
Editorial

Ambiguity of ‘ambiguity’

It is intriguing, perhaps deeply suggestive, that both language and perception can be ambiguous. It is not always recognised that there are two very different kinds of ambiguity, which I shall call *passive* and *active*.

Ambiguities are of meaning. The first, passive, kind is failure to distinguish between possible meanings. The second, active, kind is different meanings, evoked by one word or sentence. How do they apply to meanings of language and phenomena of perception?

Ambiguities of language

Passive ambiguity—failure to discriminate

Our frequently used words, ‘perception’ and ‘vision’ are richly ambiguous, with meanings into mysticism. In writings on vision, the word ‘image’ may mean a mental picture or, very differently, an optical projection. Failure to distinguish such different meanings may reflect confused thinking in the writer and certainly confuses the reader, though of course context can help. For normal discourse precise meanings may not matter; but for science or philosophy it can be disastrous. Unfortunately, there are costs in avoiding ambiguity (perhaps never entirely successful), including tedious qualifications and in-group technical terms.

Linguistic philosophers try to resolve ambiguities while claiming that truths are embedded in everyday language. One might be forgiven for thinking that these claims are hardly compatible. For philosophers have to rewrite everyday language to unearth implicit meanings. How does the reader know she or he has not introduced meanings by (horrid word!) disambiguating the language, according to what the philosopher thinks should be meant? When the writer is muddled there may be no clear intended meaning. The philosopher may extract clear meanings from muddle rather as the sculptor seems to find the statue in the rock. But, of course, he creates it, though perhaps helped by structures of cracks and veins he meets along the way. The statue was not in the rock any more than Beethoven’s symphonies are identifiable in random noise. The philosopher’s meaning may not be in the everyday language until he, or she, creates them.

Poetry makes a virtue of ambiguity. Trying to resolve it destroys the poem. Yet failing to distinguish possible meanings destroys analytical prose. This is not as simple as it sounds, for alternatives are drawn from the reader’s repertoire of stored knowledge, which may be different from the writer’s. With increased knowledge, the range of meanings and so the richness of ambiguity increases. With sufficient knowledge and imagination, it is possible to read umpteen meanings into even the most carefully constructed sentences.⁽¹⁾

Accepting ambiguities while appreciating poetry is so different from deciding on one potential meaning at the cost of any other in analytical writing, that there must be two kinds of language—making very different uses of ambiguity. They require different mind sets—perhaps different minds. Poetry-mind sees meaning enriched, analytic-mind sees meaning confused, by ambiguities. When one mind is confronted by the other, there is intolerable irritation!

⁽¹⁾ It is often possible to see alternative solutions to Intelligence Test questions, not intended by their designers. So the questions are more difficult for intelligent, knowledgeable people, who may fail by not curbing their imagination, or indeed their intelligence.

If meanings are *hypotheses*, ambiguities are alternative hypotheses. How far do hypotheses of language-meanings correspond to perceptual hypotheses of vision, and the other senses? This is the underlying question—linking language and perception.

Active ambiguity—evoking alternative meanings

Some sentences have sharply different meanings which ‘flip’. For example: “People like us”. Or, less dramatic: “He looked down on her.” Again, context usually prevents the flip in meaning; so isolated quotations must be taken with a pinch of salt.

The extreme form of active ambiguity is the pun. Puns may be funny, or irritating, when they deflect meaning away from intentions. They attract attention to words and structures of sentences. On the radio programme *Desert Island Discs*, I named a fictional culinary book, “Cooking in Ancient Greece”. This only works for the spoken language. “Cooking in ancient grease” is not at all funny, and is not a pun as there is no ambiguity in this written form.

Many years ago, I erected a lamppost in the garden—so I could watch my flocks by night. For those not brought up with “They watched their flocks by night” there would be no joke. The well-known “The Piece of Cod beyond Understanding” depends on familiarity with this fish—and is so strong it forces ambiguous meanings of ‘Piece’, and changes the meaning of unambiguous ‘Cod’ into another word, spelled and spoken differently. Clearly, shared knowledge and particular context are important for generating and avoiding ambiguities, at least for pundits.

For a rather silly example where spoken and written language both work, what about the lady ophthalmologist who made a spectacle of herself? Here the context is needed to set up the ambiguity and so the joke, such as it is. Do we use active ambiguity deliberately apart from jokes? Perhaps not.

Ambiguities of vision

Ambiguous visual illusions are well known and much studied. Again we should distinguish between passive and active ambiguities. Although the latter are more dramatic, the former can have theoretical significance and practical importance.

Passive perceptual ambiguity—failure to distinguish differences

Object perception is inherently ambiguous—as the same retinal image may represent objects of any size, distance, and shape subtending the same angles. So at least simple images cannot distinguish between very many alternative possibilities; yet we generally settle for one answer, without even entertaining alternatives. I assume this is the first lesson of an undergraduate course on vision. It leads at once to ‘cues’ for disambiguating images. The implications for understanding perception—together with the many ambiguities of shapes in pictures—remain to be worked out fully.

An interesting specific ambiguity of vision, is red + green mixture yellow being identical with monochromatic yellow. They are indistinguishable, though produced by different stimuli. This is why the anomaloscope is so useful for measuring red–green colour anomaly. Together with the evocative fact that the red + green-to-monochromatic match remains after adaptation to red or green light, it shows that the same eye–brain mechanisms are working for pure colour and for colour mixture. Specifically, this implies there is no special ‘yellow receptor’. It also implies that colour anomaly is different from colour adaptation. [I realised this while playing around in a practical class ages ago, but surely was not the first (Gregory 1955, 1998)]. This ambiguity is most useful for colour television, as almost any colour can be given by mixture of only three colours, which, as Thomas Young realised for retinal colour receptors, is economical. Biological ambiguities can be biologically useful or life-threatening.

Active perceptual ambiguity—spontaneous changes of seeing

Now we come to the dramatic illusions of ambiguity—starting with the Necker cube of 1832, though undoubtedly known to the Romans with their elaborate depth-ambiguous mosaics. The most basic ambiguity is between nothing and something: ‘ground’ or ‘figure’. It is remarkable that line figures may flip spontaneously in depth, or change from one object to another with little or no conscious control.

How else can one understand this, except by thinking of the alternative perceptions as different hypotheses of what may be out there? How can one (should one?) avoid the general conclusion that perception is not stimulus-driven, as it can take off from the world of objects it seeks to capture? Such lessons from ambiguity seem compelling and profound. (By which I mean: I am compelled to believe, and feel pleasantly profound when I think about it!) This may seem inadequate when confronted with the poetic ambiguities of the great painters. But surely artists, and their students, should not be afraid of understanding processes of perception, that make art possible, and which they can use intelligently once understood.

How far are ambiguities of language similar to ambiguities of perception? Here I assume the common basis is *meaning*. Would exploring this further lead to insights relating language and perception, perhaps suggesting that language originally derived from ancient pre-human perceptual classifications of objects and actions?

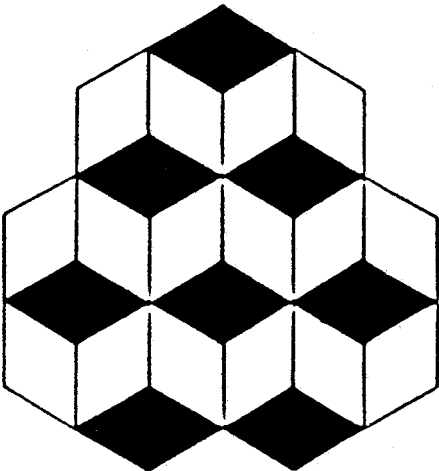
It is especially phenomena of ambiguity that make us think of perception as actively creative. One sees differently at different times, and perhaps we only partly share the same perceptual world. We can use ambiguities in experiments, on effects of knowledge and context, or, more technically, to separate effects of bottom-up signals from top-down knowledge in perceptual systems. Ambiguities make ourselves, art, and science interesting, sometimes funny. Through ambiguities we can investigate how the brain makes up its mind, and why sometimes it fails to place a bet on reality.

Richard L Gregory

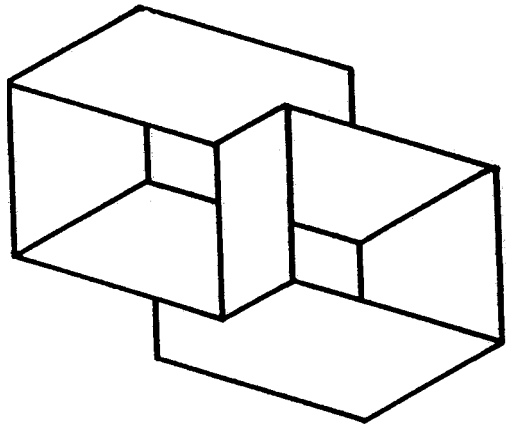
References

- Gregory R L, 1955 “Colour anomaly, The Rayleigh equation and selective adaptation” *Nature (London)* **176** 172–173
 Gregory R L, 1998 *Eye and Brain* fifth edition (Oxford: Oxford University Press) pp 128–133

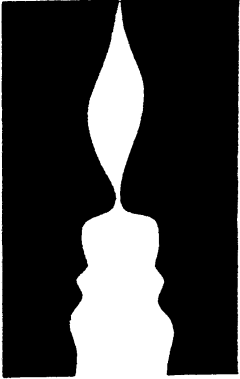
Some examples:



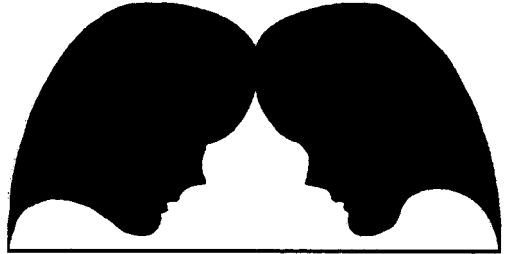
This design is found in Roman mosaics.



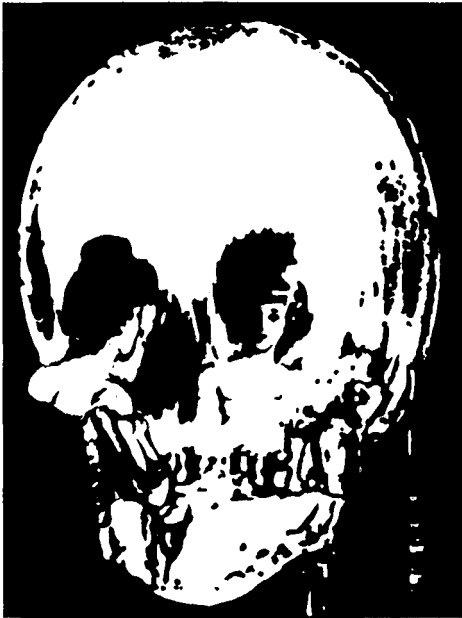
Ambiguity and impossibility combined—makes one think of life!



Burning the candle at one end.



Ramachandran's dream.



Skull duggery.



The end of fame and glory.