

The Musical Brain: Arts, Science & the Mind 2011 Conference

*The Neurohistory of Art: How Neuroscience Illuminates Individual Inspiration.*

Professor John Onians

Review by Becky Lyddon, Melanie King, Myrianthe Sozou

Neuroaesthetics, neurohistory and neuroscience were the overriding themes of Professor Onians' talk. The purpose of the talk was to explore the neurological processes that influence creative expression whilst questioning the reason why humans make art and the way it is made in different times and places.

Professor Onians was keen to express the depth and complexity of memory stating that each experience is liable to create connections in the brain which is equally likely to affect our actions. Advancing technology, and its application in neuroscience in the past two decades, has assisted Professor Onians in visualising neural activity. By understanding these links between cerebral and visceral experience he has realised how art can affect us so powerfully.

A C.A.T scan (Computerised Axial Tomography) experiment was mentioned, revealing that amateur artists use the visual part of the brain (visual cortex) when painting. In contrast, a professional artist predominantly uses their memory when painting as they have a foundation knowledge of basic principles relating to what they observe. They do not rely on the same parts of the brain as amateur artists do in order to create an image and this illustrates the important role that memory plays in our perception and expression of a subject.

As Professor Onians was talking about the way we learn through personal experiences and memory he referred to the action of mirror neurons. This is the way one learns through experience and imitation; this imitation is very important to us while we are growing up (e.g. young children learning to walk by mirroring adults). Neural mirroring evidences the human brain's capacity to change structurally and functionally as a result of input from our environment, which is known as Neuroplasticity.

Prehistoric paintings were presented as evidence suggesting that humans were inspired by the animals primitive need for survival: hunting. Professor Onians showed images of the Chauvet cave paintings in the South of France and discussed how they relate to the unique geological formations of the caves and the surrounding area. A prominent piece of supporting evidence was a very life-like depiction of the migration of animals on the walls of the caves. In prehistoric times a unique natural rock bridge formation over the River Ardèche, situated close to the caves at Chauvet, appears to have been a natural crossing point for herds of wild animals migrating through this region. This is recorded in the cave paintings which are juxtaposed with a cave wall rock formation appearing to mimic the natural rock bridge over the River Ardèche. Consequently, Professor Onians suggests that the successive exposure to this migratory event meant the prehistoric humans witnessed this, resulting in a rich neural resource for their cave paintings. Early tools were also made to mimic claws and horns and by extension the imitation of animal traits might be anticipated.

Professor Onians briefly analysed some aspects of contemporary artists works, with particular reference to the "Dust Bowl" artists who had lived through The Great Depression of the 1930s. Jasper Johns has shared the vivid memories of his uncle's empty fields and Professor Onians suggested that if one is to see a painting by Johns it is possible to relate the dust bowl to the fatigued colour scheme with the vast grey misery and dullness of the landscape. In discussing this with the artist he agreed with the Professor and his hypothesis of neural mirroring; consequently the collector which has acquired Johns' work might also be expected to share the experience the artist had.

The artwork of Gerard Caris was also presented as an example of Neuroplasticity by the Professor with the artist's engineering background reflected in his art; his 'antenna' artworks were presented as an example, being reminiscent of the antenna that his visual field was constantly exposed to at his work station. Professor Onians stated that Caris had agreed with his theory of Neuroplasticity stating that his work is not about mathematics and that this finally settled his argument with museum curators who claimed that his work was about mathematical schema.

Professor Onians sought to demonstrate how environments can create expressive behaviour of which we are not conscious. Understandably, as his background relates to art history he focused mainly on painting and sculpture instead of music. However, at the end of the talk, Professor Onians explored the relationships between music relating to geographical experiences and bird song. He suggested that humans find it pleasurable to hear and imitate birdsong as it is familiar to them being within their habitat; environments create expressive behaviour of which we are not necessarily aware.

Overall, the talk addressed the importance of memory and experience in building layers of neural activity leading to creative expression. Neurological theory was presented in vibrant and diverse ways at The Musical Brain conference and each member of our group was fascinated with Professor Onians research. However, we agreed that the talk could have been further supported by scientific research illustrated through data and more referencing to the importance of the neurology of experiencing music as this was the theme of the conference.