

Science

The word originates with the Latin, *Scienzia*, which translates most readily as 'knowledge' and certainly this would have been how the great scholar-priests of medieval times would have understood the word, always regarding such knowledge as aspects of the being of God who was of course ultimately unknowable. Hence knowledge itself was suffused from its earliest usages with an undercurrent of danger: Adam and Eve were thrown out of the Garden of Eden for eating the forbidden fruit of the Tree of Knowledge, and the history of science is shot through with myths about those reckless mortals who pursued knowledge too far and were dreadfully punished. The Greek myth of Prometheus is probably the most familiar, which tells how its hero stole fire (the emblem of natural power and destruction) from the gods and was duly chained helplessly to a rock to have his liver eaten out by vultures, the most horrible detail about the tale being that his liver replenished itself (as livers do) and that the vultures therefore returned to their hideous repast, endlessly.

The Renaissance story of Faust selling his soul to the devil in return for any knowledge he asked for, and the Romantic Mary Shelley's story of Frankenstein, the monster created by a scientist (written when she was only 19) are later such warnings against the dangers of scientific knowledge.

'Science' started to signify knowledge of the natural (rather than the human) world with the new movements of free-thinking inaugurated in Northern Italy some time after about 1450. Any such stirring of independent thought was at once pounced on by the Catholic Church as a challenge to its authority; being the most famous story of such a heresy to Galileo Galilei's, after he had developed a telescope capable of providing the observations from which in 1616 Galileo could infer the heliocentric movement of the earth, which is to say the earth's revolving round the sun, and not *vice versa*, according to divine edict.

This is one of the great early triumphs of cosmological science (although Galileo was forced to deny his discovery), but he was by no means alone either in the boldness of his discoveries or in the devising of a full-blooded methodology (i.e. system of comparable methods and procedures). In Europe, in particular, medical science, biology, chemistry and in England at the hands of Isaac Newton, theoretical physics and dynamics (supremely with his theory of gravity) raced away in an atmosphere of thrilled excitement at the possibilities of discovery

and invention. The Royal Society, which was founded in the 1660s under the King's patronage, was intended to provide a forum for the critical dissemination of science, and may be taken as the theoretical source of the extraordinary blossoming of practical technology during the next century which we call the Industrial Revolution.

By the end of that century, natural science was not only the triumphant form of knowledge, its method and its discoveries had been turned by the great philosophers of the Enlightenment (as the second great liberation of thought beginning around 1750 came to be named) directly against religion itself. Men such as David Hume in Scotland and Voltaire in France argued that science had forced religion to the sidelines of knowledge, and that reason, not faith, was the paramount human faculty.

The momentous scientific labours of Darwin, whose great work *Origin of the Species* was published in 1859, dealt another death blow to religion with its proofs of the theory of evolution. Since Darwin's day, however, science has not only established itself as the most successful system of inquiry in intellectual history – a story of success which has accelerated ever since, producing for example magical pharmaceutics and the instruments of unprecedented mass murder – it has become its own ideology.

This is the ideology of positivism or doctrinaire empiricism, according to which the study of *everything* must follow the discipline of laboratory observation, the testing (and falsification) of hypotheses, the accumulation of data and the contrivance of ever more minute systems of measurement. For it has become an unexamined supposition of normal science that the smaller the phenomenon one can study (molecules, atoms, electrons, photons, neutrinos, quanta, qualia), the nearer one is to the secrets of nature.

This rather foreshortened account omits the importance of the scientific insights and labour which yield the new theorems and the genius which imagines new metaphors for empirical testing. But it is by now important to register serious criticisms of the limits of positivism, and to say that what in French are called 'the human sciences' had better be thought of *historically*; that sociology, politics, psychology and history itself be investigated not externally as in the study of inanimate objects, but internally as the actions and consequence of human thought. Natural science, one might say, studies causes; human science studies reasons.