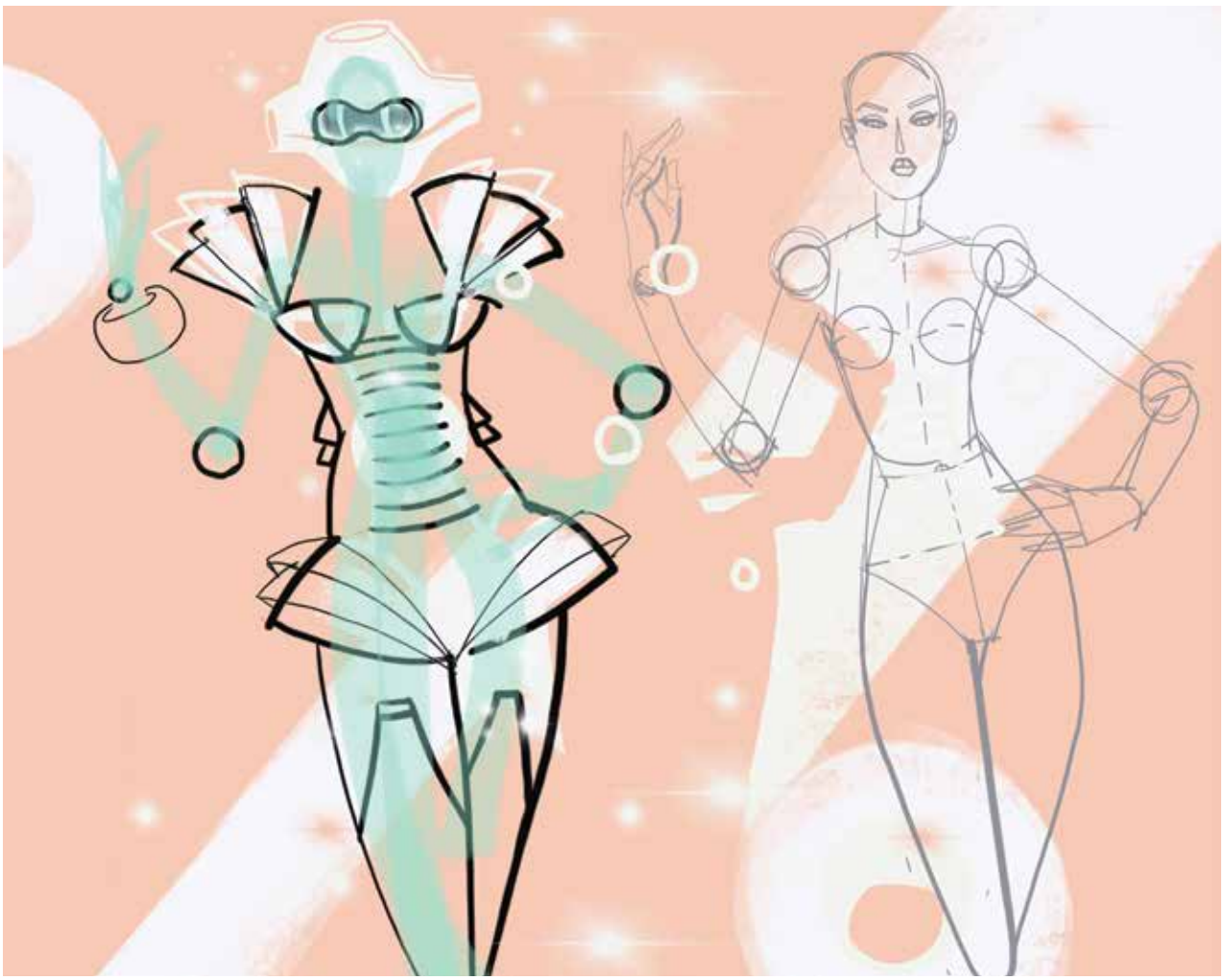
> *It's hard to imagine fashion coming from anywhere but the most creative minds. But it's not impossible.*



Intelligent Design

Artificial intelligence is making inroads into almost every facet of daily life, from relationship counselling to business development. But can it create couture? It already is, says our writer.

By S.C. Stuart Illustration by Jacqueline Bissett

In my former life as a Manhattan-based digital executive, I travelled a great deal. My job required me to look vaguely futuristic, so I dressed in head-to-toe black, and everything went into a single holdall. I never checked luggage. I definitely had "a look."

On one trip, as I was about to board an overnight flight to Paris for a fashion event, I spotted one of my colleagues. She was surrounded by airline staff helping with her full set of matching high-end luggage. Her job was to be fashionable, and she did it beautifully. Her cases held stunning creations, straight from designers' studios and wrapped in delicate tissue paper. She had at least four wardrobe changes a day, and designers loved to dress her. She had a reputation for being a trendsetter and ahead of the fashion curve. She didn't limit herself to a "look" or a particular style; she was always dressed to impress, surprise and provoke conversation.

That's the difference between style and fashion. Style is a simple matter of variants: colour, fit, shape, textiles. But fashion is personal: eye-grabbing, heart-stopping, emotional. It transcends cut and cloth to make a statement, turning the wearer into a work of art and the designer into an artist. When you look at fashion as art, it's hard to imagine anyone—or anything—but the most creative and innovative of minds dreaming it up.

But it's not impossible.

IBM and New York's Fashion Institute of Technology's Infor Design and Tech lab are working on a program that compiles thousands of product images, runway images and patterns to predict key silhouettes, colours, prints and patterns that will be popular with shoppers—all while helping designers keep track of existing styles and avoid duplications.. IBM's artificial intelligence research program grabs images of individual garments, and then,

using its proprietary algorithm, searches for similar items and makes suggestions to help FIT designers create something fresh. IBM España just collaborated with international designer Custo Dalmau to craft a capsule collection using similar technology, inspired and organized by the colours, shapes and textures identified by artificial intelligence.

How does this technology work? The artificial intelligence program uses keywords and fuzzy logic concepts to tag images—of destinations, clothing, inspiration—and then mixes and matches based on colour, style type and textile, "creating" a cohesive collection. The program sifts through thousands more images and concepts than the human brain can retain or process, finding themes and ideas that likely would have eluded even someone with a lifetime of experience in the fashion industry.

For example, by drilling down through databases and applying multilayered searches, designers producing a cruise collection can use artificial intelligence to create a mood board using the keywords "Capri," "cerulean blue," "Marisa Berenson," "Truman Capote novels" and "Italian neorealist movies from the 1960s." The program won't limit itself to those terms, but that's what humans can give it to start with.

Given those same terms, a well-rounded and extensively travelled designer like Karl Lagerfeld or the late Elsa Schiaparelli, both remarkable for their use of cultural references, would come up with many visual delights after a day or so of combing their archives, clippings and notebooks. But artificial intelligence could come up with thousands in a matter of seconds—while also analyzing social media and determining what's hot right now around the world.

Artificial intelligence looks for patterns and outliers, the things that don't match, to identify trends. It has an exhaustive memory and, because everything is digitized, it can keep records, timestamp designs to protect intellectual property, and cross-reference ideas or search terms—seemingly forever. These programs can also come up with inspiring new combinations because artificial intelligence takes apart each visual reference, breaking it into its composite parts (colour, geometry, cut, fit), and then renders new concepts on a theme.

I remember the first time I saw an artificial intelligence program "create." I was in a basement lab at the University of California, Los Angeles, staring at a huge flat screen where a program called TEVI—which powers Textpert, a relationship-guru advisor-style app—was awaiting my input. I asked TEVI a question, and then, because I was sitting with TEVI's tech team, I was given a sneak peek into how the program "thinks" about its response.

I watched TEVI hover over words and define them; move concepts next to each other to test its theories on previous queries, and start to extrapolate possible definitions. It happened quickly, and TEVI's response was amusingly spot-on. But it was watching the inner workings of artificial intelligence that taught me the most.

> *"Does this new technology take cachet away from the designer as fashion icon? It depends on your perspective on artificial intelligence—whether you value its input or fear it."*

In its purest sense, like humans, artificial intelligence programs are constantly being retrained—or, in computer language, are constantly undergoing "semi-supervised learning." In its early stages, artificial intelligence comes up with responses to whatever question is being asked, and then a human-in-the-loop (yes, that's the technical term) indicates whether the computer's responses were correct.

Artificial intelligence carefully considers what it got right or wrong and adjusts for the future. That's how TEVI "learned" to be a relationship guru: It sifted through millions of real-life queries and responses until it "understood" what was being asked, and then taught itself how to deal sensitively with matters of the heart.

It's not a big leap to assume that if artificial intelligence can help mend relationships, it can design high fashion. After all, the head of a fashion house uses data about which styles sold well, helping to predict trends. But these programs can extrapolate and analyze that data faster, and many fashion forecasters now use a variety of artificial intelligence tools like Google's annual Fashion Trends report.

Does this new technology take cachet away from the designer as a creative force? It depends on your perspective on artificial intelligence—whether you value its input or fear it, whether you're more concerned about people being replaced or outshone than about innovation. What's clear is that no designer today can afford to ignore the useful input of artificial intelligence, especially as people are constantly asked to defend their decisions by referring to both historical and predictive data sets.

This kind of technology is opening new doors in fashion, promoting symbiotic partnerships between in-the-flesh designers and their silicon cousins. The real prizes in the future will go to those who can bring together the brilliance of human creativity and the non-human acumen of artificial intelligence. ■

S.C. Stuart *is a technology commentator for* Elle China, Esquire Latino *and* Ziff Davis PCMag. *Stuart is also the former award-winning head of digital for Hearst Magazines' international division, which includes publications like* Harper's Bazaar.