BusinessWeek
Viewpoint May 12, 2008, 12:33PM EST text size: TT

A New Mantra for Creativity

Executives should apply the "Order of Magnitude" rule to any problem that demands a creative solution

by Bill Buxton

Let's start with a basic question: What differentiates the professional designer or innovator from the person who has one great idea (no matter how profitable)? For me, the difference is the same as that between the musician with a string of successful recordings, and a one-hit wonder. Yes, the latter demonstrates an act of creativity combined with execution. But the former is like the Duracell bunny—the creativity keeps going and going and going.

There is something to be learned from the ability of such serial offenders to exercise repeatedly their creative skills on demand without waiting for divine inspiration. Despite a problem that is perhaps not that interesting, they can nevertheless manufacture all the inspiration needed to complete the task at hand every time. That is their job. That is what "professional" means to them.

So how do they do it? Let me say straight off, I would be a fool—and lose all credibility—if I suggested I knew, or that there was a simple single answer. On the other hand, I'm eager to share one technique I have resorted to on many occasions when I was up against the wall with "idea block." It is something that I call the "Order of Magnitude" rule, which reads as follows:

If something changes by an order of magnitude along any meaningful dimension, it is no longer the same thing.

I like the name because its acronym, OOM, conjures up the prototypical Buddhist mantra, om. Let's meditate on it a bit by going back to 1801 and the classroom of Franklin Pierce Nitt, the inventor of the blackboard.

Misses the Point

To understand why this is relevant, first ask yourself what preceded the blackboard. Eventually, you will realize, "The slate." True enough. And equally true, the blackboard is just a big slate mounted on the wall. In the parlance of today, both use the same chip technology (calcium carbonate), have the same operating system and interface, and you can reuse the user manual! Technologically, there is no innovation here other than the manufacture of a big slate, and the challenge of mounting it on the wall.

But, while that is all true, it also misses the point—that despite the lack of technological innovation, there is a plausible argument that the innovation of the blackboard has had more impact on classroom education than any innovation since, including cheap paper (which came in about the 1860s), the PC, and the Internet. The blackboard fundamentally changed the social and physical organization of classroom education, by better supporting teaching and demonstrating to the group, rather than the individual, and by enabling timely support material to be displayed in the visible periphery, while the students worked on their personal slates. And as something that supported a new type of "social network" in the class, it did so because of one or two OOM changes—in this case, the dimensions of size and distance.

Now I am guessing that when I stated the OOM rule, you mentally enumerated a number of dimensions along which something could change. You came up with things like "faster," "smaller," "cheaper," "more of them," "easier to use," etc. I also guess that "change in distance" was not one of them.

Sweet Spots

Therein lies another valuable lesson: One of the areas where you can leverage the OOM rule is through the creativity and insights that you bring to recognizing or determining nonobvious (but important) dimensions along which something known might change—and how it might thereby be transformed.

And notice there is a multiple here. For sure, the rule applies even if there is an OOM change along only one dimension. But as our blackboard illustrates, some of the sweet spots emerge when one considers changes in two or more dimensions.

Despite coming from 1801, this blackboard example leads directly to one of the situations where I have used the OOM rule. Knowing some dramatic changes in display technologies were coming down the road, around 1992 I started asking myself questions like:

• What if screen real estate was essentially free (in the same sense as bandwidth has become)?

• What if we had large interactive displays on the walls everywhere we have whiteboards and corkboards today?

• Echoing the slate-blackboard transition, how will today's tablet PC relate to a wall-sized stylus-driven display?

• What are the implications when public signage and advertising are based on interactive displays rather than paper or other traditional media?

You can add your own questions to the list. The point is that OOM changes in cost, size, location, number, interactivity, and the like will fundamentally change our relationship to information displays. These changes are at least as profound as those that resulted from the introduction of the blackboard into classrooms. Wall-sized posters on subway platforms are not going to be static or made from paper; they are going to be active. Projection technology is

already used in some cities. What about movie posters or bus shelters? How will the impact be different in the home, in a room wallpapered with display technology vs. the office or design studio? How might your mobile phone be used to interact with such displays, so that they go beyond TV or a slide show?

Academy Award-Winning Insight

Having recognized that we were entering a period of transition in display technologies, the challenge was to find a way to gain some insights into the questions above. So at the University of Toronto in the early 1990s, we built something we called the Active Desk. This was an electronic drafting table with a three-foot flat display. You could draw on it with a digital stylus, and in one prototype application, use your other hand to hold and manipulate the graphical objects displayed on the surface. It was smoke and mirrors, but it worked.

What this did was to give us a huge head start in terms of understanding how interacting with a surface of this size was different from conventional displays. For example, pull-down menus did not work well. On the other hand, we refined a kind of gesture-based radial menu that did work with a stylus and large surface, which we called marking menus. What we also found was that these menus worked well on conventional systems as well, with their CRT displays and mouse controls, and gave up to 10 times improvement in menu selection performance.

When I became chief scientist of Alias Research in 1994, these menus became part of the signature user interface for all of our products, including the animation package, Maya, which won an Academy Award for scientific and technical achievement. By asking the right questions, and then pursuing a path to answer them, we not only gained early insights into where things were going, we were able to incorporate those insights into our existing products, thereby both reaping benefits in the short term and preparing a product line for the future. Fast-forwarding to the present, this work also became one of the stepping stones that led to Microsoft's (MSFT) Surface.

A Meaningful Discussion

There are huge implications around all of these questions for dozens of businesses that likely don't think of themselves as in the computer or high-tech business. The OOM rule isn't going to answer any of them, but in providing a catalyst for asking the right questions, its value is indisputable.

So, when you find yourself staring at the wall, stymied by a problem that demands a creative solution that is eluding you, try a simple exercise. Brainstorm a list of dimensions that could in any way characterize that with which you are concerned. Then, before you start warping your problem up or down any single dimension, add one more attribute to each dimension, namely, the reason you think it is meaningful.

The ensuing discussion of what constitutes "meaningful" will almost certainly help you generate additional items for your list of dimensions. Then start exploring each—alone and in various

combinations. The big challenge and opportunity here is in how insightful you are in recognizing the potential implications of such changes.

Not everyone can learn to be a world-class designer, no more than everyone could become a major league pitcher or a Nobel Prize-winning nuclear physicist. But that doesn't mean you can't be taught to improve your ability to throw a ball, or understand something about the interior working of the atom. So it is with creativity. There's no magic formula for any of this, and the OOM rule is just one technique that one can add to one's quiver. It's not the full story. But it is a good start.

Bill Buxton is Principal Scientist at Microsoft Research and the author of *Sketching User Experiences: Getting the Design Right and the Right Design*. Previously, he was a researcher at Xerox PARC, a professor at the University of Toronto, and Chief Scientist of Alias Research and SGI Inc.