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Science and Society

Immediately after the formation of a "New Division" by the British Association for the Advancement of Science, whose ostensible object is to institute enquiries into the social relations of science, events on a stupendous scale occurred in central Europe whose impact on international affairs was such as to rock the whole fabric of civilization to its very foundation. The ardent supporters of the "New Division" maintained a solid silence which must have earned for science the obligation of politicians for not embarrassing their delicate and difficult negotiations. Manifestly the function of creating public opinion either in favour of or in opposition to the conduct of diplomatic relations has become the prerogative of the lay press and of the members of the parliamentary opposition. From the general attitude of the whole body of scientists during the recent crisis, it is to be inferred that they make a sharp distinction between social affairs and political problems and that while the former might constitute a legitimate sphere for their interventions, the latter had best be avoided. We doubt the existence of such a sharp demarcation between the social and political questions whose paths cross one another and in certain directions become intertwined, and it must be dreadfully pretentious to keep them separate.
Experimental forecasts of all-India summer monsoon rainfall for 2002 and 2003 using neural network

Alternative modelling and forecast methodology can complement/improve forecasts of complex atmospheric and oceanic processes by conventional method through enhancement of the range, scope and quality of forecasts. A very relevant example is long-range forecasting of monsoon rainfall; accurate long-range forecasting of monsoon rainfall can have manifold benefits for the country, from crop planning to power generation to policy planning. However, conventional techniques still do not have adequate skill at long-range forecasting, especially at longer than a season. It was to address this issue that an alternative forecasting technique using neural networks (NN) was explored by the author and his collaborator. However, the skill of conventional NN for forecasting rainfall was found to be inadequate; a generalized NN, termed cognitive network (CN) was designed and evaluated for forecasting all-India summer monsoon rainfall (ISMR). The principle and the design of cognitive network (CN) were adopted from a generalization of conventional NN; in particular, a CN also carries out a cognitive summation in addition to conventional neuronal summation. Cognitive networks have proved to be a successful tool for generating long-range forecasts of all-India summer rainfall (ISMR). Hindcast experiments for more than 70 years of ISMR showed CN to have significant hindcast skill.

Using a 3-layer (input layer, hidden layer, output layer) CN configuration, the author and his collaborators have generated experimental forecasts of ISMR for the past seven years. It is noteworthy that all these experimental forecasts, generated well ahead of the season and several of them two seasons in advance, have been fairly accurate. This is all the more remarkable since years like 1997, characterized by the presence of a warming event over the Pacific, were expected to be deficit monsoon years. Table 1 compares the observed and the predicted values of ISMR for the years 1995–2000.