

Is "Craft" missing from your Innovating?

By Lanny Vincent

Several years ago I visited the National Inventors Hall of Fame in Akron, Ohio (it has since moved to Alexandria, Virginia). The building in Akron was unconventionally designed so visitors began their tour on the top floor, not on the first floor. Starting at the top and winding my way down, the novel layout ushered me through a historical journey of inventing in the United States. My tour ended where the names and pictures of the inventor inductees were hung with appropriate respect on the ground floor level.

Some of the top floor exhibits chronicled the early days of the United States Patent and Trademark Office (USPTO). Several panels described what the USPTO used to require of aspiring inventors and patent recipients in its earliest years. Requirements included written descriptions, claims and drawings, of course, but also a working model.

In those early days, prolific inventors were often paired with anonymous partners, nameless craftsman who built working models of their inventor's inventions. These mechanical contraptions demonstrated that the inventor's conception could be "reduced to practice." After a while, the USPTO became increasingly challenged to find space to store these models. Finally, after the catastrophic fire of 1836, the USPTO abandoned its requirement for a working model. I have often wondered what may have been lost when the USPTO dropped this requirement.

Without the requirement for a working model, the guild of artisan model makers disappeared. Prior to the 1836 fire, approximately 10,000 patents had been issued. Now there are some 50,000,000 issued patents. In hindsight, it was probably necessary for the USPTO to abandon the requirement for

a working model; however, in doing so, the model maker became obsolete.

My visit to the National Inventors Hall of Fame left me wondering whether a craft orientation is missing from our modern innovating efforts. My hypothesis is that in our current economic environment wherein so much attention is given to invention-less intrapreneurship and innovation, corporate innovating might remain disabled due in part to the persistent omission of craft in the innovating process. Does craft still have something essential to contribute to innovating?

By asking this question I could easily be accused of nostalgic longing for the old days of mechanical engineering. Current technologies choreograph electrons and make photons dance to the scores of software, firmware or middleware. We have come a

long way from the Rube Goldberg age of mechanical contraptions that once took up too much space in the USPTO. But I wonder, despite the reality and efficiency of creating working models in 3D CADs and simulators, have we lost what craft can contribute to innovating efforts?

Consider the meaning of "craft" particularly in the context of innovating. Might this seemingly old-fashion mindset, skill and approach still have something to contribute, especially to the development of "empowering" innovations (as Clayton Christensen calls those innovations that create jobs and new intrinsic value)? And when we avoid crafting our innovations, might we be missing something essential?

The English word *craft* derives from the German word *kraft*, which means "strong" *Continued on the next page*



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or "force." The word derives from the German adjective *kräftiger*, suggesting "strong, sturdy, vigorous, powerful, bold." For those familiar with paper chemistry, think Kraft pulping—the product and process invention of Carl Dahl and enabled by G.H. Tomlinson. Kraft pulping converts wood into wood pulp to produce near pure cellulose resulting in paper of superior strength in a relatively inexpensive manner.

Today "craft" and its cousin "artisan," connote small-scale, made by hand, albeit with great care and skill. In the context of innovating, it suggests a deeply intimate, feedback-rich set of learning interactions between the creator and his or her creation. When a craftsman engages in his craft, tacit knowledge and skill is formed, and this is the very kind of experienced-based knowledge Ikujiro Nonaka and Hirotaka Takeuchi infer as the foundational phenomena of innovating itself (see *The Knowledge Creating Company*).

Viewed from the point of view of early stage innovating, craft could provide an essential "force" in the formation of an innovation. Viewed from the point of view of large-scale mass production of standardized products, however, craft appears irrelevant or quaint. Innovating with more of a craft mindset, however, may increase the probability that outcomes are more than merely clever, cute or creative. Craft may instill innovation with sufficient care, intrinsic value and substance early, giving it a chance to weather the inevitable watering down that comes in the later stages of market introduction and launch.

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Please send us your thoughts and opinions on this issue of *Innovating Perspectives*.

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We can't ignore the post-industrialization realities of mass production and mass markets in a globalized economy. Neither can we ignore the fact that large, complex and global corporations are typically dissatisfied with the financial returns from their innovating efforts. Might these corporations be too impatient for growth and not impatient enough for profits? Might a more modest craft orientation of "reducing" the invention (and innovation) to practice actually be the quicker and more trustworthy way to determine if prospective customers recognize sufficient value to convince the CFO that profits can be sustained?

The innovation economist David Teece did a study in 1986 commissioned by the U.S. Commerce Department. At that time the Department feared the strengthening ebb tide of manufacturing going offshore. Many wondered if this worrisome tide would leave erosions of profit, know-how and intellectual property. Teece persuaded the Commerce Department and many others not to worry. Teece concluded that more profits accrue to those with the complementary business assets (distribution, sales, etc., which take inventions to market) than to those who are only owners of intellectual property.

While I am in no position to argue with Teece's findings; the logical inference from his conclusions may have added to the notion that companies should invent and innovate only what the company can take to market. Henry Chesbrough, the guru of open innovation, called this the "not-sold-here" mindset. Chesbrough named it one of the primary barriers to technological innovation. To be fair, Teece subsequently explored the notion of "dynamic capabilities"—a company's ability to reconfigure its own complementary business assets—as a sign of its adaptive, innovating potential. But the train had already left the station.

Large companies search for big innovation opportunities often mistakenly assuming they have prescience to discern the big from the little before the little gets big. Yet large

opportunities seldom start out large. More often these opportunities start small and grow into large opportunities. This seems to be the case for innovating as well.

Might innovating efforts that begin with a craft orientation end up being "strong, sturdy, vigorous, powerful and bold" enough to warrant further investment in scalable growth and expansion? Might our impatience for growth (and misplaced patience for profits) be factors keeping us dissatisfied with the puny financial returns from innovating? Might our disdain for the craft approach to innovating be causing us to avoid the more potent and substantive "empowering" innovations that create jobs?

There are innovations that may require both product and process inventions—like the semiconductor or kraft pulping. Are we avoiding the risk of innovations that require both product and process inventions? Are we deploying our engineering and scientific talent to "sustaining" innovations and "efficiency" innovations (reducing costs of making and distributing) because they are more distributable, scalable and extensible?

At least one large global company may not have lost its sense of craft when it comes to innovating. Consider Corning. In 2001, in their book, *Corning and the Craft of Innovation*, authors Margaret Graham and Alex Shuldiner wrote, "What made Corning distinctive was that it not only built the environment for scientific work and collected a solid knowledge base but also continued to draw on and maintain strong craft traditions...avoiding some of the worst excesses of 'scientific management'."

Scientific management may point us to more easily distributable and scalable innovations. However, it doesn't necessarily mean they should be distributed, scaled or extended. Innovating may be more of collaborative craft, at least in the early stages, than a repeatable process, unless of course, you are satisfied with sustaining and efficiency innovations. □