societies. Design as we know it in the industrialised world is a relatively recent idea.

Some years ago a group of my first year architecture students at Sheffield University were working on a project devised to get them to think about the design process. This project was specifically set up to get the students to concentrate on process rather than product, and for this reason did not involve buildings. Instead the students had to work in groups to design a machine to process marbles (Fig. 2.1). Nine marbles had to be poured into the machine at one end from a plastic cup and the machine was required to deliver two, three and four marbles respectively into three other plastic cups after a certain period of time. The students were also expected to record and later analyse how they had made decisions and interacted with each other during the design process. During the project, the studio was full of noise, not only from the clacking of marbles as machines were tested and found in need of improvement but also from the arguments which raged as to how the improvements could, or should be made. Inevitably most designs began by being complicated and unreliable,
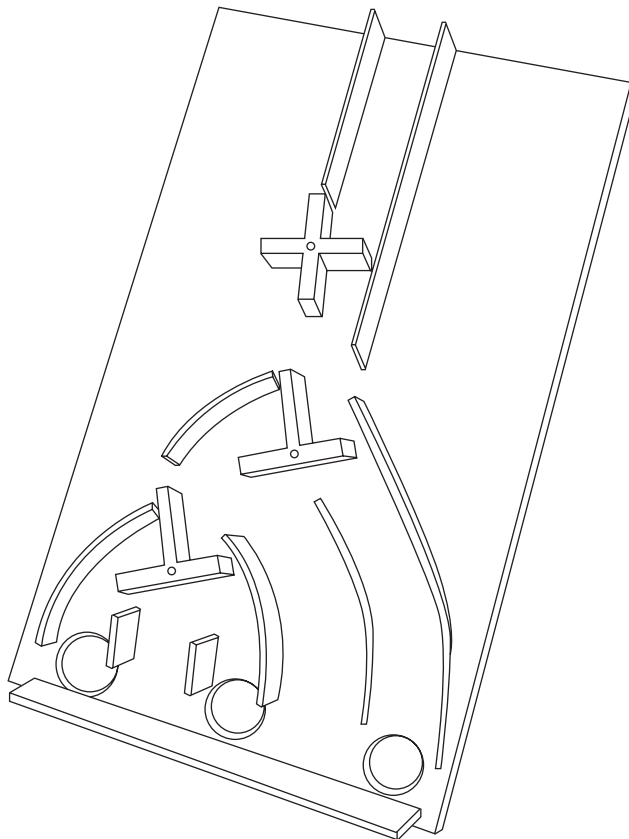

Figure 2.1
Part of a marble machine
designed by a group
of architecture students using
a highly self-conscious process

and the groups gradually moved towards simpler and more reliable machines. The most reliable solutions were generally those which had few moving parts, not many different materials and were easy to construct. As is often the case with design, such solutions also tend to look pleasing and visually explain how they work.

One night it snowed very heavily, and the next morning the students quite spontaneously decided to abandon their work and turned their attention to building an igloo in a nearby park (Fig. 2.2). The igloo was very successful. It stood up strongly and could accommodate about ten people with the internal temperature rising well above that of the ambient air. Indeed the igloo was so well made that it attracted the attention of the local radio station who came along and conducted an interview with us inside!

What was even more remarkable however was the change of process. Out in the park the students left behind not only their marble machines but also their arguments on design. The students immediately, and without any deliberation switched from the highly self-conscious and introspective mode of thinking encouraged by their project work to a natural unselfconscious action-based approach.

There were no protracted discussions or disagreements about the form of the igloo, its siting, size or even construction and there were certainly no drawings produced. They simply got on and built it. In fact these students shared a roughly common image of an igloo in

Figure 2.2
The same architecture students designed and built an igloo but used an unselfconscious approach