Science, Medicine and the Puritan Society

Karl H. Niebyl
Professor Emeritus, Temple University

The period of 1626 to 1660 Dr. Webster writes,[1] is a period of spectacular scientific advance which coincided with the economic, political and religious changes of the Puritan Revolution. He argues that the " developments in science have usually been considered without more than incidental reference to other factors... (which) is not so much a reflection of the independent character of scientific activity as a distortion in perspective caused by the evaluation of science in terms of the contribution made to a small number of classic problems chiefly from the physical sciences ". Webster contends, however, that the characterization of many of the most interesting scientific, medical and technological developments which occurred during the Puritan Revolution, cannot be undertaken without serious reference to the intellectual and social context in which they occurred " (p. XIII).

Dr. Webster wants to demonstrate his point of view by concentrating on the Puritans who formed in his mind the dominant element in English society in the middle of the seventeenth century. Moreover, their contribution to science and their relevance to the seventeenth century, according to Webster, is " independent of any proof of affinity with the conventional wisdom of modern society " (XIV). Only " by accepting this scale of values will the role of scientific ideas within the complex network of beliefs of any society be fully appreciated."

---

[1] Ch. Webster, *The Great Instauration*, Science, Medicine and Reform, 1626-1660, Holmes and Meyer Publishers, New York, 1976, 520 pp. text; 33 pp. Appendices; 18 pp. Bibliography; 55 pp. Index.

Thus, two clearly delineated viewpoints direct the present inquiry: first, the Puritans are the representative intelligentsia of the period under discussion. Second, and most important for the resulting analysis, " it is necessary " in any " assessment of the attitude towards the natural world of the Puritans... not only to break away from the preoccupation with similarities between past and present science, but also to acknowledge the intellectual gulf which separates the highly professional science.. from its analogue in earlier periods ".

These programmatic statements raise a number of important methodological questions. Is the Puritan religious frame of reference even in its widest context the appropriate way to understand the seventeenth-century scientific revolution even if we were to " acknowledge the intellectual gulf which separates the highly professional science of modern industrial societies from its analogue in earlier periods "? When Webster undertakes to survey the scientific activities of the period 1626 to 1660 " in terms of priorities which were uppermost at that time ", it may indeed be said that " from this perspective the famous discoveries take on a more limited function ". But what would be the point of doing so? It would hardly be more than an antiquarian interest, unless it were meant to resurrect and rehabilitate the ideas of Edgar Zilsel (who is referred to in Webster's Bibliography but not in his Index) about the importance of craftwork in the emergence of science.

Further, Webster makes the observation that the confluence of millinarian eschatology and belief in the revival of learning " had come to assume particular importance among English Puritans ". No explanation is offered for the hundreds of years of millinarian history and utopian thought coming into a significant stage at this time - in fact providing a source for the strong beliefs in ' providence ' and ' progress ' and learning. No distinction is made between ' providence ' as a condition imposed from ' above ' with Man trying to guess at the divinely prescribed direction for his actions, and ' progress ' as originating in Man's activity - however much it was thought to be for the greater glory of God. And we do not learn either why it was that the revival of learning " came to occupy an increasingly important though not novel role in the puritan consciousness " unless it was thought to be a " recent reaction against the corrupt philosophy of the heathens and the search for a new philosophy based on experience." When we ask what kind of experience, we are referred to printing and gunpowder as contemporary ' inventions ' (and not as importations and/or appropriations from an alien culture). Why at this time and not at any other time? Nor is the reference to a supposed widening of the mental horizon through navigation and wide travels of help except that it once again confuses consequence with cause. To assert one-to-one relationships between *e.g.* the revival of learning and experience is writing descriptive history which, as such, can never explain revolutionary processes, Puritan or otherwise.

I

The first chapter is devoted to a kind of dialectic confrontation between millinary eschatology and the revival of learning before 1626. The Saints are seen as nourishing the spirits, at times flagging and forced to yield under the attacks of the forces of the Antichrist. God had sanctioned the Reformation, and the protestant struggle was merely unfolding the divine providence. Thus the parliamentarians entered the civil war well prepared and " convinced that their efforts were part of a preordained cosmic plan, being accustomed since the Reformation to examine events with a view of detecting evidence of God's special providential favors towards England." Raleigh and Bacon were seen as providing authoritative reaffirmation in their writings for this type of thinking.

While the Puritans were concerned with general " penultimate events and with the Kingdom of God on Earth ", Bacon's emphasis was on the road towards it and on the daily work of optimizing human welfare and harmony through Man's own initiative. There is thus a significant difference between the idea of the millenium — however militant and progressive at times — and the *instauratio* of technology as the eventual lever of capitalist dynamics. Bacon's use of religious terminology in his *Valerius Terminus*, an early attempt to formulate some of his ideas, only *seems* to suggest an eschatological approach. What Webster among many other historians of the scientific revolution failed to see was that it was the new ideas of man making the world and himself that were being expressed in a language the verbal images of which still derived from a dead past for which the revolutionary economic and social change was the key for the understanding of the scientific revolution *in statu nascendi*. I conclude, said Bacon, " that the use of these sums and methods has place in institutions or introductions preparatory unto knowledge ". And in the same work he wrote: " ...all knowledge is to be limited by religion, and to be referred to use and action " (vol. VI of *The works of Francis Bacon*, Spedding, Ellis and Heath, Boston, 1858, p. 28). Hence Bacon quite clearly designated religion as the boundary beyond which only eschatological concerns have their proper place, while within that boundary " doth sense discover natural things " (*ibid.* p. 29). In contradistinction, Webster took the ' religious ' aspects in the supposed background of the scientific revolution as relating the Bible and its lessons and descriptions in a Weberian sense all-too-directly to the lived-reality of the sixteenth and seventeenth centuries.

There is, however, still a different sense in which in regard to the scientific revolution Webster's Bible-studying Puritans and Bacon's Bible-trained mind had, in effect a meeting ground and were in a way complementing each other in their awareness, even if not consciousness, of the need for a mental framework into which they could attempt to order in some faint sense of needed systematics, the multitude of new experiences and impressions thus giving expres-

sion to the inherent, holistic interdependence of these new experiences and impressions as manifestations of a new order. This they were able to do by invoking once-again the Bible though this time as an accepted and generalizeable ordering system in which generations before had been able to *describe* the economic, social and sociological as well as the moral and intellectual aspects of their social organis. The new use to which this ' remembrance of things past ' was put in the scientific revolution, can be seen not only in the ordering of the actual, material changes in the forms of the productive and reproductive conditions of everyday life as compared to those in medieval times, but also and even more visibly in the contradictions between the conception of a functioning social whole at odds with the trinitarian interpretation of such a system. The explanation of this contradiction would have to be found in the centripetal nature of the emerging social system based on a functional division of generalized labour, and the aggregative system of the still lingering medieval order. The " unitary " God is a manifestation of this social process.

The same characterization of the new world order as an interdependent and rationally understandable one can be seen in Comenius' pointed emphasis on the significance of " A mechanism for communication with all epochs of the past ", through the supposed inventions of printing and the improvements in navigation. " Communications had been opened between men scattered between various continents ". It is not so much this type of thinking, as Webster suggests, that is pregnant with the new unitary world view, but that the events mentioned by Comenius in terms of the new way in which " Man created himself " — to quote V. Gordon Childe — in and through the new mode of production. And further when Webster quotes Comenius approvingly calling for an emancipation from Greek philosophy, because it " had inflicted so many injuries upon the Christian spirit " we can see behind this anti-philosophical and hence anti-abstract-thought attitude the ' practical ' attitude of an emerging pragmatism which, in the absence as yet of any militantly opposing internal forces within the new system, saw no need to emphasize internal *theoretical* analysis. As the system progressed and with it those forces began, as if hesitatingly, to appear, the organic conception of the new system began to become more and more abstract itself, *i.e.* abstract in the sense of no longer conforming to reality. Its spokesmen saw it as a mental image, (Gr. mathema) as if in a mirror. But mirrors deflect, and do not interpret. The result was the new " practical " mathematics as seen by the practical business-Puritans, and perfected by Webster's " elitist scientists " as the new scientific method. It is interesting that the ' abstract ' origin of the ' practical ' mathematics has been taken by historians of science, including Webster, as if it had been artisans, tradesmen and businessmen who had ' invented ' science. Webster writes of the " rise of practical mathematics " and is quite interesting in his extensive descriptions of the use of what he designates as ' science ' and mathematics. But science and mathematics have first to be seen and used in

the mind in order to construct in the mind what then can be executed in practice. Dr. Webster had promised (p. XIII) that the characterization of science and scientific developments " cannot be undertaken without serious reference to the intellectual and social context in which they occurred ". In this he failed.

The nature of this failure lies in the serious analytical inadequacy of Webster's treatment of theory and theoretical thinking and its role in understanding scientific progress. In a chapter significantly entitled " The Spiritual Brotherhood ", he is discussing the origin of scientific thinking and the Puritan contribution to it. A common viewpoint on the role of " eschatology and other matters... was evolved as a result of active discussion and free communication of ideas within the community of puritan intellectuals " (p. 32). Among the members of this community Webster mentions Mede (elsewhere spelled Mead, Joseph, 1586-1638) and John Goodwin. Mead is known, however, as being of the school of Acontius, a friend of Lelius Socini, author of the *Stratagemata Satanae*, and considered a Socinian (*Cf.* H. J. Mc Lachlan, *Socinianism in seventeenth century England*). Goodwin is referred to as an " arch-Arminian ". These names are only cited to illustrate the theological persuasions of people who were included by Webster under the designation " Puritan ". Mede, furthermore, is shown by Webster himself as having been highly thought of by Samuel Hartlib, a Prussian protestant refugee who had been a member, and suspected Rosicrucian, of the Palatin Court of the future Winterking of Bohemia. As Webster refers to Mede as having provided " The substantive base for the puritan position... by (his) *clavis apocalyptica* " and who " was adopted as a model by the puritan natural scientists ", and quotes Fussel (p. 561) characterizing the period between 1641-1660 as " The Age of Hartlib " as " entirely appropriate " (p. 473), and as Goodwin is mentioned as the minister of St. Stephen's Coleman Street, a " conspicuously and consistently puritan " (p. 34) parish, it begins to appear that Webster's treatment of the Puritans as practically home-grown English, does not reflect the actual situation. They were part and parcel of the preceding social, economic, political and religious upheavals on the continent, and to understand them implies of necessity the understanding of the nature of continental protestantism. And it might be added that just as continental protestantism cannot be understood without proper attention being give to, *e.g.*, the German Peasant Wars, so indeed neither the economic and political nor the moral and theological revolution in England can be understood without taking cognizance of *e.g.* the fact that quite generally the term ' puritan ' referred by no means merely or even mainly to a theological ' community ' as Webster wants to have it, but in fact and above all to those various social strata who in fact formed the majority of the English people and were literally ' the army of the revolution ', and without whom the revolution could not have been won.

Concerning more particularly the origin of the new science, Webster attempts in the same chapter to provide a puritanical base for the process by which

it was formulated. In discussing the emergence of the so-called ' invisible college ' Webster says that " there is no direct evidence to indicate how the... group came together... " which makes Webster conclude that " any reconstruction must be purely conjectural ". Yet the term " invisible college " had been referred to directly only in three letters written by Robert Boyle in 1646 and and 1647, as Webster himself points out. But Webster chooses to interpret these obscure references as referring to " this short-lived and ' obscure ' society " which was supposedly important, since it provided the occasion for Boyle's first serious excursion into science. Accordingly, the College is " relevant to our understanding of Boyle's intellectual development, and it may throw light on the wider problem of intellectual organisation among the Puritans " (p. 57). Yet, as Frances Yates argues, " this word ' Invisible College '... is the old *ludibrium*, the old joke about invisibility always associated with the Rosicrucian Brothers and their college. Descartes had to prove his visibility to escape being associated with it. Bacon knew the joke ". Yates also makes the point that Haak, a German from the Palatinate, mentioned by Webster as an important Puritan when later in England, and credited with having started meetings which gave rise to the Royal Society, and John Wilkins, at the time of those meetings chaplain to the Elector Palatine (son of the above mentioned Winterking and Queen of Bohemia) were members with Wallis of what Webster calls the " 1645 Group." All are considered Puritans: of Wallis, Webster says that he " constitutes an example of a comprehensive puritan upbringing " (p. 40) though he is associated with two who are prominently mentioned as members of the Palatine Court: Haak directly, and Wilkins as chaplain to the Elector Palatine to whom Webster interestingly refers as " a puritan aristocrat " (p. 40). But the Palatine Court was widely known, and this is the point Yates makes, as a " Hermetic Golden Age ", an influence which came to London with the exile of the Palatine Court after the King's defeat in Bohemia The implication of all this is that it is after all the ' 1645 Group ' to which Boyle in 1646 refers, which in the present context simply suggests that Webster's claims of a Puritan Invisible College and to Puritan natural scientists would seem to be " highly conjectural ". (For F. Yates, cf. *The Rosicrucian Enlightenment*, pp, 36-40 et al.)

Dr. Webster's attempt to establish the Invisible College as the puritan equivalent of the ' elitist ' Royal Society would not only have provided a respectable platform for the launching of the idea of a ' puritan science ', it would have covered up at the same time the identification of the term ' puritan ' not only with the ' foreign ' association and influences of the Anabaptists, the Socinians, the Antitrinitarians, the Brethren of the Free Spirit, Brownists, Levellers and many others, not to forget the inflow into England of the many books and tracts of the Rackow press or the literary as well as student output of Professor Soner of the University of Altdorf near Nürnberg, but it would also leave the present-day reader of Dr. Webster's work unaware

of the identification of ' puritan ' with " the greatest part of the body of the subjects " as Bacon had put it (*Works*, 1872/4 edit. vol. XIV, p. 16, cit. Hill, *Society & Puritanism in Prerevolutionary England*, 1964, p. 16), and, as had been referred to above, with regards to the " army of the revolution ". Dr. Webster did not inquire into these ' class ' aspects of the *Great Instauration*. It is this class aspect that also explains the near-disappearance of the " Puritans " from the historical scene: the historical textbooks, after 1660 when the battle had been won, not for the common people who had done the fighting, but for the new economics and politics as well as for the new morality, i.e. for the impending capitalism. It was not, as Webster writes, that the millenium had for most of the Puritans " only a transitory appeal ". Though he is right when he continues: " Once the immediate political and military objectives were attained, the quest of a stable religious and political settlement began; the millenium and messianic imagery was pushed into the background ".

II

The last two chapters provide an interesting and in a sense scholarly review of the practical thinking and activities in the fields of medicine and political economy. Webster put them under two main headings: *The Prolongation of Life*, dealing with medical monopolies, medical aid for the poor, emerging chemistry, public health and medical education, though the claims for puritan contributions are largely submerged in a brief historical survey of the period. The last chapter, *Dominium Over Nature*, presents the contemporary attitudes to technology and agriculture. No claim is made for ' puritan ' ethics. Rather, it is seen as " the same social ethic (that) has been regarded by Weber and others as a major source for the rise of capitalism in areas of protestant, and especially Calvinist or puritan influence ". (325) The claim to " the millennial expectation of man's dominion over nature... was assimilated into the general religious worldview of the Puritans.. (so that) his (Bacon's) writings came to attain almost scriptural authority " (335).

The approach to these problems in both these chapters is quite different from *e.g.* Boyle's concerns with ' science ', though the Royal Society dealt, of course, also with ' practical ' problems, especially in its later history. Webster, in effect, illustrates in these chapters the, at that time, significant difference between the ' technology ' of the Puritans, and the establishment of general laws of nature within the confines of what came to be called Newtonian science, even if in spite of himself.

III

In his *Conclusions*, Dr. Webster ventures an assessment of the puritan world view and the rise of modern science, when, in a rather extravagant summing up, Dr. Webster says: " The Puritans evolved a comprehensive system of science with their millennial ideology. Modern science has evolved in the

context of a quite different, even alien ideology. It is therefore quite understandable that little sympathy has been felt for the priorities and achievements of the Puritans, but this judgement must not be taken as final. Arthur Young regarded Richard Weston as a greater benefactor of civilization than Isaac Newton. It may turn out in the scale of values in a future age the utopianism and humanitarianism of puritan science may come to be held in high esteem ".

The review of the arguments of Dr. Webster presented in his book compels us to conclude that on the evidence given, there was no " comprehensive system of science " evolved by " the " Puritans. This conclusion was obscured by ascribing Puritan, *e.g.* millennial beliefs to those who claimed no such beliefs. Why modern science is supposed to have developed " in the context of a quite different, even *alien* ideology " is far from clear.

If, however, he did not intend to refer to alien in the sense of antecedents like Galilei, Pascal, Descartes, but meant ' alienated ' ideology, there might be a point to it. Modern, *i.e.*, Newtonian science does indeed operate with an abstract model of the essential characteristics of reality *in the mind*, *i.e.*, a model, *e.g.*, in the form of a certain theoretical-mathematical system which then may be said to be a scientific *method* alienated from material reality. Such interpretation would then reflect the essential difference to Webster's puritan science which, perhaps in a moment of forgetfulness, Webster himself referred to as ' technology ' (324). It should be mentioned, though not relevant to the present discussion, that such distinction would no longer apply in the age of the scientific-technological revolution.