Mind and Matter

By turning materials research into a sideline business, one firm is reinventing its practice.

BY RAUL A. BARRANECE
ments accustomed to working directly with architects.

“Manufacturers usually see architects in traditional roles, not as people who have the training and imagination to invent new applications for technologies in architecture,” says Kennedy. The MATX entity helps counter that shortsightedness.

In practice, the boundaries between the two businesses are deliberately blurry. Kennedy reports that nearly all of KVA’s 14 employees have worked on MATX research projects—an efficient and profitable use of resources. The mechanics of billing for MATX work hasn’t yet been standardized. Sometimes Kennedy and Violich separate billable hours between MATX and KVA projects; sometimes they don’t. The accounting issue could become even muddier, as Kennedy and Violich are examining ways of adding material-development phases to both schematic design and also to the end of design development. Weaving material R&D services into architectural contracts is also a way to squeeze materials research into a commission, without undertaking an entirely new project and scaring off the client.

KVA’s architectural projects are often the source of innovative material studies and applications carried out under the MATX name. For instance, in their 1999 design of a Massachusetts house addition, KVA developed a ramping, 3-inch-deep structural plywood floor that splits into a floor and work desk. The desk became the basis of a MATX project, dubbed the EL (or Electro-Luminescent) Desk. In order to do away with messy cabling and wiring, KVA embedded ultra-thin polymer films into the plywood work surface—allowing the wood to carry both electricity and data. The electroluminescent film between the wood and the veneer generates light, and handheld PDAs can be plugged into discrete data ports embedded within the desk. (A new prototype of the EL Desk is on view at the Cooper-Hewitt Museum in New York City through mid-September.)

In other cases, Kennedy and Violich look for suitable applications for new MATX-generated materials in their architectural commissions. MATX developed a light-emitting “give-back curtain” prototype for the Opto-Semiconductors division of lighting manufacturer Osram. By dyeing the synthetic and cotton fabric of the curtain with phosphors that absorb low-spectrum waves from artificial and natural light, the curtain releases the waves as visible light: a larger, more sophisticated version of the technology used in glow-in-the-dark wrist-watches. The curtain then found a perfect application in the Boston offices of German street-furniture manufacturer Wall International. KVA used the luminous curtain to form mutable enclosures for small meeting spaces within the lobby interior.

Whereas an architectural practice tends to afford only a one-time payoff, materials research contin-
For its Boston Theater District project (right), KVA created a system of glowing markers to orient visitors to the streetscape. The markers, like this luminous manhole cover (left), are now standalone objects, ready for production.

KVA uses to earn for KVA, as they further develop and refine existing projects. The give-back curtain is no exception. After learning about its light-generating capabilities, the U.S. Department of Energy gave MATx grant money to take the curtain back to the drawing board and develop a more advanced version. MATx compiled, adding semiconductors that give off more light and tiny microprocessors that control its color and output level. Kennedy and Violich have since been approached by the hospitality and health-care industries about their next-generation curtain. There are also possible applications in the defense industry: temporary shelters made of the give-back fabric could generate their own utility lighting.

The architects also earmark certain projects for MATx when looking for solutions for their building commissions. If they haven’t already built a body of knowledge on a particular material, KVA will turn to MATx and begin a new research project. In designing a renovation for the Art Institute of Chicago, KVA was looking for new ways of integrate donor’s names into the walls of exhibition areas, auditoriums, and lobbies—a handsome alternative to engraved plaques or slide-in nameplates. From MATx came the idea of walls made of inexpensive “junk wood” (scraps of glue-laminated beams) imbedded with solid-state active-matrix displays (more commonly seen in handheld PDAs and cell phones). The displays can show text or even streaming video.

Often, manufacturers call on MATx’s services to work on a product prototype. But industrial clients also pay them for problem-solving skills: conceptual brainstorming about a material, or
finding potential architectural or landscape applications for an existing product. Companies have called on MATx to work with them on products they are looking to launch three or five years down the line, products as vague as “large bendable surfaces” or as specific as “smart windows.” This intellectual-property work is where the MATx business model makes good sense: By offering itself as a research lab, the firm can tap its existing human resources to sell a valuable service—knowledge and expertise—hopefully at a healthy profit.

“We have to be very careful not to propose competing ideas to different manufacturers; each has to get its own concept,” explains Violich. For certain projects, employees and outside collaborators must sign confidentiality or nondisclosure agreements. “It can be very James Bond,” he says. If MATx’s scope of work includes the development of an actual product, they negotiate royalty agreements with the manufacturer.

Naturally, the process of developing new materials involves creating mock-ups of the products. In the absence of a vast R&D facility, most of those mock-ups and prototypes are built right in the KVA/MATx studio. For the sake of confidentiality, Kennedy and Violich keep those individual projects out of view in separate workrooms down the hall from the main studio, often at a client’s request. It possible, the final products are also manufactured in the studio. For instance, Indian-born, RISD-trained weaver Sheetal Khanna set up a loom in the studio and spent two weeks weaving the “give-back curtain” for the Wall International project. The yarn from which the curtain was woven was also impregnated with phosphors in the studio. If a project is too large to be produced in-house or requires, say, large computer-numeric-controlled milling or plastic-forming equipment, it gets outsourced to trusted partners.

Kennedy and Violich’s strategy makes good business sense for their firm. But it is also important as a new benchmark in interdisciplinary collaboration among designers, manufacturers, and even government. The work goes a long way towards proving how research can inform architecture, and vice versa, like a feedback loop. And the DOE’s interest in the give-back curtain demonstrates how architectural innovations can have a broad interest and applicability beyond architecture and interiors—as a renewable, recyclable source of light, for instance. In that sense, KVA’s endeavor really isn’t an expansion of the architect’s traditional role, but a more accurate representation of the architect’s valuable skills.


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