

Stylistic devices and modes of expression mean that it is difficult to assess the meaning and intellectual message of a piece of art. However, some aspects of an artist’s work may be compatible with objective assessment. The study of simple constructional tasks has provided evidence of the effect of cerebral damage on drawing, free from the complications of expressionism and interpretation. Qualitative analysis of the errors made by brain-damaged individuals on drawing tasks has revealed that the type of copying errors made are influenced by the location of the damage. People with right hemisphere damage tend to have problems with the spatial arrangements between the parts of an image, whereas those with left hemisphere damage tend to oversimplify drawings while maintaining the overall spatial organisation. A combination of these drawing deficits has been observed in patients with probable Alzheimer’s disease.

By contrast, anterior temporal lobe damage might be associated with enhanced artistic ability, which occurred in three individuals after the emergence of frontotemporal dementia. In addition to patients with unilateral cerebral lesions, individuals with degenerative conditions provide an opportunity to investigate the neurological basis of artistic expression and creativity.

We have reviewed the case of an artist with probable Alzheimer’s disease and charted the progression of his work from the earliest stages of the disease to the present, with reference to neuropsychological, medical, and social information. We have also explored how his clinical condition could have influenced his most recent artwork.

**Table 1: Neuropsychological assessment scores**

<table>
<thead>
<tr>
<th>Age at time of assessment</th>
<th>WAIS-R verbal intelligence quotient</th>
<th>WAIS-R performance intelligence quotient</th>
<th>Recognition/words</th>
<th>Memory/faces</th>
<th>Visual objects and spatial perception battery</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>61 years</td>
<td>70</td>
<td>36/50</td>
<td>46/50</td>
<td>Shape detection</td>
</tr>
<tr>
<td></td>
<td>65 years</td>
<td>73</td>
<td>18/25</td>
<td>24/25</td>
<td>Fragmented letters</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Object decision</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Cube analysis</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Dot counting</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Position discrimination</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Naming</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Calculation</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Weigh sorting test solutions</td>
</tr>
</tbody>
</table>

**Case report**

William Utermohlen is a 66-year-old artist, born in south Philadelphia, who came to England in 1957. He has no family history of neurological or psychiatric illness and his medical history before presentation was unremarkable, except for a car accident at the age of 55 years which left him unconscious for about 30 min.

At the age of 61 years, he was referred to a neurologist for assessment of his cognitive impairment, and a diagnosis of probable Alzheimer’s disease was made. Background information provided by his wife traced his problems back to about 4 years when he began to experience difficulty tying his neck tie. She also noticed a deterioration in his ability to handle household finances, lapses in memory, and a decline in his writing ability. It was noted that he appeared depressed, subdued, and out of touch with his surroundings. On formal examination his episodic memory was predominantly affected. Delayed recall was worse for verbal than visual material and he scored 22/30 on the Mini Mental State Examination (MMSE). General physical and neurological examinations were normal. A magnetic resonance imaging scan revealed generalised cerebral atrophy.

Formal neuropsychological assessment was done at the time of diagnosis and showed a moderate degree of cognitive deterioration especially on tasks with an abstract reasoning component. Memory functions for verbal material were particularly affected, and there was also evidence of word retrieval and calculation difficulties, and a decline in visuospatial and visuospatial abilities. Performance on tests for frontal lobe function was also poor (table). The observed pattern of a global cognitive impairment was consistent with the diagnosis of Alzheimer’s disease.
From the time of the diagnosis most of his work concentrated on self-portraits, and we have chosen these works to chart the change in artistic ability during the course of the disease. A portrait painted at the age of 60 years before either he or his wife, an art historian, had noticed any change in his artistic skills represents a stylistic and technical reference point against which subsequent works may be compared (figure 3A). In terms of precision of brushwork, colouration, emotional expression, and originality, this painting is typical of the quality of his work before the onset of his illness.

A selection of his subsequent self-portraits reveal a change commensurate and consistent with the deterioration in his cognitive state, particularly with respect to his visuoperceptual and visuospatial skills. Analysis of these errors is complicated by the risk of overinterpretation of what might have been an artistic decision to change style. However, since simple figure copying tasks, which have no stylistic component, conducted at the age of 61 years as part of the assessment of the drug trial reveal subtle visuospatial errors, we do not believe that these errors represent an artistic decision. A further example of a spatial error in a picture less strongly influenced by other stylistic factors is shown in figure 4A. This line drawing forms part of a series of quick sketches the patient was requested to produce. Individual features—arms, hands, legs, head—are accurately defined and proportioned but the organisation of some of these parts, namely the arms, is awry. The artist acknowledged that there was a problem with the sketch, but did not know what the problem was nor how it could be rectified.

The deterioration of his constructional abilities is more evident in the fourth portrait, painted at 64 years (figure 3D). In this picture, facial features appear either blurred together or strangely disjointed, changes which the artist and his wife attribute to a deterioration in his painting ability rather than to artistic device. This painting also reflects Utermohlen’s pattern of work at this time, with him working intermittently upon the portrait over a period of 2 months. In her professional opinion, the artist’s wife believes the final product was not believe that these errors represent an artistic decision. The artist acknowledged that there was a problem with the sketch, but did not know what the problem was nor how it could be rectified.

The later pictures are characterised by thicker brushwork and rawer surfaces. The second portrait, painted at the age of 62 years, shows the earliest signs of difficulty in accurately representing individual facial features, both in terms of their structure and their spatial relation to the rest of the face (figure 3B). These changes are more pronounced in the third portrait, at 63 years, where the sense of proportion has altered (most notably with the ear) and an abstract background or context is no longer provided (figure 3C).

The deterioration of his constructional abilities is more evident in the fourth portrait, painted at 64 years (figure 3D). In this picture, facial features appear either blurred together or strangely disjointed, changes which the artist and his wife attribute to a deterioration in his painting ability rather than to artistic device. This painting also reflects Utermohlen’s pattern of work at this time, with him working intermittently upon the portrait over a period of 2 months. In her professional opinion, the artist’s wife believes the final product was also strongly affected by the artist’s tendency to rub out sections of the painting with which he was displeased. “It [the painting] has been through at least four manifestations. The sad thing about this picture is that at one stage when it was more complete than this it was really very good despite its complete mismanagement of space, and then he got distressed about it and just rubbed it out”.

Most recently, Utermohlen abandoned oil paints and worked only in pencil (figure 3E). Only the fundamental components of the face are recognisable and the division of the face caused by the continuation of the jaw line makes the portrait eerily reminiscent of the fragmented visages created by Picasso in works such as Weeping Woman (1937). A portrait, painted at 65 years, is more abstract in nature and reflects the fact that the realism of his previous work is no longer attainable (figure 3F). Unlike the
oblique perspective of his earlier paintings, this picture provides a more primitive view. This dramatic shift in style and approach is consistent with the production of other abstract paintings the following year (figure 4B). Here, perspective and depth are lost but form and colour are still used in a creative and original manner.

Although he has abandoned painting on several occasions since his diagnosis owing to the decline in his artistic talent and a resulting lack of confidence, all five of the portraits described above were self-motivated and represent individual attempts at self-portrayal rather than copying of previous efforts. One function of a self-portrait is to convey feeling and emotion. The self-portraits shown have been considered by many observers to openly express a variety of states of mind, including terror, sadness, anger, naked pain, and resignation (Paris Exhibition, 2000). Indeed, as the artist himself noted, “When you are painting it is always about how you feel”. The themes of depression or anxiety are apparent particularly in the later self-portraits. However, these
which has made assessment of de Kooning’s work so controversial.

The rapidity and extent of change in artistic ability is indicative of a process above and beyond normal ageing, particularly given his relatively young age at onset. Over an interval of 5 years, there has been an objective deterioration in the quality of artwork produced. There is evidence of decline in the ability to represent spatial relations between features and objects, and proportion and perspective. Backgrounds are either simpler or no longer provided. Brushwork has also become more coarse and the artist now solely produces pencil line drawings.

Studies of spontaneous drawing in Alzheimer’s disease have highlighted the presence of perceptual and executive visuospatial deficits. Neuropsychological measures of visuoperceptual and visuospatial function show significant decline, as a component of the global cognitive impairment. At the time of diagnosis there was evidence of difficulty achieving a fully structured percept, but only mildly impaired perception of complex spatial relations. However, assessment 4 years later revealed some

same emotions are to be found retrospectively as themes of several works painted before any noticeable decline in artistic ability. One such picture painted at the age of 60 shows the artist seated at and gripping on to a table beneath an open skylight (figure 4C). His wife believes the picture describes fear and isolation with the figure dominated by, and even irrelevant to, its surroundings. When asked if this is a reasonable interpretation of the work, the artist himself indicates the open skylight saying, “Yes, and I was getting out”.

Comment

We have reported the case of a 66-year-old man with probable Alzheimer’s disease fulfilling DSM-IV criteria. Performance on neuropsychological tests was consistent with a progressive global deterioration in cognitive function. Successive MMSEs also chart a slow intellectual decline. His insight and willingness to participate in research presents the opportunity to study artistic deterioration in the context of Alzheimer’s disease, free from the diagnostic uncertainty which has made assessment of de Kooning’s work so controversial.

The rapidity and extent of change in artistic ability is indicative of a process above and beyond normal ageing, particularly given his relatively young age at onset. Over an interval of 5 years, there has been an objective deterioration in the quality of artwork produced. There is evidence of decline in the ability to represent spatial relations between features and objects, and proportion and perspective. Backgrounds are either simpler or no longer provided. Brushwork has also become more coarse and the artist now solely produces pencil line drawings. Studies of spontaneous drawing in Alzheimer’s disease have highlighted the presence of perceptual and executive visuospatial deficits. Neuropsychological measures of visuoperceptual and visuospatial function show significant decline, as a component of the global cognitive impairment. At the time of diagnosis there was evidence of difficulty achieving a fully structured percept, but only mildly impaired perception of complex spatial relations. However, assessment 4 years later revealed some
Alzheimer’s disease. Correlations between artistic abilities and neuropsychological measures showed that the effect of perceptual and spatial deficits upon artistic output was secondary to a more executive dysfunction. However, perhaps surprisingly, correlations suggest there is no strong relation between drawing impairment and language or memory.

The most notable recent change in artistic style is the production of works with a more abstract theme. We draw two main points from this observation. First, the continued production of paintings despite the apparent decline in organisational skills indicates some sparing of artistic motivation and artistic drive. This generation of fresh perspectives imposed by realism and the unattainable accurate replication of colours, forms, angles, proportion, and perspective.

The study of talented individuals offers an insight into the neurological basis of artistic creativity. We suggest creative impetus and the skills required to implement artistic intention may be unequally affected by neurological insult. In the present case, it appears that the artist’s perceptual and spatial abilities are the more vulnerable component of the creative process. The production of new works may also reflect the importance of right hemisphere structures in painting. Neuropsychological assessment suggests our patient has a mildly asymmetric form of Alzheimer’s disease with relative preservation of visual memory. Nevertheless, this example of continued artistic endeavour at a stage when Alzheimer’s disease has blunted the craftsman’s most precious tools offers a testament to the resilience of human creativity.

We thank Richard Harvey for his helpful suggestions on this work and Lisa Capolotti for making neuropsychological test results available. We also thank William Utermohlen for his patience and his wife for her insightful comments and descriptions of her husband’s work. This article was made possible by the Utermohlen’s willingness for us to study and reproduce some of the artist’s most recent paintings and drawings. An exhibition of William Utermohlen’s work will be shown at the Two10 Gallery, London from August 1 to 31, 2001. The exhibition is supported by The Wellcome Trust and Alzheimer’s Society.

References