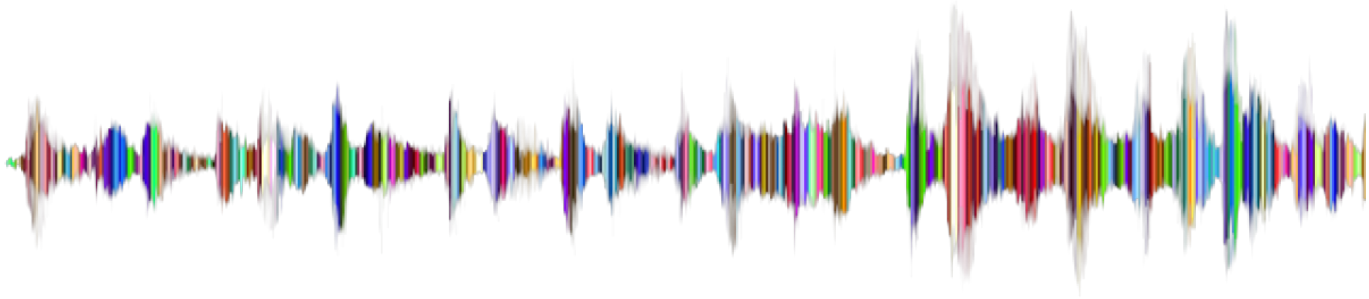
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With our eyes, we can see an amazing array of colours. But some people have an even deeper experience of colour, encompassing other senses.

A symphony of colour

Eric Carle, author of the much-loved children's book *The Very Hungry Caterpillar*, wrote a curious book entitled *I See a Song* [5] in which a small black figure is immersed in swirls, stripes and splashes of colour as he listens to the orchestra. For some people, different musical notes evoke different colours: D major might be blue and G minor yellow. For them, the term "blues music" takes on a new meaning.

As well as hearing in hues, some people taste in technicolour

Eating a rainbow

In 1911, an intriguing paper [6] was written. It described a young man for whom sweet foods tasted black, bitter foods an orange-red, and salty food crystal clear. When the colour sensation induced by the food did not match the actual colour of the food, a "most disagreeable experience" resulted.

For those of us only used to experiencing colour with our eyes, these additional routes into the world of colour seem unbelievable. And yet scientists have shown that it is a real phenomenon, known as 'synaesthesia', in which there is a fusion of the senses: for example, colour vision paired with hearing or taste.

The most common type of synaesthesia is when letters and numbers evoke particular colours.

Painting by numbers

Jacques Lusseyran, a blind French underground resistance leader [7] during World War 2, described how, for him, “the number 5 was always black, the letter L light green”.

A useful book on synaesthesia continues this theme in its title *Wednesday is Indigo Blue*. It describes a family where three members had synaesthesia who would play a game that involved calling out the corresponding colours on car number plates.

Why does synaesthesia occur?

When trying to understand how synaesthesia works, one idea is that letter-colour synaesthesia could be learnt from childhood toys [8] such as refrigerator magnets, where each letter has a particular colour. This idea does not, however, explain the numerous types of synaesthesia, how it tends to run in families, or why it is more common amongst artists and poets.

Crossed wires

Cross-wiring within the brain might explain synaesthesia. Could it be that all people have cross-wiring in the brain, but for most people it's turned off? In extreme cases such as synaesthesia or blindness, it can sometimes be switched on.

Hyper-connection

In the developing brain, there are substantially more connections between different areas of the brain than in the adult: it is ‘hyperconnected’. Through experience and learning, connections are ‘pruned’.

Professor Ramachandran of California University suggests that, in synaesthesia, there may be reduced pruning of brain connections owing to a genetic mutation and so, for example, connections remain between the parts of the brain for hearing, and for colour vision. If this is the case, the developing baby is truly living in a multi-coloured milieu.

How do you experience colour?

Playing music during pregnancy is said to enhance brain development [9]: it may also flood the baby’s mind with beautiful colours.

As adults, most of us cannot hear or taste colours: we are colour-deaf and our tastes colour-bland. Since the colours experienced during synaesthesia are often reported as ‘weird’ and unlike colours experienced during colour vision, are we missing out on a whole new encounter with colour?

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