

down to pick it up I was quite shocked to feel how warm the floor was. The material was of a type that one normally expects to feel cold, but it was warmed by the underfloor heating. Here the material and the sensation of touching it sent out signals that caused me to recall experiences of spaces that were on the whole smaller, warmer and more intimate than the great hall I was in. There was an incongruity between perception and expectation based on memory.

Not only does this illustrate the integrative nature of perception as opposed to sensation, it also demonstrates how active perception is. We are not passive observers of the world around us but active predictors of it. I had already expected what to feel, even though I was not aware of the expectation, and I was then surprised by the difference between unconscious expectation and experienced reality. In turn, this drew a conscious analysis of what until then had been unconscious.

The integrated nature of perception is further illustrated by the curious phenomenon of synaesthesia. A small but significant group of people, estimated to be up to one in 2000 of the population, experiences this condition. Synaesthesia literally means the coming together of the senses so that experience is reported across normal sensory boundaries. People with this condition reliably 'see' sounds and tastes. Of course they cannot genuinely detect such matters with their eyes, but their internal mental experience of the sensation is for them confused with experience actually seen. Although by no means fully understood, this phenomenon clearly indicates a neurological possibility of cross-communication between sensory organs such as eyes and ears and the parts of the brain responsible for our feeling of experience. What is remarkable about synaesthetes is the similarity of their reported experience. Particular sounds such as the letters of the alphabet are commonly associated with similar visual imagery. The vowels are particularly reliable in this way, with 'i' commonly thought to be pale grey, 'o' white, 'u' yellow and so on.

So we have seen that sensation and perception are by no means the same thing, and that to some extent our perception is an integrative experience. In normal life no one goes around in space looking, listening, touching and smelling, but rather we simply experience. It remains the case, however, that it is through sight that we get by far the most information about space, and it is on how we perceive space through vision that we shall concentrate here. We are also going to take apart the mechanisms through which this works. Again, perception does not in reality feel as if it is an analytical process but rather an integrative one. However, all the research we have accumulated on perception does suggest that this experience depends upon analysis by the eye-brain system. Perhaps one of the most accessible and stimulating discussions of this eye-brain system can be found in Richard Gregory's books (Gregory 1966; Gregory, Harris, Heard and Rose 1995).