USER REQUIREMENTS

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Business and Industry were voicing concern that their needs were not being adequately met by the current activities of University Computer Science Departments. Dr. Cowie felt that the Universities were anxious to respond to criticisms where these could be substantiated. He welcomed the opportunity to discuss differences in views and what might be done to improve the situation.

He suggested that Universities and Business have different cultures and value systems. The Universities have a longer term orientation. They are much concerned with the intellectual content of a coherent body of knowledge based on theory which will attract and challenge 'the best minds' in terms of capacity to deal with this. Elegance is admired. Business must take a shorter term view and ask managerial questions such as "Is an area of effort important?", "Are proposals practical?"; "Are they cost effective?" When the founders of Computer Science departments were challenged by their colleagues because the subject had inadequate foundations, was the defence not the 'business' one? The subject area was of growing importance and the setting up of departments was a practical step towards developing the appropriate theory.

The users of computers are now criticising the Universities for inadequate attention to important areas affecting future applications.

When two cultures are in dispute there is a tendency to resort to slogans. Charges of 'mediocrity', 'vocational' and 'short sighted' are met by 'very little use', 'arrogant' and 'irrelevant'. Such behaviour overstates the arguments and obstructs progress. The need is to search for common ground.

Dr. Cowie then gave an industrial view which he thought would have support from suppliers and users of computer equipment and services.

There are problem areas in the use of computers which are intellectually challenging and require attention by people of university calibre following basic and applied approaches.

The aggregate effort of the university sector is unbalanced. Too much emphasis is placed on areas which are not matched by the perceived lifetime needs of employers of the graduates.

As computing technology becomes more complex, the need will increase for University assistance in developing theory and understanding to cope with the complexity.

There is already concern with the 'exploitation gap' between the capabilities of the technology and the use that is made of them. Not enough people are being developed to bridge this gap. This is a general problem affecting all users of computers, not just those in industry.

A better understanding of the technology and the greater involvement of Computer Science departments are only two factors which could lead to the more effective use of computers. Other disciplines and departments would need to participate. The ACM Curriculum Committee on Computer Education for Management (members include Ashenburst and Couger) have suggested education for people with various types of computer responsibilities in organizations. Computer Science departments could not be expected to provide for such a broad range of requirements but they would have an important role to play. Industry would welcome graduates with a more sophisticated understanding of the technology and user needs, particularly if they came from quality programs associated with appropriate research in a university environment. Dr. Cowie thought that the work of the ACM committee was a valuable basis for discussion and further progress, whatever one's reservations about the current state of the theoretical foundations.

He then listed topic areas of interest to industry meriting more research and educational effort by the University sector. Included were:- Tools for the Development Process including Systems Analysis, Design and Applications Software; Performance Analysis of Systems and Personnel; Questions of Cost Effectiveness, Reliability, Survivability and Security; Data Bases and Data Management Systems; and Communications Systems.

Some of the personal qualities desired by industry were:- Ability to work in teams; to be exposed to interdisciplinary efforts; to have engendered cost consciousness; to be aware of trade off's between elegance and efficiency, and to allocate effort in proportion to the importance of the particular aspect of the problem in hand.

How might the Universities respond? Dr. Cowie envisaged initially a few focal points of specialisation in areas of interest to computer users, involving collaboration between Universities and departments within Universities. He expected the interest in business data processing in its widest sense to grow in almost all Universities with more options available for those wishing to enter organisations. Even if a student remained at the University, he could benefit from study of the material presented by Andersen.

In conclusion, he remarked that the computer is a major agent of change. Progress will be accelerated by a better understanding of the technology and areas of application. Attempts to use computers have illustrated how much more we need to learn about various processes, for example, in support of problem solving, decision making and education. Joint research in Behavioural and Computing Sciences, for example, could be fruitful for both disciplines.

Good people from Universities will be required for computing to fulfil its potential and to develop the professionalism which will protect the public interest. It is hoped that Computing Science departments will play a full role in developing such people.