

BY
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SPECIAL TO

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By comparison, architectural and engineering applications of CAD look simple. Textile and apparel design processes are not only complex, but the style cycle is short. Twice a year or more, clothing designers have to have something new, and it has to *look* new. Variations on the CAD theme make more responsive design cycles.

Modern apparel design is tremendously competitive - there are many designers out there. It's not just independent design shops; every serious retail chain has its own design teams. Consider the GAP: Originally, the company sold Levi-Strauss jeans; it made itself over into a brand-name jeans maker competing with Levi-Strauss - then cloned that experience with *another* competing line, Old Navy.

Old main-line retail chains have been doing this for generations. Sears and J. C. Penney have long bought the entire output of some clothing manufacturers, made up to retailer specifications. Both companies have even offered (very quietly) made-to-measure features in their own-brand products. [For example, J. C. Penney would run up

special orders of Towncraft shirts in odd-size sleeve-and-neck combinations; minimum order: four shirts. Sears Roebuck had a made-to-measure clothing department in selected stores.] Large retailers have long understood the advantage of vertically integrated clothing business.

The complexity has increased, as manufacturing has moved off-shore. A design originating in North America or Europe is more than likely to be manufactured under contract in a country where even shop management has only limited command of the language of the designer. Precisely detailed drawings, patterns and samples are essential; they insure that the job is done right the first time.

The time pressures are not insignificant. The fashion-dominant crowd is teenage - Generation 4. Shifts in taste can happen *monthly*. Major shifts are *clearly* visible in the course of a year (a year ago, my students still wore Tommy Hilfiger and red/white/blue - that was before folks decided they didn't like being bad-mouthed; a year ago DKNY was still a presence in my part of the City University -- now, just a memory).

A decade ago - less - things were fragmented. Major design houses such as Liz Claiborne knew they wanted CAD technology, but only seriously began playing with it in the mid-'90s. Two years ago, a quick survey of apparel and textile industry trade shows revealed only a limited number of players, with a definite slant toward the needs of textile designers serving industries already heavily dominated by an engineering mindset. For example, textile designers creating fabrics for use in automobile interiors were more likely to use CAD; design offices in close proximity to automobile design centers in Detroit

would be wired to manufacturing plants in the Southeast, literally controlling the weaving process at a distance.

The demands of a fast-paced fashion industry, coupled with a generation of young designers for whom the computer is not a strange, antithetical, un-artistic tool, have changed things. So, CAD has come to the clothing industry. It appears that the changes are just beginning.

CAD for textile and apparel design comes in several different forms. Both bitmap and vector models play in the field; solutions based on off-the-shelf programs work side-by-side with highly specialized programs.

A very good example of dedicated vector-drawing software for the apparel industry comes from Karat Software in Montréal. [Karat has a whole line of software tailored (!) to the needs of apparel designers; it covers the entire spectrum of the business from concept to fulfillment.]

KaratCAD Designer is real CAD; the company builds on top of the AutoCAD OEM engine. This is smart for a lot of reasons: AutoCAD is very well designed software with a long history of getting the issues solved correctly. AutoCAD - and therefore, KaratCAD - runs on relatively low-cost AMD- and Intel-based systems (I tested the Karat demo on an AMD Athlon system and it zipped right along). Despite the custom elements, KaratCAD *feels* like AutoCAD and *runs* like AutoCAD; consequently, lots of training and support options exist - not all of them KaratCAD-specific. The most important move in that direction: New York's Fashion Institute of Technology, a preeminent school for various aspects of the apparel industry, now offers KaratCAD instruction as part of its

routine.

The basics of the KaratCAD design process are easily comprehended and mastered. Starting with a mannequin, sketch the basic lines of one side of a garment - shoulder and sleeve, down through the torso and so on. Add neckline and perhaps lines indicating fitting (e. g., the "princess line" in a woman's dress). Duplicate the resulting half-garment and join the lines; hide the mannequin. Details such as a knit neckband or cuff can be shown using standard CAD tools for inserting a repetitive, slightly varied pattern of lines - a standard CAD feature. Stitching and seam details, buttons and the like, are added with specialized apparel-design tools, accessed the the same way.

Following the KaratCAD demo, and drawing on my own - somewhat out-of-date - familiarity with AutoCAD, I was able to do simple things in a very short period of time.

Much the same story applies to Micrografx Designer. Designer has always had a strong CAD heritage underlying its illustration orientation. The company has had a somewhat rough time over the last few years; recently, Micrografx has been playing its strong cards with tailored applications of its powerful graphics software to particular industry needs. The result is an off-the-shelf price for what amounts to industry-customized.

As with KaratCAD, availability of training is central. In Micrografx's home territory, this means former employee Mary Jo Pilcher. She lives around Dallas, and J. C. Penney can easily have her come in to train new designers at the company's headquarters.

Pilcher's background at Micrografx means not only thorough familiarity with the software but a wide range of training experiences.

Again, it turns out the general-purpose of the software is a strength. Pilcher indicates that the addition of a relatively small number of specialized lines to represent seams and other apparel-specific elements makes Micrografx Designer an effective tool.

These vector-drawing programs show their advantage when it comes to producing finished drawings, obviously. One can easily see how a layered drawing could produce detailed drawing sets leaving no ambiguity about what was required in manufacturing. Equally, vector-based CAD software is ideally suited to driving large-format printer/plotters, including those which can be used to actually cut, and other early-phase prototyping and manufacturing processes.

Bitmap programs seem to play most strongly in the textile-design end of the fashion industry. Haberdash, now from Machanix, is the "venerable player" and effectively works as an enhancement to Adobe PhotoShop. Colour-Matters, originating in the United Kingdom and marketed from New York, is a complete stand-alone product specifically aimed at the apparel end of textile design.

Haberdasher's claim to special strength is its relative familiarity to design-school graduates: The company line is, "Why train designers in software use, when they already know PhotoShop?" It is not a bad approach, installing PhotoShop up and running with the Haberdasher tools installed in jig-time; I was able to create a fairly straight-forward design for a printed material in minutes.

Haberdash's add-on approach minimizes the cost of the product; list is US\$699 complete (which does not, apparently, include the cost of PhotoShop).

Colour-Matters makes a case that familiarity is not as valuable

as specifically tasked software. The company's product consists of a platform product, to which modules are added for specific kinds of textile design. The add-ons customize the software for woven materials, knits and mapping the resulting material to a photograph.

Answering Haberdash's claim to short-learning-curve, Colour-Matters advances customer claims to ease-of-use and quick productivity. Colour-Matters suffers against the PhotoShop-plugin, however, when it comes to price; the platform software costs US\$4,000., while the modules run from US\$3,000. each.

Hardware requirement for each of these programs appears to be a bit more involved than might be expected for vector-drawing programs. Colour-Matters recommends a hefty Pentium III class machine with highest-end graphics display hardware and at least 256mb RAM.

A Colour-Matters peculiarity: The company's recommended-hardware specification calls for disabling serial ports in the BIOS, and *never* using them (their emphasis). I did not have time to pursue this rather strange and *non seq.* specification; one suspects either an untraced bug or the artifact of a hardware-control no longer used; in such a case, turning on serial ports, with their very specific IRQs and memory addresses could interfere with the software. One immediately suspects pre-Win32 (Windows 95/98/ME and NT/2000) programming code and software design strategies; the Windows memory model should lock out this kind of programming issue. This could lead to serious stability problems, especially in current Windows systems, which are decreasingly tolerant of sloppy DOS-leftover and 16-bit Windows code.

One last program drew attention: A Korean product, Solias Studio, is interesting because of its history. This is bitmap software; it is

well suited for textile design - not surprising, given the strength of Korea's textile manufacturing industry. At the same time, it is well-tuned to sketching and design, and transition from such sketches to working drawings and client-presentation boards.

The history is simply stated: The company had software, but it wasn't going anywhere. In comes a Rhode Island School of Design graduate with a talent for programming. He takes the programming team off for six months and gives them a short course in design. The programmers come back to their workstations primed with a genuine understanding of what designers do, and build that into the new product. The result is impressive. Best of all, that designer is also the guy you are most likely to talk to at this company's North American offices. He and his ilk do the training. This means a short learning curve and the best kind of support in the product-use department.

The price is not bad, either: The entire package is US\$1,000; according to the company's website, additional licenses (after the first) cost US\$150.; this is both effective and a nice deterrent to the make-lots-of-copies piracy problem.

The Solias downside: The company is so nervous about intellectual-property issues, it has locked the software up with a password-protection scheme that could easily turn a user off. I tend to distrust such schemes; they often break the software somewhere. I also like the inconvenience, in this case: Get the software, then call in to unlock it, which is custom-generated, based on the serial number (also custom-generated) and time of the request. I waited too long to plug in my data and couldn't unlock my software. The surf-over-for-a-new-one feature, which should have generated and e-mailed me a new password,

didn't work. In short, when you have this installed, don't fail in your back-ups and don't try to change to a new machine.

The second problem: Solias Studio uses proprietary datafile formats. Though the company provides vector-like drawing capabilities, it is a bitmap program and rather determinedly sticks to that. It imports and exports all the usual bitmap datafiles, but cannot exchange data with vector-based software. That, however, is largely inherent in the whole vector/bitmap difference, and not a great issue, finally.

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