

JUDAISM SCIENCE AND COSMOLOGY IN THE LATE TWENTIETH CENTURY

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Judaism has been traditionally supportive of science and nowhere is this more evident than in the intense involvement of Jews with medicine.

In biblical times considerable care was taken to ensure the highest possible standards of public health. To prevent contagion the Hebrews insisted upon quarantine, burning or scalding of infected garments and utensils, thorough scrubbing and fumigation of houses suspected of infection and scrupulous inspection and purification of the diseased person following recovery (Lv 13). Anyone coming into contact with a corpse or carrion, or suffering from a bodily discharge, also required a thorough cleansing of self and belongings before resuming contact with the rest of the community (Lv 15; Nm 19). The garments, weapons and utensils of soldiers returning from battle had to be thoroughly cleansed and disinfected to prevent the spread of diseases which may have been caught through contact with the enemy (Nm 13:20-24). Whoever needed to defecate or urinate was obliged to do so outside the settlement, in a hole which was dug and afterwards covered over (Dt 23:13-14).

In Talmudic times, as in biblical times, the prevention of disease was emphasised and the importance of hygiene as a preventive measure was clearly understood. 'Bodily cleanliness leads to spiritual cleanliness' (Avodan Zarah 208 in Talmud Bavli) became an essential principle of health care.

From Talmudic times until fairly recently a large number of rabbis practised the profession of medicine, blending traditional Near Eastern wisdom with that of Greek authorities like Galen and periodically adding to the stockpile of scientific knowledge - first from their researches and study in the Islamic world of the Middle Ages and later from their findings in post-Renaissance Europe.

Of the hundreds of medieval rabbis who distinguished themselves in medicine, none was greater than Moshe ben Maimon, who lived in the twelfth century and is generally referred to as Maimonides. He wrote ten medical works and one of them (Maqala Fi al-Rabw, Treatise on Asthma, Fostat, Egypt, 1190), dealing with asthma and bronchitis, was still being studied in the medical faculty of Edinburgh University as late as the nineteenth century. Maimonides, like most other rabbi-physicians, employed a holistic approach to health, understanding well the interaction between body and mind.

A pupil of Maimonides, Yosef ben Yehudah Ibn Aqin of Fez, wrote an ethical work in which he included a curriculum of advanced Jewish and secular studies² Subjects included in this twelfth-century curriculum were Bible, Talmud, Poetry, Philosophy, Mathematics, Astronomy, Mechanics and Medicine. With regard to medicine Ibn Aqin wrote:

Medicine is the art which maintains the human constitution in a normal state and which brings back to a normal state that constitution which has departed from it. This latter activity is cure of the sick while the former is care of the healthy.

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2 *Tibb al-Nufus al-Salima wa-Mu alajat al-Nufus al-Alima* (The Hygiene of Healthy souls and the therapy of Ailing souls) Chapter 27, Fez, Morocco, late twelfth century.

The medical faculty of the University of Montpellier was established and dominated by Jewish physicians from the twelfth to the sixteenth century and Jewish physicians were prominent at the Universities of Padua and Perugia in the fifteenth and sixteenth centuries.

Most European universities refused admission to Jews until Joseph II of Austria issued his 'Edict of Tolerance' in 1782. The French Revolution shortly afterwards brought emancipation to Jews throughout Western Europe. By the middle of the nineteenth century Jewish participation in the scientific endeavours of West European nation-states was considerable. In the twentieth century such participation reached quite remarkable proportions.

Between 1905 and 1995, the Nobel Prize for medicine was awarded to thirty-nine Jews; the Nobel Prize for physics was awarded to thirty-two Jews and eighteen Jews were awarded the Nobel prize for chemistry (Jewish Year Book 1996). Given that Jews constitute less than one-quarter of one per cent of the world's population, Jewish success in the natural sciences is truly astonishing. Jews have also been prominent in law and in the arts, especially the performing arts, but their contributions to science have been far more consistent and striking. Why is this?

In part it is the result of natural selection. Only those Jews who were alert and tenacious were likely to survive the tribulations of diaspora history and those same qualities of alertness and tenacity were admirably suited to scientific enquiry and discovery.

Another reason for the millennia-long involvement of Jews with science, and a reason much more pertinent to the purpose of this paper, is that Judaism itself views science in such a positive way. Lawrence Hoffman (1996), Professor of Liturgy at the New York School of the Hebrew Union College, has recently expressed the Jewish view of science as follows: 'Our tradition remembers for good the visionaries who insist that Judaism has no quarrel with science. Why should we object to what God has made, or hide our eyes from the mysteries of God's own making?'

According to the Book of Genesis (1:27), humanity has been created in God's moral image, and that implies a human duty to reflect divine attributes when dealing with other humans or with other parts of creation. *Imitatio Dei* (in Hebrew, *Hadbakat bemidotav shel Hakadosh Barukh Hu*) is essential to Judaism, since it is written, 'You shall be holy because I; the Lord your God, am holy' (Lv 19:2). The obligation to strive for moral and social improvement is facilitated by an understanding of nature.

There are many Rabbinic parables (*Midrashim*) which suggest that the world was deliberately created incomplete so as to leave tasks and direction for humanity. One of the prayers with which we conclude each synagogue service contains the phrase *Letaken olam bemalkhut Shaddai* (to repair the world under sovereignty of the Almighty)³ From this phrase was derived the principle of *Tikkun Olam* (repair of the world), a phrase which indicates the programme which we, as God's stewards, are expected to follow and eventually fulfil. *Tikkun Olam* is also an admission that it is only with human assistance that the world may be brought nearer to completion or perfection.

In reflecting divine attributes such as justice and mercy, in imitating God and in repairing or improving our world, we fulfil our purpose as creatures of God. In order to be effective as God's stewards we need to know and understand as much as possible about the way our world is constructed. The study of the physical universe helps us to act in a more constructive manner. The pursuit of science is therefore not only consistent with but actually

3 The 'ALENU' prayer, originally composed for the liturgy of Rosh Ha-Shanah (the Jewish New Year) but for centuries since, a prayer to close each statutory synagogue service.

essential to the implementation of God's plans for us and for His world. Science assists in Tikkun Olam.

The spur to Jewish involvement with science is strengthened by the insistence of Judaism that one God has created everything and that therefore everything is interconnected and interdependent. To quote from the Encyclopedia Judaica (1971/1972:vol 10, 397):

The rise of modern science was due to a number of factors, prominent among them the Greek element in Western thought. But Judaism's teachings regarding the unity of nature as the creation of the one God are not to be underestimated in their effects on early scientific thought. It is doubtful whether science could have emerged in its full boldness and confidence against a polytheistic backcloth in which each God is allotted only a portion of the world.

To return to the theme of medicine, which best illustrates the Jewish desire to understand nature, Judaism views the physician as God's collaborator par excellence. While in other religions human interference in sickness was seriously questioned and even opposed, Judaism has long regarded the physician as the instrument through whom God effects a cure. The Jewish physician has traditionally regarded his profession as spiritually endowed which is why, for nearly two millennia, rabbis have been so active in the field of medicine.

As co-worker with God for the improvement of the world, humanity is entitled to remove whatever obstructs the road to physical and mental health. Judaism sees it as a religious duty to mobilise all the resources of human knowledge in the fight against disease. Human welfare is promoted by advancing the science of medicine; by improving the instruments, methods and institutions of healing, and by increasing the knowledge and general conditions of hygiene. Judaism is as concerned with physical well-being as it is with spiritual well-being, though it also recognises the interaction between spirit and body and encourages medicine to do the same.

Throughout Jewish history the art of healing was understood to include psychotherapy but was never restricted to curing by faith. An early praise of the physician, and one which acknowledges his dependence upon God, appears in the Apocryphal Book of Ecclesiasticus, compiled by Yehoshua ben Sirah (chapter 38) in the second century BCE:⁴

Honour a physician with the honour due to him for you may have need of him. The Lord has created him and from the Lord comes healing. The physician shall receive honour from the King. Because of his skill the physician may hold his head high and be admired ... Give place to the physician for the Lord has created him for a purpose ...

The official Jewish view of medicine is summarised by the foremost fourteenth-century authority on Jewish law, Yaakov ben Asher: 'The school of Rabbi Yishmael (one of the leading legal authorities of early second-century Palestine) derived from the words in Exodus 21:19 ('and he shall cause him to be thoroughly healed') that permission is granted the physician to heal ... The physician may not say, 'God has struck down so who am I to heal?' This is not the way to proceed for did not King Asa, when sick, consult physicians rather than God? Hence scripture teaches us that not only is the physician permitted to heal but he is in fact obliged to heal' (Arbaah Turim, Yorej Deah, chapter 336). Repeated in the

4 BCE (Before the Common Era) and CE (Of the Common Era) are the Jewish equivalents of the Christian terms BC and AD.

sixteenth century legal code Shulhan Arukh,⁵ ben Asher's statement that the physician has a duty to heal, assumes the force of law.

In the *Kitzur Shulhan Arukh* (a nineteenth-century condensation of the more voluminous sixteenth-century work), Solomon Ganzfried⁶ places the responsibility upon the patient. In time of sickness, Ganzfried insists, it is the religious duty of the patient to consult a physician. Failure to do so constitutes an act of presumption on the part of the sufferer as if he presumed to merit the direct and miraculous intervention of God (*Kitzur Shulhan Arukh*, chapter 192, vs3-4). It is, by the way, a principle of Judaism that we do not rely on miracles (*Bava Metzia* 598 in *Talmud Bavli*).

In considering the Jewish view of science I have (for reasons already stated) concentrated on medicine but, for the past century and a half, Jews have participated fully in all branches of science and have been responsible for many important discoveries. Not all of these discoveries are necessarily seen today as beneficial to humanity.⁷

The twentieth century has witnessed a catastrophic coincidence of scientific success and moral failure, enabling war, genocide and environmental degradation on a scale which no one in the past could ever have imagined.

Disenchantment with the industrial and technological fruits of science is not all that modern, for 200 years ago the English painter and poet, William Blake,⁸ railed against the 'dark Satanic Mills' and saw more clearly than most that the industrial revolution would seriously damage the fabric of society. The division and subdivision of labour was to lead to the near-extinction of ancient crafts. The abandonment of the countryside by a work force seeking better and more regular pay in the factories and the foundries of industrialising Britain would lead to severe social disruption, slum proliferation, falling standards of health and rising levels of crime.

There was no Jewish counterpart to William Blake. On the contrary, as the nineteenth century progressed, European Jews seemed to embrace science and its products more enthusiastically than ever. As children of the Enlightenment they possessed a naive and even utopian view of human and scientific progress. The Aufkl-rung or German Enlightenment, led by thinkers like Gotthold Lessing⁹ and culminating in the work of Immanuel Kant,¹⁰ was a prelude to the American and French Revolutions and to the civic emancipation of West European Jewry. Enlightenment thinking suggested that argument only assumes validity when it can be supported by scientific evidence - by carefully documented experiment. The 'scientific method' altered the fundamental question 'why' to 'how'. Whereas religion seeks a purpose, science seeks a cause. Medieval society had been dominated by religion and had

5 The *Shulhan Arukh*, written in the Gallilean town of Safed by Yosef Caro in the mid-sixteenth century, is based upon the *Arbaah Turim* and is the last great codification of Jewish law.

6 Solomon Ganzfried (1804-1886) was a leading Orthodox rabbi in Hungary. His *Kitzur Shulhan Arukh* (1864) achieved great popularity and became the main handbook for Ashkenazi Jewry.

7 The construction of the first roadworthy automobile by Siegfried Marcus in 1875 and the first atomic bomb by Robert Oppenheimer in 1945 are examples of discovery which many of us might now regret.

8 William Blake (1757-1827) was a visionary and social critic who struggled against official indifference and incomprehension at the time of the Industrial Revolution.

9 Gotthold Ephraim Lessing (1729-1781) was a German dramatist, critic and philosopher and an early champion of the Jews.

10 Immanuel Kant (1724-1804) lived his whole life in Konigsberg and from 1770 was Professor of logic and metaphysics at the university there. His major work, *Critique of Pure Reason*, appeared in 1781. He defined 'enlightenment' as the liberation of the individual from a self-induced state of subservience to institutionalised authority.

tended to ask 'why?'. Since the eighteenth century, European society has been essentially secular, scientific and outward-looking and intensely concerned with the question 'how'?

Among the enlightenment philosophers was Moses Mendelssohn,¹¹ the first Jew to be fully accepted in German Christian intellectual circles and the man chiefly responsible for pointing his people in the direction of secularisation. Mendelssohn and his disciples encouraged their fellow Jews to adopt modern western modes of thought and behaviour and to regard scientific progress as a valuable agent of social improvement. After hundreds of years of social isolation, newly emancipated Jews felt deeply grateful to the Enlightenment which they saw as responsible for bringing them out of the ghetto.

By its espousment of the 'scientific method', Enlightenment thinking further strengthened the Jewish attachment to science. Jewish disillusionment with science would not arise until the twentieth century.

The intellectual hero of nineteenth-century Jewry was Immanuel Kant.¹² Despite his criticism of Judaism, which he regarded as overly concerned with worldly matters, Kant was supported by liberal Jews because of his contention that religion was essentially a system of ethics. In his own lifetime Kant inspired a number of Jewish thinkers¹³ and during the Neo-Kantian revival of the late nineteenth century his staunchest supporter was Herman Cohen,¹⁴ who was Professor of Philosophy at the University of Marburg from 1876-1912. Cohen initially taught that religion was only a historical presupposition for ethics and would eventually be absorbed by ethics. In later life Cohen returned to a more theocentric position and maintained that there are problems which ethics cannot explain because ethics deals with man as a type and not with man as an individual. Only a God-centred religion can satisfy individual needs.

Herman Cohen may have enabled Jewish devotees of Kant to remain loyal to Judaism but he could do little to combat the anti-religious tendencies of Darwinism. On the Origin of Species, published by Charles Darwin in 1859, undermined traditional religious understanding of how the world came into being. The Darwinian theory of evolution challenged the Book of Genesis and appeared to shake the foundations of Judaeo-Christian belief. The discovery and decipherment of Ancient Near Eastern texts cast further doubts upon the originality, and therefore upon the divine origin, of parts of the Genesis narrative and upon segments of the legislation in the other Pentateuchal books. Palaeontology showed that our planet was much older than the Bible suggested.

Those who embraced the 'scientific method' could not remain biblical fundamentalists and those who remained biblical fundamentalists had to reject the 'scientific method'. This was a problem to be faced by both Christians and Jews and even today there are places where the teaching of evolutionary theory is powerfully resisted. Biblical criticism, which

11 Moses Mendelssohn (1729-1786) was the first influential thinker to advocate and carefully plan the social emancipation of the Jews for whom he became a much-loved role model.

12 So enamoured of Kant were nineteenth-century Jews that they even read his name into the liturgy: In the Hebrew original of Psalm 42:2 is the phrase *ken nafshi taarog elekha* (Thus my soul pants for you) which is paraphrased in a well-known synagogue hymn as *ki alekha nafshi taarog*, the first letters of which spell KANT.

13 Marcus Herz (1747-1803), Solomon Maimon (1753-1800) and Lazarus Bendavid (1762-1832) were all devotees of Kant and explained or reflected Kantian ideas in their own writings.

14 Herman Cohen (1842-1918) initially trained for the rabbinate before turning entirely to philosophy. In later life he returned increasingly to his Jewish roots and following his retirement from university life (in 1912), taught at the Hochschule fuer die Wissenschaft des Judentums, the great liberal rabbinic seminary in Berlin.

was pioneered by German Protestant scholars like Julius Wellhausen¹⁵ in the late nineteenth century, does not of necessity demolish either faith or the essential worth of biblical teaching. Indeed, literary research and archaeological findings have frequently supported the integrity of much Old Testament material. I personally regard the first eleven chapters of the Bible as mythology, drawn from the literary treasures of ancient Sumerian and Semitic cultures but nonetheless, in its Hebraic form, profoundly insightful of human nature.¹⁶ Israelite laws may in part have been based upon the legal codes of Ur-Nammu, Lipit Ishtar or Hammurabi,¹⁷ but that does not invalidate their worth or obscure the fact that Israelite law is invariably more moral than the law from which it borrows.

While some Jewish fundamentalists strive, through tortuous exegesis, to resolve the conflicting claims of creationists and evolutionists, almost all Jewish fundamentalists reject the notion that biblical narrative and law could be partially derived from older Near Eastern models.

What impact, if any, has the 'new cosmology' had upon Judaism? Jewish fundamentalists may be worried by theories which challenge the biblical accounts of creation but Judaism per se is primarily concerned with human nature and with the quality of society. During the 4 000 years that have elapsed since Abraham discovered monotheism, Judaism has had to deal with many theories of the origin and structure of the universe - Babylonian, Canaanite, Egyptian, Persian, Graeco-Roman, medieval, postmedieval and modern. It has rejected those which it found to be untenable and absorbed elements of those which it found to be reasonable. To date most cosmogonies have been compatible with Jewish notions of a 'first principle' or 'primary cause' bringing all that exists out of nothing. Aristotle, like other Greeks before him, conceived of eternal matter, thereby challenging the Judaeo-Christian dogma of *Creatio ex nihilo*. Among the medieval philosophers who attempted to resolve the conflicting views of Aristotle and the Bible was Maimonides, mentioned earlier in this paper as a leading physician but remembered chiefly for his contributions to philosophy and law. Maimonides, like other Jewish, Christian and Islamic thinkers of the Middle Ages, saw God as the instigating and unifying principle of existence. The Divine Spirit, which is beyond time and space, brought the universe into being and continues to maintain it. The manner and means by which the universe came into being and the manner and means by which it continues to be, is largely unknown, though such paucity of knowledge has failed to inhibit scientists from publishing many persuasive theories.

As long as God may be seen as the architect, builder and maintainer of all that exists, it matters little to Judaism whether the universe came into being in this way or that, or whether it operates in that way or this, unless such constructs impinge upon the everyday conduct of human affairs. The origins and composition of the universe are irrelevant to considerations of basic human need - physical or spiritual.

15 Julius Wellhausen (1844-1918) son of a Lutheran pastor, was a formidable biblical scholar and historian of the ancient Near East.

16 In the 'Epic of Gilgamesh', for instance, humanity is destroyed by a flood because of divine whim and the hero, Utnapishtim, is saved from the rising flood because he is the favourite of one of the gods. In the much later Genesis story humanity is destroyed by a flood because of its wickedness and Noah is saved because of his righteousness. The biblical author transforms an ancient myth through the injection of morality.

17 Ur-Nammu, King of Ur, Sumer and Akkad from about 2113 to 2096 BCE, promulgated laws which were remarkably humane and introduced the concept of monetary compensation for victims of violence. Lipit-Ishtar, king of Isin from about 1934 to 1924 BCE, introduced legislation dealing with succession, property, contracts of hire and slavery. Hammurabi, king of Babylon from about 1792 to 1750 BCE, produced laws which dealt with commerce, marriage, family, property, agriculture and many other matters. His laws were often harsher than those of Ur-Nammu.

I have lived through a number of cosmological fashions and care little about things like the Big-Bang hypothesis, cosmic background radiation, expansion of the universe, pulsating universe, steady-state hypothesis or whatever else, because such theories really do not affect everyday human existence. My concern is not with the cosmological views of scientists but rather with those of their discoveries which have a real effect, positive or negative, upon life as it is lived by most people, animals and plants. Jewish non-fundamentalists, like myself, question the morality of twentieth-century scientists who have produced the means to bring so much horror and degradation to humans, animals and plants. The millennia-long love affair between Judaism and science has been cooling down for some time as Jews have come to realise that, while some scientific discoveries have undoubtedly proved a boon to humanity, too many have not. The naive optimism of nineteenth-century Jewish intellectuals, intoxicated with Kant and convinced that science was about to lead humanity into a golden age, seems very remote and unreal from our perspective.

Disillusionment with the negative consequences of scientific research should not lead to a total rejection of science for, after all, it is not science as such which is at fault, but rather those scientists who have allowed themselves to be corrupted by unscrupulous patrons. When science and ethics part company, catastrophe is sure to follow. What religions in general must demand of scientists is a greater sense of responsibility towards society - an acknowledgement that they live under the moral law as we all must do. While remaining supportive of scientific research we must also demand of scientists that they distinguish between use and abuse of the earth's resources. Because technology is a two-edged sword, the modern scientist needs to be ethically aware as well as technically skilled.

In Genesis 2:15 it is written that God placed the first man in a garden to work it and conserve it. From this we should learn that the riches of our planet are there for our use but that such use must be accompanied by a caring attitude towards the earth and its manifold, interconnected, systems. The Bible demands of Jews (and of Christians too) that they conserve and protect the environment. Judaism may have broken off its love affair with science but it still requires scientific assistance to realise the ancient dream of repairing the world. Scientists have discovered and developed demonic ways of harnessing energy, and degrading ends for the employment of raw materials, but technologies of war and destruction can be diverted for peaceful and constructive use. Did not the Hebrew prophets look to a time when swords would be beaten into ploughshares? (Is 2:4; Mi 4:3).

Here in South Africa the military establishment has invested considerable resources in the development of war technology. It may be tempting to utterly reject such technology because of our revulsion over its deployment, both for political oppression at home and political destabilisation abroad. We would do better, though, to transform and redirect its capabilities, and to some extent this has already been done. Ceramic material refined for use in rocket nose-cones is now found in kitchenware that can be taken straight from the freezer to the oven. A tiny plastic filter developed for armoured-car engines has been successfully adapted for tractor engines, eliminating ninety-eight per cent of air pollutants before the normal filter takes over. Infra-red goggles used for night-fighting have been adapted for use in mines.

Science in the service of industry and agriculture has provided the means for polluting land, air and water, and must now provide the means for resurrecting polluted soil and for purifying foul air and water. Medical research has enabled *in vitro* fertilisation, donor insemination and surrogate motherhood, thus introducing us all to new moral dilemmas which demand solution. Scientists payed by government or business have devised ways of invading privacy, so all who live in democratic societies (as we now do) must exercise their

civic rights and protest until governments are persuaded to respect and protect the privacy of those they govern. New means have to be found to neutralise the harmful effects of technology and always ethics must be at the centre of scientific planning.

Some thirty years ago, at the Haifa Technion, the following question was inserted into final-year examination papers: 'How would you construct a pipeline to carry blood from Elath to Haifa?' Technically brilliant answers were produced but not one student asked why it should be necessary to pipe blood from one city to another. Since then, all Technion students have been required to take courses in the humanities.

Because scientific training is essentially about how things work and how problems may be solved, the average scientist does not find it natural or easy to ask why certain morally dubious things are being done or if a particular line of enquiry and development will accord with ethical demands.

The apparent conflict between science on the one hand and religion and literature on the other has been a dominant theme in the writings of several British intellectuals. CP Snow¹⁸ coined the term 'two cultures' in his memorable 1959 Rede lecture at Cambridge in which he revived a controversy already dealt with by Thomas Huxley, Matthew Arnold and Alfred Whitehead.¹⁹ Snow maintained that intellectuals are either 'scientists' or 'humanists' who have been trained so differently from one another that they possess no common language. He brashly declared that 'humanists' cannot understand the simplest scientific concepts.²⁰

When I began my tertiary education in Western Australia in the 1950s, all BA students were required to take a certain number of science courses and all BSc students were required to take a certain number of arts courses. It used to be the case in North American universities that all students completed a liberal arts degree before specialising at post-graduate level. One of the fundamental problems with British education is that one must choose sciences or arts at too early a stage. Specialisation in adolescence leads exactly to the 'two cultures' society which so vexed CP Snow. It makes it possible for scientists to be relatively untouched by ethical considerations and for 'humanists' (to use CP Snow's term) to be so ignorant of science that they are impotent when attempting to persuade scientists to behave more morally.

Leonardo da Vinci may have been the last man who could justifiably claim expertise in the sciences and in the arts. The stockpile of knowledge is today so vast (and especially so in the sciences) that even within a given discipline, practitioners know little of areas outside of their own speciality. 'Renaissance man' is probably now a romantic and unattainable type but this does not absolve intellectuals who are scientists from knowing something of religion and literature or those who are experts in religion, law or the arts, from possessing at least a basic understanding of science.

When medical scientists are faced with problems of genetic engineering or euthanasia they must surely consult with representatives of the major religions who can offer ethical advice. Medical ethics is a field far too important to be left entirely to those who are trained to ask 'how' but not 'why'? Since such matters concern women, as much as men, it is also necessary for women to be fully represented among the decision-makers. Judaism has no

18. Charles Percy Snow (1905-1972) was a British scientist and novelist.

19. Thomas Henry Huxley (1825-1895) was a British scientist and humanist. See his *Science and culture* (1881).

Matthew Arnold (1822-1888) was a British poet and critic. See his *Literature and science* (1882), a reply to Huxley. Alfred North Whitehead (1861-1947) was an Anglo-American mathematician and philosopher. See his *Science and the modern world* (1927) in which he reconciles science and the arts.

20. Frank Raymond Levis (1895-1978) was a British literary critic who answered Snow with considerable acerbity in his 1962 Richmond lecture at Cambridge.

new answers for late twentieth-century problems but I believe that some of its old answers retain their relevance. The concept of Tikkun Olam (repairing the world) is surely relevant in a world where so much damage has been done. With its insistence that humans are created in the divine image and must reflect divine virtues like justice and mercy, Judaism offers a world-view which some may consider to be overly idealistic but which I consider to be eminently sound. I do not share the view of Thomas Hobbs²¹ that humanity is essentially brutish and will only conform to standards of decency when legally compelled to do so. My view (and the view of Judaism) is less cynical. I do believe it possible successfully to appeal to the altruistic side of human nature though I would also consider it mandatory to support legislation which curbs and punishes further assaults upon society and upon the natural environment. It is sensible to believe that humans do have the capacity and the willingness to act as God's stewards because, unless they do, we and all life upon this planet are ultimately doomed.

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21 . Thomas Hobbes (1588-1679) was a British philosopher and political theorist. See his *Leviathan* (1651).