

Manfred E.A. Schmutzer
Vienna University of Technology
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- Is Religion an Obstacle to Progress?

Manfred E. A. Schmutzer

Vienna University of Technology
Institute of Technology and Society

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Introductory Remarks

Lynn White, the eminent American historian of technology once wrote an article (1968), claiming that the teachings of the bible are at the source of an attitude that regards man as the master of nature and hence promote technological progress.

This observation of L. White puts a remarkable question mark behind the multiple assertions claiming the opposite, namely that religion is nothing but a sinister plot of a group of obscurantist, dominant reactionaries.

When positions are as contradictory as those mentioned above, a somewhat closer scrutiny may be indicated. First we should clarify what is to be understood by "progress" and then analyse the impact religion has on it.

In the second place we might ask if other religions than Christianity or Judaism, or possibly the different denominations of Christianity, have differing impacts on progress. And third the question may be asked if the progress related message which different religions provide for their adherents remains the same as time passes, or if these messages and positions are modified by "Zeitgeist", i.e. according to the prevalent ideas, questions and values of a certain age.

A serious attempt at answering these questions would probably require writing at least one learned book, if not more. In view of the few pages at our disposal in the present context, no attempt shall be made in this direction. Instead the stress will be put on the concept of "progress", a concept which might be taken to be uncontroversial and quite obvious. It will emerge that the conception of "progress" is loaded by presumptuous presupposition.

Some Teachings of Technology Assessment

One thing will be clear from the outset, the concept of "progress" is loaded with value judgements, as it is movement in a certain direction. Without desirable ends progress would be nothing more than change. From this follows the necessity to inquire into the social origins of these value judgements since no good exists without beneficiaries making positive judgements, if and when their ends are served. Who are the beneficiaries?

In relation to technological progress one frequently encounters the argument, that Man or humankind as such is the beneficiary.

This position in most instances is quickly supported by convincing examples, such as the increase of life-expectancy or the fulfillment of supposedly eternal dreams of mankind, such as unlimited mobility, flying or communicating with the speed of thought. These references to individual desires bear at first sight much plausibility. Few people will abstain from giving preference to an increased life-expectancy and many will also find the suggestion of an eternal dream of flying convincing. Mythologies of diverse origins provide evidence from times immemorial that men must have cherished such desires.

Second thoughts will cast doubt on these projections. Such second thoughts have a fairly long tradition. Not infrequently do the ancient mythologies themselves supply their own counter teachings, as the fall of Icarus demonstrates. And thoughtful sceptics, such as Jonathan Swift in the 18th century, provided counterarguments already at a time when medical progress was minimal and no-one could seriously expect prolongation of life from medical research. Swift pointed in one of his parables to the misery of people of very old age which he portrayed as stigmatized. Forgetfulness, the premodern version of Alzheimer's disease, progressive frailty and bodily deficiencies dominate their life, and cause - according to Swift - the contemporaries of such people to shrink back from them, such that misery is aggravated by social isolation.

For this alone one might consider Swift as a greatgrandfather of Technology Assessment since he offered an analysis of a kind of progress which is the regular output of certain scientific academies or research institutes today.

Swift's analysis provided accurate insights at a time when an extended life-expectancy was quite remote from being realised. Alzheimer is a social burden today, social isolation of the elderly a common evil and the need for care increases such that no-one believes that an adequate number of homes for the aged can be provided and supported in the future.

The following query is unavoidable:

Is this kind of progress to the taste of its supporters; is it satisfying the age-old dream of mankind? Presented with Swift's picture most people would hesitate to give an affirmative answer, without making some preliminary remark about further research to be performed, social provisions to be increased, or similar precautions to be provided.

Still the same people would undoubtedly have responded in a positive vein when simply asked, if an increase of life-expectancy seemed a desirable end and its achievement a shining example of what "progress" should signify.

It would not be too difficult to subject increased mobility or the ancient longing for flying to a similar analysis producing comparable results. We will not for the moment perform this exercise, but turn our attention to a more pressing topic.

A Law of Decay of Value

If – as indicated above – no topic can be found which might unequivocally be considered to represent progress, we have to ask, what message is transmitted by this concept. Mere instantaneous betterment of life is not automatically an improvement of life, so the interesting question is, who are the beneficiaries broadcasting such positive judgements and who are their opposites, the disadvantaged, who remain silent.

When the normative question is asked who the beneficiaries of technological progress should be, there is little doubt that a consensus will be found that progress should be for a majority. This perspective conforms to basic principles of democracy, to which a majority again at least pays lip-service.

In the case of the aged we found however that the larger the number of "beneficiaries" the greater the burden to society in general. But we also found that the closer we come to ultimate success by getting advances equally distributed, the less gains result for the ones afflicted, as the overall-costs involved for a very large number are rarely correctly estimated and tend to be kept constant. A majority will, as can be seen from arguments presented in the context of the European pension debate, opt for a solution of minimizing costs for those who are young and healthy and temporally far from becoming "beneficiaries". Looking at the age-old dream of increased life-expectancy from the point of view of a majority we may come to the conclusion that it is a spurious one. It rather seems a kind of lipservice of those who normally give little thought to their own death and even less to that of others. Perpetuation of a present comfortable life looks desirable at first, when a possible inversion of the present state of affairs is rarely seriously considered.

Nonetheless, it is true that people in Central European countries find themselves in general in a more desirable state of health than the same age cohort found itself a century ago. People aged sixty or seventy become comparable with respect to physical fitness to those fifteen or twenty years younger one or two centuries ago.

This at first sight constitutes a manifestation of progress. But what kind of progress? One may argue that this advance is less attributable to technology or science than to a particular kind of social system. It is a platitude to note that the rich and wealthy used to have a higher life-expectancy than the poor and miserable in any period of history. Central Europeans belong to the first group due to political systems emphasizing some kind of social solidarity and equality. As a quick glance across the Atlantic Ocean shows, technology and science alone do not guarantee increased welfare for a majority of the population, but generally only for those being well-off. WHO statistics for the year 2000 put the United States of America, certainly one of the most advanced countries with respect to research, between Croatia and Cyprus in the 32nd position with regard to "Equality of Child Survival" and in a meager 54th place in the vicinity of countries such as Fiji, Bangladesh and Iraq as regards "Fairness of Financial Contributions to the Health System".

From this perspective one may infer a general impossibility of distributing the declared good to a totality of the population.

It looks as if the results of progress must remain restricted to a small number only - of what definition ever - as the general good obeys a little recognized law of dialectical inversion. This law states that the more any positively valued institution or substance is spread out and becomes common property the more it loses in value, deteriorating further until it finally mutates possibly even into negative value becoming undesirable by this.

From this it follows that rules should exist keeping the propagation of progress restricted to maintain its value. Consequently restrictive prescriptions will be demanded for distributing the scarce good in a population.

As an auxiliary lemma one may stress, that this kind of scarcity results from intentions and is not natural, as economists frequently like to put the case.

The Law of Small Numbers

The law cited above will perhaps sound unacceptable, particularly when taking into consideration the sometimes horrifying costs incurred for attaining technological progress. The expenses are in the vast majority of cases not paid by the few enjoying the results but by the majority not having the favour of receiving the benefits or receiving them only, when quality already has degraded substantially.

Such a result poses a veritable dilemma. Not only will many doubt that such a law of transformation exists and if, then only in exceptional cases, but it also appears to be a highly elitist conception counter to anything proclaimed as being humanitarian. On the other hand a vast promotion stressing humanitarian ideas tries to justify the efforts and investments made in the name of progress for all. The situation merits closer scrutiny.

First the validity of a decay-law of values will have to be substantiated. Decay of the value of information is one example amply known and accepted. The principle states simply that the frequency of occurrence of a signal defines the information value of the signal. Signals amply available carry little information. The increasing occurrence of a particular signal devalues the signal consequently. This principle finds a very common demonstration in the decay of the market value of goods. Rare goods are highly priced, their common availability would force prices into the cellar. This observation again gains its validity from the decay of information. Expensive luxury goods derive their value from their scarcity, making them at once very potent signals or symbols. Therefore luxury goods have to be kept rare. An example is provided by the international diamond market which is highly regulated and controlled by a very small oligopoly.

Marxists have argued since long, that the value of any good is inherent in the good. It is use-value that counts and use-value is independent of the surrounding objects, contrary to information-value which depends on the context of other objects. Following Marxist theory one would argue that increased life-expectancy does not deteriorate by the mere fact that others enjoy it too. However we have seen already that the value of prolonged life decreases when shared with a vast majority of people, as a constant amount of material support will be spread out over a larger number and thus thinned out.

The insight corresponds to one little recognized by sociologists despite the fact that Max Weber expressed it long ago: He called it the law of "Small Numbers" referring to an observation he made, that organisations tend to minimize the number of members as far as possible.

Weber does not give reasons for this tendency, but it seems obvious that it must lie in the distributive mechanisms within an organisation: The smaller the number, the bigger the share.

As the quality of increased life-expectancy depends on the provision of various costly supports certain limits will be reached and the share will decrease if the number of beneficiaries increases¹. This is the simple logic behind Max Weber's law.

One might argue that such a principle only holds in cases where some common good has to be distributed. Taking some of our previous examples of beneficial progress, such as enhanced mobility or the coming true of the eternal dream of flying, we easily see that an increase in the number of those enjoying the advance diminishes the benefits of the advance rapidly. Without long discussions

¹ An illustrative example is the on-going discussion of financing expensive surgeries for the elderly in the UK. Costly surgeries shall not be performed on persons over seventy years of age, unless they pay for them out of their own pockets.

one will gain support of this proposition from anyone having been exposed to traffic congestions or having been made to wait for some surgical transplant for weeks, months, even years. Insecticides, the applications of antibiotics, the spread of the media or the advances of industrialized agriculture, global warming etc. all teach us similar lessons.

The teaching of all these examples is that the fruits of progress should remain restricted to a small minority if their value is not to diminish.

If this is true, progress loses the main argument for its justification, - but some new questions arise.

The Pilgrims' Progress

Advances of technological and scientific insights were linked to social welfare already by Francis Bacon, most probably the creator of the concept of scientific progress. The growth of knowledge will according to his prognosis provide a plentitude of food and clothing and medical practices, banning hunger, misery and diseases, and providing the basis for paradise on earth, as skillfully painted in his *Nova Atlantis*.

The growth of the wealth of nations lay also at the roots of Adam Smith's intentions and many thinkers and politicians have subscribed since then to the doctrine of improving the lot of the masses by encouraging scientific and technological progress. Ghandi, MaoTse Tung, Lenin or Roosevelt, economists, philosophers or scientists of reputation, all propagate one remedy, which is the advancement of learning.

Focussing our glance on such figures of historical stature one cannot help seeing others appearing simultaneously on the horizon. As they take shape an army of occasionally strange appearances comes into sight. Ancient Chinese and medieval Italians, Jewish patriarchs, Indian pundits, Arab sages and Hellenic scholars, together with many others, make up this colourful assembly. Clearly, the question arises, what might bind together this diverse group. In unison their voices preach that improvement of life cannot be found by ameliorating the present external world but rather by an orientation towards another world, a world only coming. This alternative is amply exemplified by John Bunyan's allegory quoted above. But this future-oriented perspective seems to coincide with the gospels of the prophets of progress.

What distinguishes however the first group from the last is their excessive individualism, their claim that salvation must be achieved by anyone's own personal efforts for his individual sake.

The group promoting scientific progress contrarily argues for the collective, as improvement will be achieved by a successive joint action for the salvation of all, particularly however for future generations - notwithstanding the possibility of some individual gains here and now.

This seems to be a strange and puzzling result, as the proponents of progress are usually identified with other claims of the enlightenment, such as human rights, individual liberty, democratization etc.. On the other hand proclaimers of individual salvation are normally considered to be representatives of communality, solidarity and collectivity. How do these two contradictory attitudes go together? Is the idea of progress indeed an immaculate conception?

Benedicting Benefices

In the previous arguments interest focussed on questions of redistribution. The fruits of the loom of progress seemed to get distributed in an unsatisfactory way by being subject to a miraculous principle of decay of value: as the number of people receiving benefits increases, the value of these benefits diminishes. In other words: the smaller the number, the higher the rewards.

Any support system is at the same time a system of renunciation; granting support means granting something that will not be at one's own disposal any longer. Collecting support has been since times primordial linked to promises, as otherwise no or only small support will be given².

² A remarkable example of this strategy could again be experienced during the last few weeks. The announcement of the completion of the human genom sequence was delivered to the public accompanied by most exaggerated exclamations. The abolition of genetic diseases, novel insights in the workings of evolution, genetic screening etc. are among those promises. Last not least we will, due to this advance, finally discover the meaning of life. For those interested in confronting an exemplary piece of these eulogies, see *SCIENCE*, vol.291,No.5507, Feb.16th,2001. The entire copy is devoted to this particular subject.

Looking at these transmutations one may distinguish two opposing concepts of awarding benefits. One suggests individual persons to be rewarded for services rendered to society, whereas the other proclaims rewards to society for supporting individuals. Translating this into a system of renouncement, it simply means that in the first case a collectivity profits from individual offerings, in the other one individuals or small groups gain from the collective.

Here lies the crux of the different procedures. Both camps extract support for quite distinct constituencies. If the one promotes some collectivity, a class, a family, a church, the other one promotes individuals, usually portrayed as exceptional and ingenious. Since the Second World War however, when research and innovation became industrialized, ingenuity need not be attached to individuals only. The "geniuses" formed groups and were incorporated in corporations³. But this is not essential to our arguments.

By this subjection to corporate whims the sheer quantity expended for support grew probably on an exponential scale, the principle remained however the same.

Revenues still are provided by the public in form of exuberant prices and they are granted to the few.

Although it is not central to our present argument the sources distributing rewards should for illustrative reasons not remain unmentioned. Progress is sponsored today by two main sources, first by the government in the form of distributing taxes for financial support of research, and second by the market.

To demonstrate the working of the first support system, a brief reference to the 6th European Research Framework Programme may suffice, which devotes 17.5 billion Euros to research within the next five years. Seven target areas are defined, i.e. bio- and gene technology, information technologies, nanotechnologies, space and aviation, environment and sustainable growth including renewable energy, safety for nutrition, and civil rights in a knowledge based society. Taking the last two topics as being those of immediate interest to the individual, the rest being addressed rather to big science, industry, and the military, we find, that 825 million, i.e. 4.7 % of the sum total, are granted to research in the interest of people. But even this does not necessarily mean that any results of such sponsored research will eventually reach the supposed target group.

The second system of redistribution is the highly praised market, which being manipulated by government's support of patenting with the benediction of business corporations, is transformed into monopolies or oligopolies. This guarantees high prices for a long period by suspending competition.

This regulation safeguards and channels revenues again to the few, even after termination of patent rights, as a recent campaign by OXFAM in the UK made public not for the first time.

OXFAM accused for example drug companies publicly of using patent rights to deny millions of people life-saving medicines, particularly in the third world. The Financial Times (Feb. 17th, 2001) quotes in this context the head of GSK - company saying, that his company sold 80% of its medicines to 20% of the world's population only.

The entire report of FT may however be summarized by the following quotation:

"...the balance has skewed too far towards corporate wealth rather than public health " (ibid.)

This seems to be a valid illustration of what was said above: Progress is progress for the few, or else it will be subject to the principle of value decay.

Religion and Progress: What the conflict may be about

Linking these considerations to our initial statement about the role of religion vis-à-vis scientific and technological progress, some preliminary, sociological remarks on religion prove unavoidable.

³ Due to the great successes of the Manhattan Project and for fear of creating from jobless scientists a most influential political opponent the US government started to sponsor private research at universities etc., but mainly for longterm military targets. Till 1978 government support in total research expenditure was about 60% annually. After this year commercial R&D funding superseded government expenditure and is by now about three times the amount of Federal spending. University research became by that increasingly dependent on industry with far reaching implications on ethics, accountability and conflicts of interest. See on this topic *THE ECONOMIST*, Feb.15th, 2001.

According to E. Durkheim religion is nothing less than a transfiguration of society, god is society at large. Durkheim based his study on a detailed analysis of Australian aborigines claiming that this would be the way of seeing the most rudimentary forms of religious life and by this its constituent elements.

Although society is composed of distinct individual persons their personality results from their contemporaneous co-existence and interaction. For enhancing the capacity for cooperation individuals are subjected to shared experiences of high emotional content stamping their consciousness. These experiences are transmitted in feasts and rituals. They create a feeling of a common identity and belonging.

Gods and society exist only insofar as they find a place in human consciousness. Just as individuals depend on society, society depends on them. Society supports individuals because and only if individuals support society.

Since god is society, god also depends on these elementary individuals. A mutual relationship exists of perennial giving and taking.

A sacrifice is an act of renunciation by which gods and society gain the power to reciprocate. Whether sacrifices are pure and sufficient enough to be accepted, always remains an open question. If they are not accepted, promised rewards will fail to materialize and intensified efforts are required⁴.

Durkheim attributes two functions to religion, i.e. explaining the world by offering a cosmology and second, providing, by cults and belief, a motivation for action.

Durkheim extended his inquiry to modern times and modern forms of religious life. Demonstrating how increasing individualization finds an accompanying trend in religious life by a growing "internationalisation" of gods, Durkheim shows how this development corresponds to extended and borderless social structures prevailing today. Such tendencies do however not eliminate the basic need and demand for collective experiences offered by rituals and feasts. Such experiences will become vested in new garments and exhibit novel forms.

For his days Durkheim argues that the ancient gods are dying away without new ones having been born. This observation is by now about a century old. Yet, he maintained too, that scientific thought is nothing more than a more perfect version of religious thought. Sprung from religion, science tends to occupy the position of religion in society and it will take possession of every one of the intellectual and cognitive functions of religion. One of the two main functions of religion, offering a cosmology, will be lost to science. But the second one, i.e. motivating action by cults and belief, will be maintained by religion. Life has to be guided by motivations not provided by scientific insights.

But guiding motivations for action and making individuals sacrifice and renounce in various ways, is exactly what the ideology of technological progress amounts to, as we have argued above. The concept of progress offers motivations, creates and propagates novel ideas of individual salvation and thus oversteps the border drawn between a scientific cosmology explaining the universe and a creed motivating for action.

Based on his conviction of new versions of religious life to come Durkheim prophesied new forms of feasts and rituals for establishing the indispensable feelings of collectivity and communality. By now it transpires what these new forms are.

When the rewards of research are praised in entertaining TV films or in science fiction novels or in the sincere and candid statements of highly reputed scientists, astronauts or physicians, the new rituals are being performed. Offerings to the gods of modernity are made in public to induce them to open their cornucopia of progress and thus to guarantee the survival of our global society.

Does Religion Inhibit Progress?

Hence, when the question stimulating this essay was: "Does religion inhibit scientific progress?", the answer can only be "No, progress forms an essential constituent of the new religion".

⁴ A telling example for this procedure is in our case the gigantic increase of material inputs into cancer research.

When speaking of society and god, it will not do to forget the ever so necessary intermediaries, the high priests, as they were called in former days.

Religion serves some very worldly interests of some priestly castes. They are the beneficiaries of the tithes subtracted from the offerings of simple people. One might argue that their place has nowadays been taken by the community of scientists⁵; but no, scientists make up but a very small minority of the beneficiaries. After science has come under the tutelage of business corporations, the leaders and owners of these and their many hirelings are the real and proper beneficiaries. Thus it will not come as a surprise that from this particular quarter anyone having ears to hear will hear fervent pleas for the support of technological progress and - willy-nilly accusations, stigmatizing traditional religions for inhibiting the beneficial workings of progress.

Taking this point of view seriously, it appears mandatory to support the propagation of a multitude of different religions providing a multitude of motivations and cosmologies. By this the competitive laws of the market would be re-established, exactly where they were abandoned in the name of the holy spirit of "progress".

⁵ Not infrequently scientists are labelled as "high priests" and the other side as "lays".

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