

Art at the boundary of the science of consciousness

(All the illustrations referenced here but not included can be seen at <http://www.stem—arts.com/postdigital/Tucson2002.html>)

Robert Pepperell and Michael Punt

The interdisciplinary character of much contemporary intellectual activity demonstrates that without recourse to other fields of enquiry it may be that the habitual explanatory practices of conventional science are somewhat limited. Given the growing interest in the interface between art and science, the question arises as to what is the most useful division of labour. In this paper we will raise questions concerning the productive integration of art and science, not in the studio or the laboratory, or as ‘infotainment’, but in the domain of entertainment; that is, science as it is conducted through public display and popular demonstration.

It is worth reminding ourselves that the ambiguous space between laboratory and theatre has been colonised for centuries by the spectacle of the conjuring trick; any first-rate magician must ensure the audience understands the analogous interval between conjuring and magic on the one hand and conjuring and science on the other. Through clever management of this interval the conjuring show has thrived, while magicians have made huge fortunes by manifesting the implicit unity between the thinking subject and the objective world. In earlier times, the search for this unity was reflected in the elusive quest of the alchemist whose sought to cohere the material and mystical worlds through the transmutation of base metals into gold. The thesis offered here is that the performative and theatrical space between science and art presents a continuous view of reality that classical physics and philosophy could not envisage until recently, but which has now become almost commonplace.

Although they are uncomfortable fellow travellers for the rationalist (often accused of intellectual profligacy, and even charlatanism), the function of both the magician and the artist conjuror (as distinct from the artist replicator) has been to offer new metaphors for what would otherwise be unthinkable. We wish to draw attention to the role of these

actors is to liberate the more circumspect and constrained methods of scientists and philosophers by, for example, acknowledging the irrational and contradictory processes that often lie outside the bounds of other explanatory systems. What follows is broadly in two parts: the first looks at the question of conjuring and the second relates to logic and painting.

In 1983 Michael Punt had the privilege to be asked by Roy Ascott to contribute to a ground breaking collaborative project that brought the artist's creative intelligence and electronic media together in a single time-space performance. Around twenty six artists from across the world were invited to adopt Proppian functions and create a simultaneous fairytale in electronic space. Cast as the trickster, we had the function of derailing the narrative so that the Prince's heroic recovery would make him a better suitor for the Princess. One day, more by chance than design, we performed a conjuring trick in data—space at a point where the Prince was taking up a little too much of my time rambling on about philosophy and history. To paraphrase what followed: the conjuror offered to perform a trick and asked the Prince to sit centre stage on a chair, and showing both the Prince and the audience that there really was nothing hidden up his sleeve he pulled a small revolver from his pocket, and after pointing out to all who cared to see that the chamber was chock—a—block full of bullets he placed the gun against the Prince's head and with a dazzling smile pulled the trigger; the Prince died instantly. As you can imagine what followed was a stunned silence in the email traffic and a certain tangible ill feeling. Nonetheless, it was an intoxicating moment, terminating a fragment of consciousness in the network. Something close to a miracle had happened; something concrete had been conjured from nothing, its very presence being signified by its absence or loss.

Something analogous is visible in the picture of the conjuror by Hieronymus Bosch of around 1500. In it we see a trickster working the crowd in a street and making a merchant vomit a frog while performing some obvious sleight of hand. The merchant is so incensed by the banality of the cup-and-ball trick that he has overlooked the miracle of the frog and is also oblivious to the fact that the conjuror's assistant is picking his pocket. The more he argues with the conjuror the more vulnerable he is to being duped, and the more likely he is to miss the evidence in front of him: that miracles can sometimes happen, and

things we do not understand can coexist with those that we do. Bosch's painting is more than an amusing depiction of a merchant losing face in front of the peasants — it is a treatise on conjuring. The professional magician knows that the hand is never quicker than the eye (even merchants know that it seems) but the skill lies in misdirecting the audience so that the focus of attention is on the wrong place at the right time. But lest we suffer the same knowing complacency as the onlookers, Bosch's painting exhibits a further layer of complexity: if the merchant is really vomiting frogs then the conjuror is more than a fairground mountebank. If he is not then the merchant is a mere accomplice and the trick is on us. Bosch taunts us with a scene which exists in more than one possible state at a time — as do we.

Consider another painting of a conjuring trick, Joseph Wright's "An Experiment on a Bird in the Air Pump". This is what might be called a scientific experiment in which an itinerant lecturer is performing for the benefit of a small family gathering. A bird is taken to the brink of death and saved by the turn of a tap. Like the magic show in the Bosch painting, the more we argue the more likely it is that the bird will die and the greater the chance we will miss the trick, and thus overlook the miracle before us. Hence, by creating an vacuum the lecturer performs a virtual murder with an invisible weapon much as the trickster did in 1983; the miracle is that with paint and canvas a complex matrix of human perceptions and beliefs (the collective consciousness of the lecturer and the audience, as well as the endless network of natural philosophers to whom Wright was connected) has been transported from 1765 to our present imagination.

The seated figure in the foreground of "The Experiment on a Bird in the Air Pump" seems uninterested in the experiment. He, like Joseph Wright, is more concerned with the metaphysical questions released by the painting and the scientific act it depicts. As he contemplates the candle and the skull, he highlights the various illusions that this experiment and painting propose. In this sense the painting reverberates with Joseph Jastrow's story about of the nineteenth century French chemist Chevreul (Jastrow 1935) who determined that the movement of a pendulum held by a subject over various samples of matter was attributable, not to para—scientific phenomena, but apparently straight—forward auto—suggestion, what is now called "ideo—motor suggestibility". What was once a spectacle that entertained the public since Roman times, The Chevreul Pendulum

Test (as it is now known) is still used in psychology to measure subject suggestibility under hypnosis. The point is that some philosophers of mind, with the same respectable distrust of illusion as Chevreul, have been pre—occupied with the idea of “The Illusion of Consciousness” (as is, for example, Daniel Dennett in “Consciousness Explained” (1991)) as though it were some grand deception, or trick to which we, like the merchant in Bosch's picture, succumb to by being ignorant of the true state of affairs. However rather than being summarily dismissed as inherently deceptive, we might want to reconsider illusions as presentations of things as they really are; that is, as more than one thing at a time. It is upon this fact that Joseph Wright relies to sustain the greater illusion of the pictorial surface.



Take for example this digital photograph recently taken at the Musée Grévin of French people looking at a waxwork display of Velasquez painting the Spanish Court. Here, the spectators are not deceived into believing these wax dummies are living people from history, nor would they believe they are nothing more than lumps of wax cloaked in fabric. After all the painting in the tableaux is a painting of a figure in the tableaux

(presumably Phillip IV) and is a copy of a painting made three and a half centuries earlier (just as the Bosch painting is in fact a copy of a now lost original). In the alchemy of the wax work nothing is just one thing; contradictory elements cohere into a unified real. Perhaps our impulse to make sense of contradictions is so powerful that in order to resolve them one way or the other we are willing believe the unbelievable, even if it defies the laws of science and the evidence of our eyes.

The apparent mission of science is to find out what is really going on, at least the science practised in the shadow of Enlightenment, which is informed largely by Aristotle's "Principle of Non—Contradiction" in law and logic. As foundational as this principle seems to our formal understanding of the world, it is not universally applicable, nor indeed is it universally embraced. Since the middle part of the last century a form of logic has been slowly emerging which seems more able to cope with the seeming paradoxes and contradictions of our everyday experience. This fairly obscure branch of logical theory is broadly called "dialethic" or "paraconsistent".

Paraconsistent logic accepts states of simultaneous contradiction as valid. It is, however, seen by many in the logic community as lacking significant real world applications. As a logical system it shares much, in spirit if not in formal structure, with the eastern traditions of Tao and Zen in which states of mutual contradiction are a common part of everyday experience. But a century or more ago, western European artists were familiar with paraconsistency to the extent that it figured prominently in their intellectual palette. The artistic avant—guard, and the cubists in particular, were attracted to simultaneous contradictions insofar as they refuted the bourgeois imperative of monocular representation. Some of these paintings and sculptures, as well as music of the early twentieth century, demonstrated that we are able to comprehend contradictions fully without necessarily having to resolve them into a whole.

Consider the painting "The Dressing Table" by Picasso, made in 1910 at the zenith of analytical cubism. Those unfamiliar with cubism tend to see at first what looks like random patches of grey and brown paint, perhaps some buildings or strips of newsprint. It takes some time and concentration to see what is quite clearly a nineteenth century dressing table, complete with drawers, keys, legs, a glass and toothbrush and a mirror. It takes further concentration and goodwill to see the painting is also a symbolic portrait of

Picasso's then lover, Fernande Olivier, which includes the typical Picassian erotic symbolism (the key between the legs, the nipples) as well as her inverted portrait in the mirror. The fact that Picasso's "Dressing Table" can be at least three things at once (a painting, a dressing table, and a woman) without appearing contradictory or any of the readings being mutually exclusive is a testament both to our investment in pigment as a conduit of human intention and the capacity for paraconsistent awareness in the viewer. As Arthur Danto has provocatively suggested: "If a mere bit of paint can be of the Passion of the Lord, why on earth not a state of our brain?" (Danto 2001). To imagine that this silent arrangement of canvas and paint could sustain erotic power, passion and belief is no greater a step of faith than to believe the stream of text in the 1983 performance sustained the execution of a Prince, or indeed that the monochrome fabric of our brain could sustain the polychromatic riot of our mental lives.

None of this is especially new. What seems clear, however, is that we need a scientific method, particularly in the study of consciousness, that can allow something to be more than one thing at the same time, without dismissing the overall state as an "illusion". To do this we must recover the power of analogy; that is, we must rebuild our sensitivity to the networks of similarities in differences which is the locus of conjurers, artists, and happy to say, some philosophers and scientists of the mind who appear to be on similar tracks. Given this emerging consensus it would be superficially simple if scientists became artists and artists became scientist, or if we all followed the yellow brick road to an undifferentiated land of Oz. But perhaps at the boundary of consciousness where reality is always present through analogy — that is, the similarity of different states — and when increasingly science as a whole must contemplate ten or eleven dimensions in order to account for matter consistently, eradicating difference and resolving contradictions is to fritter an asset. When thinking in a more interdisciplinary way about consciousness we need to re—engage the skills of the alchemist and the artist to practice the tasks they have been trained for, regardless of contemporary tastes; that is, to successfully manage interval, manufacture productive illusion, and celebrate paraconsistency.

To return to the question of the division of labour between scientists and artists, it seems there are some moves to be made. For one thing, artists can make explicit to

scientists the value of unresolved contradiction, and relieve us all of the Sisyphean task of ultimate resolution and the pointless effort of distinguishing the real from the illusory. The potential reward is that the science of consciousness might not only solve some of its own fascinating problems but might also open the way to a new and valuable epistemology in other fields of enquiry.

Robert Pepperell and Michael Punt © 2003

A version of this paper was first delivered at “Towards a Science of Consciousness”, University of Arizona, Tucson, April 9 2002

References

Danto, A. (2001) *The Body/Body Problem: Selected Essays*. London: University of California Press.

Dennett, D. (1991) *Consciousness Explained*. New York: Little, Brown & Company

Jastrow, J. (1935) *Error and Eccentricity in Human Belief*. London: Dover.