

Innovation: Heed Lessons of Others



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Last month, *The Wall Street Journal* ran a series of articles that offer a cautionary tale about innovation for the aerospace and defense industries of North America and Europe. Entitled “How Japan Lost Its Electronics Crown,” the stories relate how one-time giants of consumer electronics—Sony, Panasonic and Sharp—stumbled crossing the threshold from analog to digital, and now trail badly in the markets for e-readers, smartphones and next-generation televisions. What happened? Did the upstarts at Apple, Amazon and Samsung simply out-innovate the Japanese at their own game?

Not exactly. Many of the technical innovations we find in these devices originated in the vaunted R&D labs of these same Japanese companies, such as cameras integrated to phones (Sharp) and light-emitting diode televisions (Sony). Instead, the entrants now credited with transforming these markets figured out that the Japanese incumbents missed a subtle but powerful

“It’s a new innovation game [in aerospace], with changed rules that are leveling the playing field once again”

shift in how customers value electronics—from what a product does to what the user can do with it.

That shift, which I call the difference between performance and customization, subordinated those hardware competencies in which Japanese companies excelled. Instead, the successful businesses elevated how ordinary users access and employ digital technologies to the head of the value-proposition competencies in programming, design and services that innovate. As Daisuke Wakabayashi writes to explain the Amazon Kindle’s dominance over Sony’s short-lived Librie e-reader: “Sony was focused on selling devices, while Amazon was focused on selling books.”

There could hardly be two industries whose characteristics are more different than one that makes gadgets for the masses and one that builds complex systems for bureaucratic buyers. So, what does this tale have to do with innovation in aerospace and defense? It holds significance because our industry too is experiencing an inflection in customers’ preferences from performance to customization. And, just as in consumer electron-

ics, that inflection is shifting the orientation of game-changing innovations from “hardware,” the Space Age impulse to higher-faster-farther so deeply ingrained in our industry, to “software,” a caption meant to signify not just computer programming but the whole panoply of customer expectations animating the Information Age maxim of better-quicker-cheaper.

Consider, for example, the customer preferences and corresponding innovations that distinguish the promising next-generation space launch vehicle SpaceX’s Falcon 9 from the recently retired space shuttle. Falcon is hardly the marvel of technical achievement that the shuttle was, but it is an exemplar of new design, manufacturing and contracting practices that are changing how customers—hidebound NASA among them—gain access to low Earth orbit. And while a dramatically cheaper price-per-pound to orbit is certainly central to the Falcon’s value proposition, it also manifests quicker development and arguably better design-for-reliability features.

The moral of this tale is germane to our entire industry, but it’s especially poignant for companies at each end of the spectrum of size. For the handful of prime contractors on the big end, the shift of innovation-advantage from hardware to software has hardly gone without notice. But responding effectively requires reforming reflexes about innovation that have been honed to celebrate successes for more than a century. It also requires overcoming the so-called Galapagos effect, by which the persistence of comfortable advantage in idiosyncratic home markets deflects attention from dynamism on the global landscape. At the same time, offsetting a big company’s challenging inheritance are ostensible advantages to realizing customized value arising from superior access to customers, end users and capital.

For the multitude of small enterprises at the other end of the spectrum, the significance of this shift is less obvious but equally profound: On a playing field where customization counts, small scale and narrow scope can be turned to decisive advantage. Consider, for example, TECT Aerospace (profiled on page 69), a machining company that one might expect to seek innovation-advantage around hardware. Instead, the company marks its successes with services-oriented, knowledge-based innovations and vertically integrated structure practices that do not require large scale.

All of this discussion serves to underscore a still larger point about innovation in aerospace and defense: It still matters, the game is still on. But there is a new innovation game with changed rules that is leveling the playing field once again. ☛

