



INSIGHT | From dreams come masterpieces

Altered-state art

a clue to brain's

inner workings

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MOST of us have visual memories of some of our most vivid dreams and of the absurd situations in which they may place us. At other times we may daydream in our vivid imaginations.

Many people experience hallucinations produced by drugs, and see things that are not there. A little too much alcohol and most of us begin to see double.

Were we to take LSD we would lose our sense of time and space, and dreams – often with a nightmare quality – would intrude into our mind. Too many individuals suffer the consequences of some brain disease or other, which alters their mental experiences.

Modern neuroscience uses increasingly powerful tools, such as brain imaging, to investigate how the normal and diseased (or drug-affected) brain constructs our normal visual experiences.

These studies show that what we see is not simply a passive recording of what is out there, but that the brain actively extracts

meaningful images from a veritable visual bombardment.

Detecting what is out there in a meaningful way is essentially evolution's way of better adapting us to our surroundings, and we share this process (to varying extents) with other species.

Prehistoric painting is one of the earliest indications of the emergence of human culture, and in Australia we are privileged to have some of the world's oldest examples.

The depiction of visual experiences is probably the first sign of humans explicitly sharing otherwise subjective experiences.

Without explicit communication our subjective experiences would remain totally personal and could not be shared, and without this sharing cultures could not develop.

Painting is thus a powerful way of communicating meaningful experiences and of overcoming the difficulty of sharing subjective experiences. The history of painting reflects the exploration of how humans depict both the world out there and inner experi-

ences such as our feelings and emotions. In this sense, painters are intrepid explorers of how the human brain constructs such visual experiences.

Painters with altered brain function – be it through illness, injury or drug use – provide a powerful insight into how our brains work.

For example, a proportion of painters suffering from migraine, paint their visual experiences with remarkably constant features. These include richly-coloured “fortifications”; a series of zig-zag lines that neuroscientists ascribe to the early processing of images in the visual cortex. Furthermore, painters have noted and taken advantage of the actions of certain (sometimes illicit) substances.

In the late 1800s and early 1900s many impressionist artists, including Paul Degas and Eduard Manet, not only depicted scenes of absinthe drinkers, but also probably painted under the influence of the mildly



hallucinogenic compound present in the wormwood plant used at the time to prepare the traditional French Pernod. Since then, use of more powerful drugs has produced the dream-like paintings known as "psychedelic" art.

The discovery in the late forties of the active ingredients of the "magic" mushrooms and cacti used by certain cultures for religious purposes – such as psilocybin and mescaline respectively – and the synthesis of similar molecules with even more potent effects, such as LSD, was paralleled by the discovery that the brain contains and utilises as "neurotransmitters" small chemicals (called biogenic amines) with actions similar to those of the psychedelic drugs.

The Beatles allegedly composed much of the music on their famous *Sgt Pepper* album under the influence of psychedelics. The likely action of many of these drugs, including ecstasy and marijuana, is on the one hand to enhance some of our sensory experiences, while on the other,

disconnecting the mind from contact with the external world. Such "dream-like" drug-induced states are in fact remarkably similar to dreams and to states of extreme sensory deprivation.

The disruption of normal thinking processes that occurs in schizophrenia also results in altered experiences. It is likely Van Gogh painted under the influence of the symptoms of schizophrenia. Depiction of fragmented human faces, such as Picasso become famous for, is also a common feature of paintings by patients with schizophrenia, but I'm not claiming Picasso also suffered from this condition.

Painters have also documented more specific lesions of the brain. Lesions of the parietal lobe of the brain result in a condition called "spatial neglect"; denial that the entire side of one's body and external objects exist.

Painters with such lesions paint only half of self-portraits and during slow recovery begin to paint their full face.

More devastating brain diseases such as strokes or

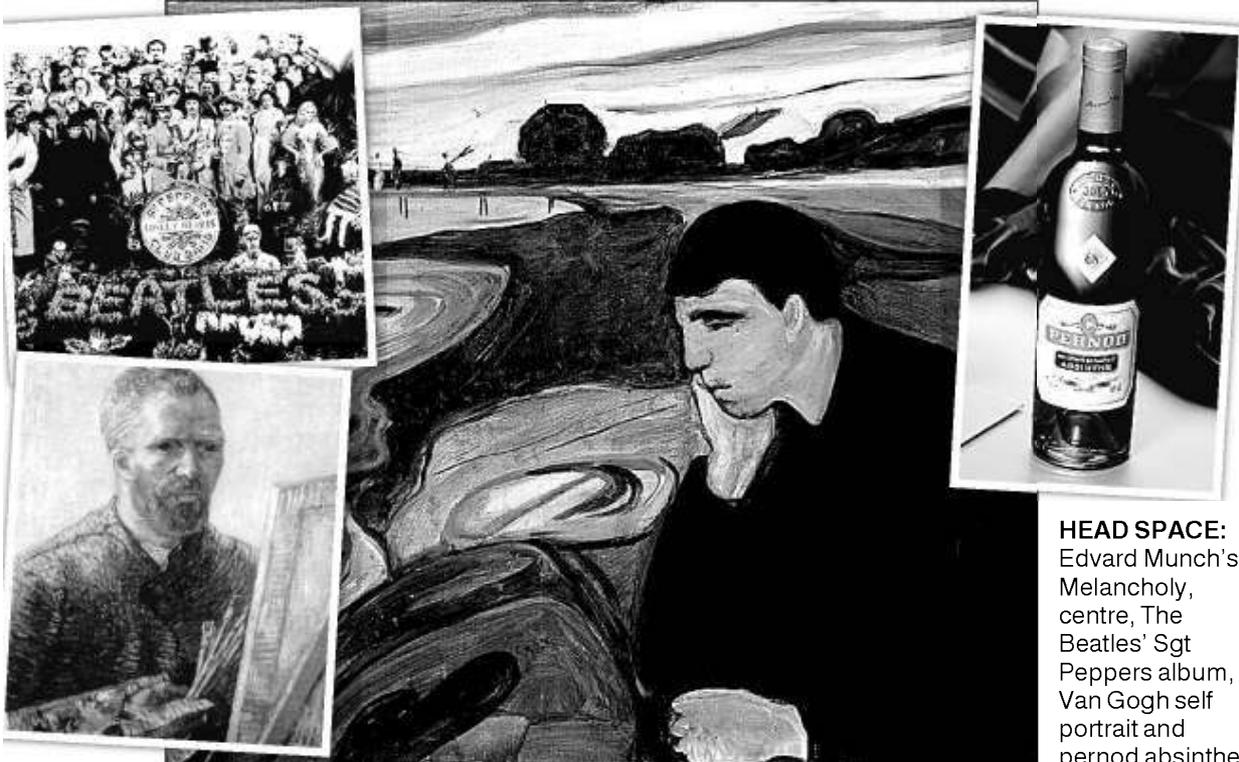
dementias known to affect global cognitive functions are reflected with great insight in the paintings of affected artists. The self-portraits show the dramatic degradation from detailed images of the human face to simpler and poorer representations of themselves.

The most dramatic effects of brain and mental disorders in paintings are expressed during depression, anxiety and panic disorders. The paintings of Edvard Munch remain classic examples of how painters can reveal the deepest mental suffering.

Perhaps the large number of paintings by individuals with mental disease, representing their inner experiences, reveals our deep need to communicate with other human beings.

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The 24-hour Alcohol and Drug Information Service is available seven days a week on 1300 131 340.



HEAD SPACE:
Edvard Munch's Melancholy, centre, The Beatles' Sgt Peppers album, a Van Gogh self portrait and pernod absinthe.