

# The Cognitive Science of Aesthetic Interaction

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## 1. INTRODUCTION

If you have ever wondered why people love some paintings but are unmoved by others, then this exploration of the science of pictorial cognition is for you. Using carefully designed exercises and assisted by *Konrad*, Britain's first "thinking computer", the workshop will explain how the human visual system makes sense of pictures, how artists use colours, shapes, and no little skill to bring out the full range of human emotions on demand, and how computer simulations of cognitive processing can help us study both sides of the aesthetic exchange more effectively.

## 2. THE WORKSHOP

Modern theories of language production typically assert that no sentence can be generated in words (and that includes language cycled internally as thought) without the prior existence of a preverbal "speech act", a primitive expression of an individual's momentary communicative intent. Unfortunately, speech act processing is not yet clearly understood, not least because it is (by definition) preverbal. In fact the encoding must involve the same sort of iconic abstractions used by artists. As a consequence, the deep aspects of language production have so far defied everyday systems analysis techniques such as data-flow modelling and entity-relationship modelling. Nowhere is this modelling inadequacy more acutely felt than when we are trying to explain the emotional impact of art, where art theorists can still not agree whether there is any such thing as "artistic intention".

The workshop will introduce the cognitive science of visual perception in general and, within that, the perception of emotionally charged artworks (be they sublimely beautiful or disturbingly gothic). Attention will be drawn to the mechanisms by which perceptual input is (a) analysed for its essential

drama, and then (b) used to initiate motor output, because these are the deeply mysterious processes by which the mind interacts with the visual world. With art, as with speech, the basic interaction is as follows ...

I feel something  
I therefore transmit OUTPUT of some sort to you  
which becomes your INPUT  
which leads you to feel that same something

Participants will begin with a series of simple hands-on exercises previously used at the Wrexham Science Festival, 2012, and will then participate in a new and highly interactive group exercise in psycholinguistic modelling. The workshop as a whole will be supported by output obtained from *Project Konrad*, a "Codasyl-style" semantic network database being developed by the author and International Software Products, Toronto. This will include a historical first - listening in to a machine thinking silently to itself while working out what it feels about a sublime work of art!

## 3. LEADER AND LEARNING OBJECTIVES

During the 1980s Derek Smith worked for British Telecom, Cardiff, where he specialised in the design and operation of very large CA IDMS "semantic network" databases. Between 1991 and 2010 he taught psycholinguistics and neuropsychology to the Speech and Language Therapy students at Cardiff Metropolitan University. He is currently working with International Software Products, Toronto, on "Project Konrad", an artificial consciousness project using a CA IDMS platform. The tutorial will equip participants with the basic skills necessary to apply the latest psycholinguistic theories of communication to the production and perception of art.