3.2. Objectives and modes of operation

There are various methods of using a computer in our teaching. The teacher can use the computer like a "blackboard", in the same way as one proceeds when giving demonstrations in the experimental sciences. However, the use of an interactive computer permits a much higher degree of interaction with the audience. This particular mode has been tested in various places, but its wider use depends upon the provision of more, and more varied, software. What are the specific requirements which must be met by such software?

The computer can be used by students, individually or in groups of two or more, in order to accomplish predetermined work (this is really programmed learning adapted to work on the computer: unfortunately, there seems to be little software of this type available having any great mathematical interest). In a similar manner, the computer can provide the student with a permanent and readily accessible form of self-evaluation.

Another use of the computer is for "practical work": the experimental manipulation of mathematical objects in connection with open-ended problems (e.g. statistical treatment of data, geometric explorations, the manipulation of functions, ...).

One sees, then, the need for the development of "software banks" in order both to provide support for teachers and lecturers and also to encourage further improvements. This software, which should be available to all, would be located in "multi-media centres" in the middle of institutions and seen as a means of communication on a par with written texts, films, ...

The preparation of software will call upon the united skills of mathematicians, computer scientists and practising teachers. How should one share out the work in order to produce satisfactory software and within which structural framework?

Finally, another use of the computer, in the school or university environment, is in the context of a "computer club". After an initial period of familiarisation, it is the users/members who are chiefly responsible for determining the paths to follow. This type of work is of relevance not only to students, but also to their teachers. What needs can be identified, therefore, for those who are going to be responsible for the training of teachers?