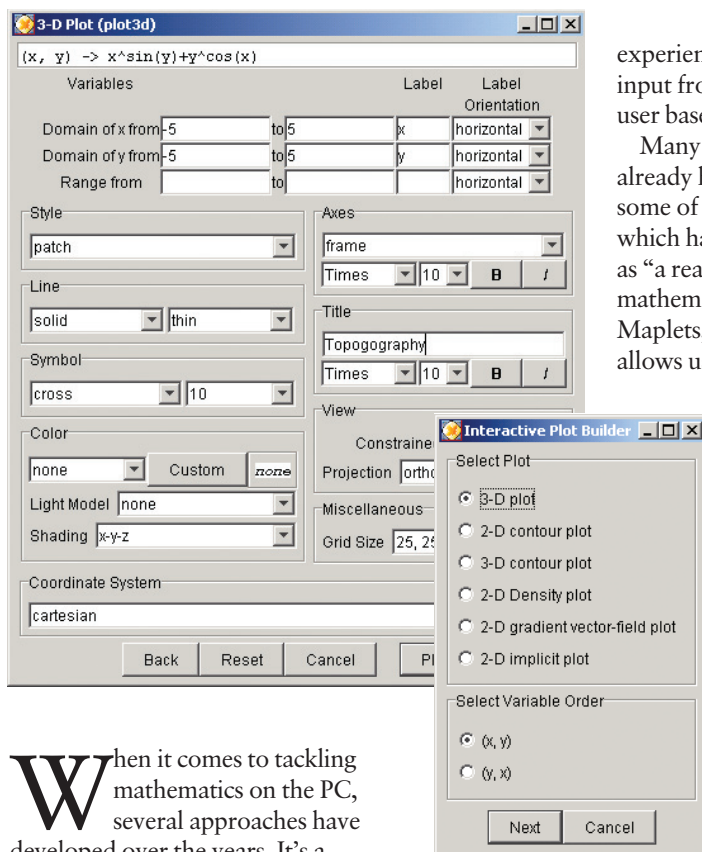**From the long list of new capabilities in Maple 8, users have already picked some of their favourites. SAMIR KHAN reports from the customer support desk.**

The power behind the Maths

When it comes to tackling mathematics on the PC, several approaches have developed over the years. It's a fascinating subject. But there's no doubt that the tens of thousands of users of Maple form not only perhaps the largest community in mathematical computing, but also one of the most dynamic too. **Maple 8,** the latest release of this extraordinary product, has resulted from a combination of its developers' long experience and the steady input from its worldwide user base.

Many readers will already have heard about some of the new features, which have been described as "a real revolution in mathematical computing". Maplets, for example, allows users to customise Maple for other users. But in this issue of TCM, we'd like to focus on three features away from the headlines which really seem to have generated interest amongst users and prospective users.

Firstly, there's the **Interactive Plot Builder**. Rather than remembering the arcane syntax behind plotting in mathematics software, you can now use the Interactive Plot Builder. Using dialogues with check boxes and drop-down lists, you can select a plot type and the plot features; Maple then generates and displays your plot in the worksheet.

Next is a fine example of why Maple is such a standard in education. To help users study the techniques of computation in single-variable calculus, the **Calculus1 package** provides facilities to proceed in small steps through calculations. For example, you can request that a differentiation problem be solved one step at a time, where you specify the differentiation rule applied at each step. Limit, differentiation, and integration can all be stepped through in this manner. At any time during a single-step computation, you can ask for a hint about the next step to take, which you can then apply to the problem. The package maintains a list of all the problems that you have stepped through in this manner in the current session. You can ask for a review of any or all of these problems.

Finally, a flexible conversion facility in mathematics is as important as a dictionary in spoken language. Maple 8 introduces such a tool to a computer algebra system for the first time, implemented as a net of conversion routines, permitting the expression of any mathematical function in terms of another one, whenever that is possible as a finite sum of terms.

The main idea behind the **Maple 8 conversion network** is to split the set of mathematical functions into three main subsets, according to their hypergeometric representation as 2F1, 1F1 and 0F1 hypergeometric functions. Then, generally speaking, conversions - when possible - can be performed among functions of the same class. The Maple 8 routines allow you to convert to any of 58 mathematical functions, including all the elementary transcendental ones and most of the special functions of mathematical physics.

Maple 8 also offers new evolutionary improvements to make working faster and smoother. In addition to an extensive set of new mathematics packages, you can now spell check, set global preferences, set separate display and computation precision for numeric computations, and e-mail your worksheet directly from Maple. ◆