to those found in furniture. While timber is capable of solving both problems there are many other materials, each with their own technology, which are not usually common to architecture and furniture design. Although both are possible, we do not very often see brick chairs or polypropylene buildings!

The various design fields are also often thought to be different in terms of the inherent difficulty of the problems they present. It is easy to assume that size represents complexity. This argument suggests that architecture must be more complex than industrial design since buildings are larger than products. Certainly it is possible to see the three-dimensional design fields in a tree with town planning at the roots and the trunk beginning to branch out through urban design, architecture and interior design to the twigs of industrial design, but does this really mean that town planning is more difficult than product design? (Fig. 4.1).

Difficulty is, of course, a subjective matter. What one person finds difficult may often be easy to another, so we must look at the exact nature of these various kinds of problems to discover more. Urban design solutions are obviously much larger in scale than architectural solutions, but are urban design problems also in some way bigger and more complex than architectural problems? The answer to this question must be that this is not necessarily so. What really matters

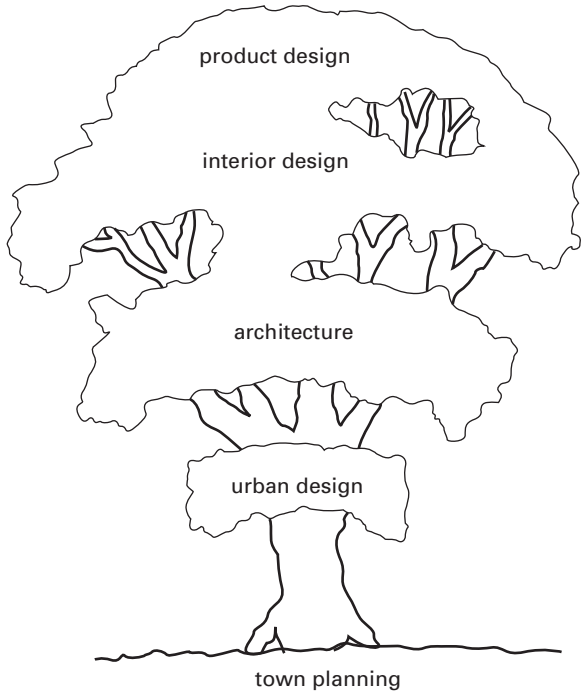

Figure 4.1
A 'tree' of three dimensional design fields

here is just how far down the hierarchy the designer must go. For example, when designing an ordinary house architects are unlikely to be greatly concerned with detailed considerations of methods of opening and closing cupboard doors. There may be some thought necessary as to whether the windows might be of the sliding sash, hinged casement or pivoting variety; but even that is not usually critical. The designer of a small caravan or boat, however, may need to give very careful thought to such matters. Even the way in which cupboard doors open in the restricted space available may be of crucial significance. Thus part of the definition of a design problem is the level of detail which requires attention. What usually seems detail to architects may be central to interior or industrial designers and so on.

The beginning and end of the problem

How, then, do we find the end of a design problem? Is it not possible to go on getting involved in more and more detail? Indeed this is so; there is no natural end to the design process. There is no way of deciding beyond doubt when a design problem has been solved. Designers simply stop designing either when they run out of time or when, in their judgement, it is not worth pursuing the matter further. In design, rather like art, one of the skills is in knowing when to stop. Unfortunately, there seems to be no real substitute for experience in developing this judgement. This presents considerable difficulties not just for students of design, but also for practitioners. Since there is no real end to a design problem it is very hard to decide how much time should be allowed for its solution. Generally speaking, it seems that the nearer you get to finishing a design the more accurately you are able to estimate how much work remains to be done. As we have seen in the last section we learn about design problems largely by trying to solve them. Thus it may take quite a lot of effort before a designer is really aware just how difficult a problem is. First impressions are rarely very reliable in these matters. Design students seem to be incorrigibly optimistic in their estimation of the difficulty of problems and the time needed to arrive at acceptable solutions. As a result students often fail to get down to the level of detail required of them by their tutors. It is all too easy to look superficially at a new design problem and, failing to see any great difficulty, imagine that there is no real urgency.