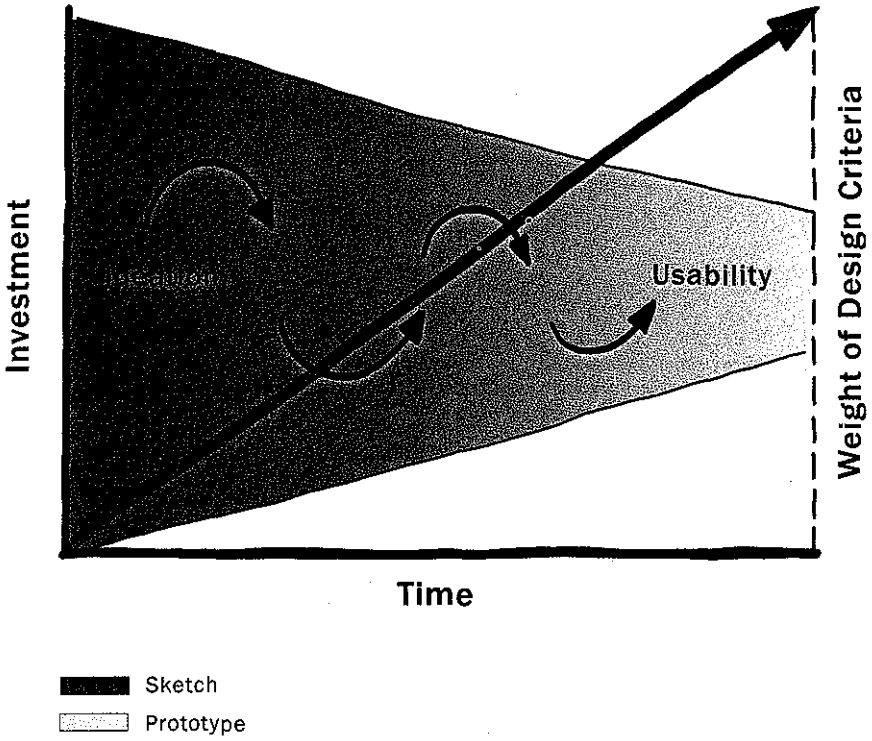

Figure 51: The Dynamics of the Design Funnel

The design funnel begins with ideation, and ends with usability testing. The former is largely dominated by sketching, which enables ideas to be explored quickly and cheaply. More refined (and expensive) prototypes provide the basis for the testing at the later stages of design. Where testing is a key concern, the most dominant artifacts are more refined (and expensive) prototypes. The transition from one to the other is represented by the transition from orange to yellow in the figure. As we progress, our overall investment in the process grows. This is indicated by the rising arrow and the y-axis label on the left. The y-axis label on the right side of the figure emphasizes that as our investment increases, so should the weight of the criteria that we use to evaluate our design decisions. In other words, you don't manage ideation the same way, or with the same rigor, as usability. Finally, the circular arrows are a reminder that we include users throughout the iterative process, not just during usability testing.

Sketches are not Prototypes

Practice is the best of all instructors
—Publius Syrus

Now that what I mean by sketching interaction is becoming a bit more clear, it is inevitable that someone is going to ask something like, "Isn't what you are calling a sketch just another word for prototype or low-fidelity prototype?" The answer is emphatically, "No!" The distinction between a sketch and a prototype is—for me at least—one of the most interesting things to emerge as I went down this path.

/Sketches and prototypes are both instantiations of the design concept. However they serve different purposes, and therefore are concentrated at different stages of the design process. Sketches dominate the early ideation stages, whereas prototypes are more concentrated at the later stages where things are converging within the design funnel. Much of this has to do with the related attributes of cost, timeliness, quantity, and disposability. Essentially, the investment in a prototype is larger than that in a sketch, hence there are fewer of them, they are less disposable, and they take longer to build. At the front end of the funnel, when there are lots of different concepts to explore and things are still quite uncertain, sketching dominates the process./

These notions are captured graphically in Figure 51. The circular arrows reinforce that the whole design phase is an iterative, user-centred process. The coloured change reflects a transition from a concentration on sketching at the front to one concentrating on prototyping at the back. Related to this, and signified in the colour coding, is the accompanying transition from ideation to usability testing.

From the management perspective, perhaps the most important component of Figure 51 is the ascending red arrow. What this says is that the weight of the criteria by which ideas or concepts are injected or rejected varies with the investment made in them. Stated simply, at the beginning, ideas are cheap, so "easy come, easy go" and "the more the merrier." As we proceed, we have more and more invested in the concepts in play, hence we need to adopt increasingly formal or explicit criteria for evaluating what goes, what stays, and where we invest our resources.

Because the investment in the product is low, the front end is the one time in the product pipeline when one can actually afford to play, explore, learn, and really try and gain a deep understanding of the undertaking. In fact, too much concern for quality too early may well have a negative effect. I found a wonderful example illustrating what I mean by this referred to in a blog from someone called Bill Brandon:

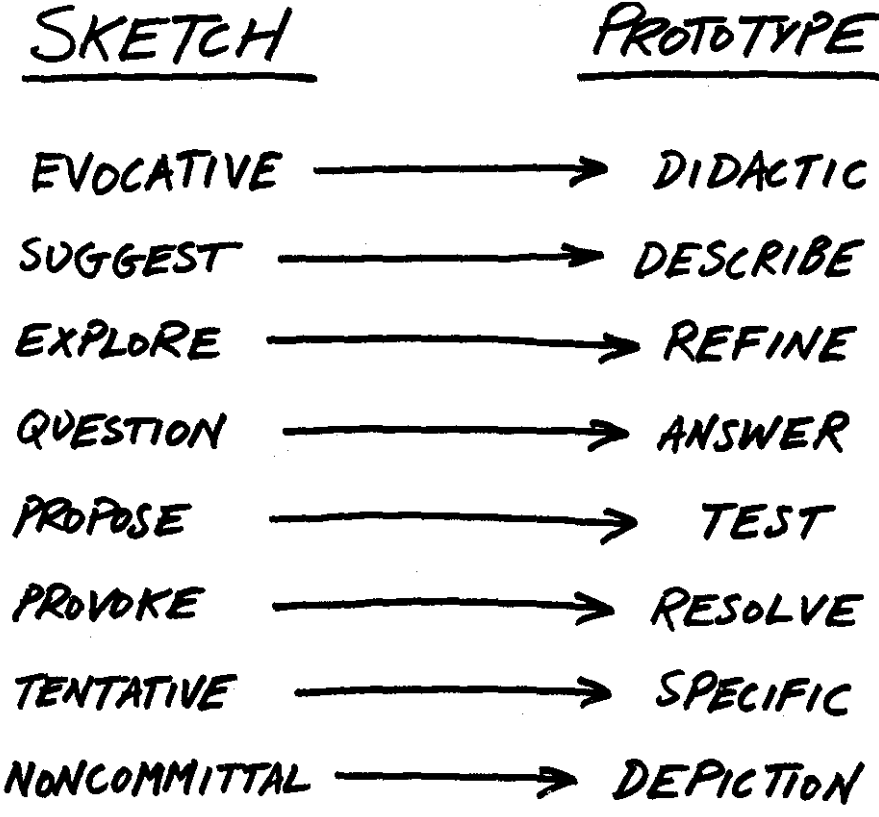

Figure 52: The Sketch to Prototype Continuum
The difference between the two is as much a contrast of purpose, or intent, as it is a contrast in form. The arrows emphasize that this is a continuum, not an either/or proposition.

> The ceramics teacher announced on opening day that he was dividing the class into two groups. All those on the left side of the studio, he said, would be graded solely on the quantity of work they produced, all those on the right solely on its quality. His procedure was simple: on the final day of class he would bring in his bathroom scales and weigh the work of the "quantity" group: fifty pounds of pots rated an "A", forty pounds a "B", and so on. Those being graded on "quality," however, needed to produce only one pot—albeit a perfect one—to get an "A." Well, came grading time and a curious fact emerged: the works of highest quality were all produced by the group being graded for quantity. It seems that while the "quantity" group was busily churning out piles of work—and learning from their mistakes—the "quality" group had sat theorizing about perfection, and in the end had little more to show for their efforts than grandiose theories and a pile of dead clay. (Bayles & Orland 2001; p. 29)

Baxter (1995) argues that because the investment is so low and the opportunity to explore options is so high at the start, that this is also the stage in the product development lifecycle when you have the potential to realize the highest return on investment. Of course, this is a double-edged sword. It is also the point in the process where the consequences of an undetected bad decision, or an opportunity missed, can cost you the most (in real dollars or missed revenue). So, as the saying goes:

> Fail early and fail often.

And learn.

But adequate investment at this stage happens too infrequently, especially with software companies. The paradox is that those same firms that can't afford a relatively small planned investment in design at the front end, seem quite able to afford the far higher unexpected and unbudgeted (but predictable) high back-end costs that result from a bad product being late and underdelivering on its potential.

Jumping in and immediately starting to build the product, even if it does get completed and ship, is almost guaranteed to produce a mediocre product in which there is little innovation or market differentiation. When you have only one kick at the can, the behaviour of the entire team and process is as predictable as it will be pedestrian:

> You cling ever more tightly to what you already know you can do—away from risk and exploration, and possibly further from the work of your heart. (Bayles & Orland 2001; p.30)

Robert Cooper (1993; 2001) compares managing product development costs in terms of the type of risk analysis that one would use at the poker table, or in managing an investment portfolio. Mike Baxter summarizes this in terms of the following Gambling Rule:

> When uncertainties are high, keep the stakes low. As the uncertainties reduce, increase the stakes. (Baxter 1995; p.10)

In summary, what all this says is that we must manage the front-end of the process differently than the back-end, regardless of whether we are looking at things in the large (the overall product pipeline—design, engineering, sales, etc.) or in the small (within the design funnel itself, where we must manage the sketching and ideation phase differently than we manage the back-end prototyping stage).