Talking about Goethe
A private concert with dinner in a palace, the Palazzo Borghese in Florence. Could anything be more safe and civilised? It was to celebrate the 250th anniversary of Goethe's birth in 1749, with music by Mozart, Schubert, Mendelsohn, and Liszt, with readings of Goethe’s poetry. Well, this was indeed the most civilised occasion; but it turned out to be unforgettably traumatic for all concerned, especially for the talented and charming international concert pianist, Margaret Bruce, who was also our hostess.

The large splendid rooms were packed with distinguished Italians, and with more than a sprinkling of English people. It was a very hot evening. Seated and hushed, we waited for the first notes of Mozart’s Sonata in C (K 545). What we heard was tinkling of broken glass, followed by a smothered cry of distress. Margaret, the pianist, had pushed a window closed—unfortunately by pushing the glass, not the frame. So, just before playing, she cut her finger.

Then Mozart took over. Few of us realised what had happened. After a brave performance, with modified fingering, it was impossible to complete the concert. Adrian Lyttleton read extra excerpts from Goethe, extremely well; but it was felt that something more was needed to fill the vacuum from the shock wave of the accident. Then, from too much reality, fantasy came alive. Adrian asked whether I could give a talk of Goethe’s theory of colour! He had heard, somehow, that I had presented a lecture to the Goethe Society in London a year or so before. So, without notes or slides, I was faced with giving an impromptu talk to the Good and the Great of Florence, with imminent danger of boring them into extinction.

There were a number of art historians in the audience though I did not know this. I was sitting next to a Count (actually a Prince) who owned eight palaces, with a family deep in Italian history of power and intrigue back to the 14th Century. He was/is a Papal Judge on divorce cases, sometimes granting annulment following umpteen children. He complained, with a smile, of the low pay for each case. I was about to ask how the plea works, when the glass broke.

These were impressive people with subtle thoughts, expressed in English that showed too clearly one’s own abysmal inadequacy. Why can’t I speak Italian after scores of visits of weeks and even months? Everyone was immaculately dressed in sober dark clothes. I was wearing a bright-red (actually Italian) jacket, which was far too conspicuous, though as it turned out rather appropriate for a lecture on colour vision with no pictures. I did try to borrow a coloured lamp to demonstrate Goethe’s shadows but none was available. How could I make the talk interesting? Personality conflict, and surprising facts and ideas, seemed appropriate to this highly cultivated though nonscientific audience—who had been expecting music and poetry, and probably knew nothing of how colours are perceived. So, risking displeasure from extreme Goethe fans, I described how the great man disliked Newton’s approach, and never properly repeated his celebrated prism experiments. Goethe was given a pair of prisms; but instead of using a beam of light to spread into a spectrum, he looked through a prism at a white wall and saw no colours because they are all mixed up. But he did see colours at black edges. He didn’t believe Newton’s notion of colours as evoked in suitable eyes and brains by wavelengths (or whatever), white being given by all wavelengths combined. For him black was active, and not mere
absence of white. Then I mentioned Thomas Young’s three primary colours and how all colours as seen are mixtures of these: roughly red, green, blue. Here a sigh of disbelief broke out.

Goethe’s extensive work on afterimages, including probably appreciating Emmert’s law of size increasing with apparent distance went down better—as demonstration with a conveniently placed lamp and walls at various distances made the point. Easy in an Italian palace, this is impossible to show on television! Unfortunately I could not demonstrate the coloured shadows, but made the point that they do add to Newton’s account, and that perhaps they led to Edwin Land’s two-colour pictures, with significance in photography and how the eye works.

Pointing to my over-bright red jacket, I made the point that sensations of colour (qualia) are not in the object or in the light—but are created by the brain and projected psychologically into the external world. This is indeed counterintuitive, and a quite disturbing thought.

After polite clapping there was silence. Stunned? Perhaps. But then two or three professors of the history of art asked whether I had got the primary colours wrong. One said he had heard the same error from a stage lighting expert. Surely amazingly, none knew the difference between additive and subtractive (pigment) colours. Isn’t this discussed in art schools? Isn’t the difference demonstrated? How is colour television described, or explained? These were highly cultured, excellently educated people, with leisure to read and think, but from the ‘arts side’.

The Science Museum, with Galileo’s telescope and his middle finger as a relic, is an incomparable inspiration in Florence. And Goethe himself did, in his own way, combine art with science. But Europe is parallel universes. How we speak is different in each country, and how we think is divided into subcultures. The differences stimulate, educate, amuse, and they reveal our own prejudices and ignorances. We see ourselves and our countries reflected in surprising differences of others’. Long may individualities of people and of peoples survive.

Art and science are incredibly important for perception, in its widest sense. Just possibly there should be more science talks in concerts. Any volunteers?

Richard Gregory
Professor Sir Ernst Gombrich has contributed the following note commenting on the recent editorial celebrating his 90th birthday. This included a drawing of a bicycle—which was impossible, as a chain went to the front wheels, preventing them turning corners. Here is his reply—for which many thanks.

A Note further to the Drawing of Bicycles
In his most generous Editorial on the occasion of my ninetieth birthday, the Editor tells of a seminar he once attended in which the inability to draw a bicycle was considered symptomatic of brain damage. Ingenious as always, Professor Gregory turned the tables on the experimenters by submitting them to the same test—in which they failed, as did other perfectly sane students used to cycling. How, he asked, would this observation tally with the tenets of *Art and Illusion*? May I reply that in a later paper, published in my *Visual Discovery through Art* I emphasised the distinction between recognition and recall? We can all recognise a bicycle, and we can recognise it without difficulty in the drawing Professor Gregory reproduced—after all, it has all the elements we remember: two wheels of equal size, one behind the other, handlebars in front, and pedals between the wheels linked to a chain. Where the attempt went wrong was only in recalling the way the elements are fitted together—much as a child who can tell the features of face and body usually fails to join them correctly. It takes many hours in the life-class to learn to do this, though we generally can notice any mistakes or distortions (by the way, has anybody yet investigated whether this applies to members of all cultures, that is, to those who are not habituated to realism in art or to photographs?).

Obviously our recall mainly fastens on what linguists call ‘distinctive features’, which may save the brain a good deal of storage space; it is these features which dominate our global perceptions. But in drawing, as I insisted, we must proceed by ‘schema and correction’ or by ‘making and matching’. It turns out that the case of the bicycle wheels offers a useful example. The drawing reproduced in Gregory’s editorial suggests the schema of a wheel with radiating spokes, and that misconception will be found to be frequent. In fact, the spokes of a bicycle wheel do not radiate evenly from the axle but frequently cross each other. Even those of us whose brain is still reasonably intact may have to check the arrangement before drawing it.

E H Gombrich, June 1999

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(1) In *The Image and the Eye* (1992, Oxford: Oxford University Press) pp 11 – 39.