

Art of communication

Some kind of language is essential in order for individuals to convey ideas from one person to another. The science of language has been termed linguistics, and the more you look into linguistics the more complex become simple word of mouth communication and the transfer of ideas through writing.

Specialists in linguistics have indeed developed a formidable language of their own to enable them to express ideas. Thus, from semantics, which means the study of meaning, comes another term, morpheme, which is used to denote the smallest individually meaningful element that goes to make a language. Then we get polyseme, meaning a word with several meanings, anadiplosis, which means the repetition of a word or phrase for purely rhetorical effect, and tautology, which describes unnecessary and ineffective repetition. All this is well calculated to discourage anyone from making a serious study of language and communication.

Yet language is essential for civilised and ordered existence. Politicians are masters at using it to turn the meaning of words into something that is precisely the converse, and they have also learnt that the art of putting one's argument is never to listen but always to talk without a break that might be used by an opponent to raise a question.

The faculty of language, what it is and who has it, and how it developed in history, is the subject of papers in *Science* for 22 November 2002. It has been regarded as a unique feature of being human. There are serious doubts about the truth of this belief, but certainly language has exerted a profound influence on social and behavioural affairs within human societies. Its origin has long been something over which philosophers differ. Two aspects concern us: first is the expression of common humanity, and second is the interconnection of ideas and concepts. Darwin considered that language had emerged from primitive communication of emotions in animals.

We may define language as a culturally specific system for communication, or as an essential internal component of mind. In speech it relies upon vocal imitation. The achievement of this depends on physical problems of the mouth and throat, and damage or disease may interfere with the process. In written communication interpretation of symbols plays its part, usually by means of vision, but sometimes by the tactile sense.

Creatures other than humans are capable of using the same mechanisms. According to Noam Chomsky, the linguistic expert, human interpretation involves two aspects, merging and displacement, and the second of these is unique to humans and has no manifestation in non-human animals. It depends on intellectual capacity, not on signals. An important concept is that human

symbolic representations possess both emotional and computational components. Whenever we use language, spoken or written, we would do well to remember this. No wonder accurate communication is so difficult.

Censoring science

According to another report in *Science* for 22 November 2002, there is considerable disquiet in the United States over moves to suppress "sensitive but unclassified" material contained in scientific papers available to readers. For example, the National Academy of Sciences thought fit to excise part of a recent study of agricultural bioterrorism. This section will be available only on a "need-to-know" basis, whatever this means. Scientific organisations have expressed concern that such a move not only increases the administrative burden but impedes the free flow of scientific information. Fear has been expressed that such an action might be demanded of other professional organisations publishing in scientific journals. There are calls for the government to give explicit guidance on what it regards as "sensitive but unclassified".

In response to the challenge, National Academy officials drew up a list of those who might be permitted to see material excised from papers, to include federal, state and local government workers, officials concerned with homeland security, and scientists engaged in plant and animal health work, but carefully excluding the public and those working in the mass media. It is claimed by legal experts in the US that withholding documents from the public domain may be illegal under the Freedom of Information Act. Three presidents of the National Academy have urged the government to affirm the general principle that there should be no restrictions on reporting non-classified research and that vague and ill-defined categories of information should not be created. And a government official has acknowledged openly that unimpeded access to research findings is critical in assuring continued scientific development. The suppression of "sensitive" information can only discourage investigators from making their discoveries known to their colleagues, so impeding criticism and preventing advances in knowledge.

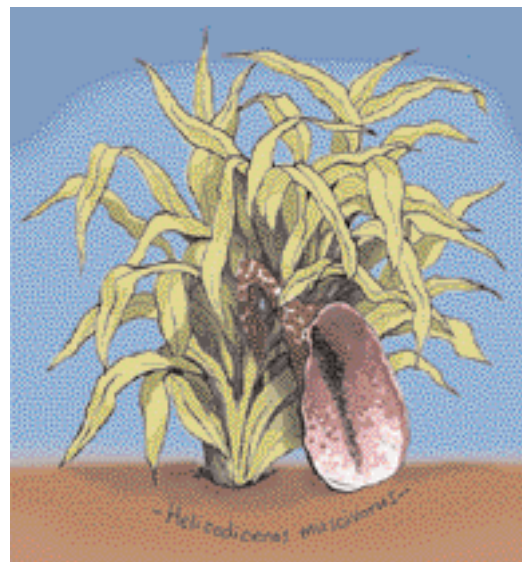
For a New Year

Ring out false pride in place and blood, / The civic slander and the spite; / Ring in the love of truth and right, / Ring in the common love of good. — Alfred Tennyson ("In memoriam", 1850).

Floral deceit

We know that some plants, to ensure their cross-pollination, offer food to insects, particularly bees, so that they may enter a flower and carry pollen on their feet and bristles. As a rule we associate this process with pleasant floral essences, and not with odours that offend our nostrils. However, flies that are attracted to rotting carcasses by their revolting smell may also be enticed to perform the pollination operation by flowers that produce equally revolting essences.

A communication by scientists from Sweden and Italy, published in *Nature* for 12 December 2002, describes an investigation into the odorous attractant of the dead-horse arum (*Helicodiceros muscivorus*), a lily that grows on small islands off the coasts of Sardinia, Corsica and the Balearics. To ensure its pollination this plant lures insects into a trap chamber surrounding the female florets, from which spines and filaments hinder their exit. Thus, insects bearing pollen from another plant fertilise the plant visited.



The compounds responsible for attracting the insects to the arum and to a rotting carcass were investigated by chromatography and flame ionisation and their effect on blowflies studied by applying them to the insects' antennae. Stimulants from both sources generated identical antennal responses. They proved to be three structurally similar oligosulphides, dimethyl mono-, di- and trisulphides. These compounds are synthesised in the headspace of the arum plant and are produced during the decomposition of protein in decaying meat. Thus, oligosulphide odours serve the dual purpose of attracting blowflies for food and also assisting the pollination of arum lilies, something that they do presumably without deliberate intention or motive. "This plant is a striking example of evolutionary cunning that exploits insects for pollination purposes," the researchers write.