Psychiatric Bulletin (1990), **14**, 237–243

Correspondence

General management

DEAR SIRS

Som Soni and his colleagues (*Psychiatric Bulletin*, December 1989, **13**, 657–661) accurately describe the hopeless conflict which characterises the relationship between a multidisciplinary team and its members' professional line managers. The message is obvious – get rid of line management.

It constantly surprises me that the fundamental principles of effective management accepted everywhere else outside the NHS, i.e. a hierarchy of accountable individuals for specific objectives, is thought of within the health service to be new and dangerously anti-professional. Staff in teams need professional guidance and support from senior members of their profession – but the *service* provided by the team should be managed by *one* person, accountable to one other. It's called 'general' management. Good general managers devolve decision making and budgetary control to the lowest possible level: management should feel less remote as a consequence. Why it hasn't percolated down beyond Unit management in many districts is a mystery. Some *one*'s got to be in charge, not some six or seven parallel managers.

As a senior registrar I took time out of the NHS to go to work with sociologist Professor George Brown's Social Research Unit at Bedford College. There wasn't another doctor in sight – the research team was made up of sociologists, nurses, economists and a random selection of other professions. We all consulted senior colleagues outside the Unit for advice and guidance on aspects of our own work but none of us were in any doubt as to who was boss or to whom we were accountable for our work which of course was the Head of Department.

As a doctor I found it perfectly acceptable to be accountable to a non-doctor. Roll on general management throughout the health service. Let's free multidisciplinary teams from the stranglehold of the managerial octopus of line management.

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Neural network technology

DEAR SIRS

I was most encouraged to read of McDonald & McDonald's attempts to use neural networks in clinical diagnosis (*Psychiatric Bulletin*, January 1990, **14**, 45–46). Their reported study, using psychometric data from the WAIS to distinguish between various types of dementia and depression, has unfortunately a few misconceptions.

During the training process, a neural network 'learns' by forming and weighting links between input, hidden and output neurons. With each new training fact the weightings are adjusted so as to give the best possible agreement between the observed input and its expected output. Our experience of using the same software package (Brainmaker V2.0, California Scientific Software) is that training accuracies always approach 100%. This apparent precision is in itself rather meaningless as it refers only to the information used for training. The acid test for a trained network is to assess its efficiency on unseen data. McDonald & McDonald trained the network on 63 cases and then tested it on only four further sets of information. The reported efficiency (50%) of assignment to one of three diagnostic categories is not that impressive.

Two further objections to the reported work exist. The reliability of ante-mortem diagnoses of types of dementia in psychogeriatric patients is not high and most reputable studies of dementia use post-mortem findings as the criteria. Also it is unclear whether the original WAIS testing was done with the administrators blind to the clinical diagnoses. Despite these reservations, the implementation and evaluation of the use of neural networks in clinical decision making is to be supported.

I would like to report my own work also using the Brainmaker package, in patients with affective disorder. Lucas *et al* (1989) described the use of discriminant analysis to predict the occurrence of post-manic depression in a group of bipolar patients using information from case notes. These data have been re-analysed using both discriminant analysis (Fisher's linear discriminant function) and a trained neural network. Data from 98 cases were randomly split for both methods giving 80% for training, and leaving 18 cases (20%) to form an evaluative sample.

During training the neural network had a 99% efficiency, whereas the discriminant analysis had an efficiency of 83%. When applied to the test set of data, however, the neural network had an efficiency of only 67%, with discriminant analysis proving slightly more accurate (72%). What is fascinating is that the two contrasting methods of analysis gave very similar allocations to groups (Depressed or Not depressed). Table 1 shows no significant difference between the ways in which the neural network and