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INNOVATION

Material Witness

AUTOMOTIVE HISTORY ■ CONSUMER ELECTRONICS ■ IN HIS OWN WRITE

Techno-Craft, Manufactured Brands and Data-Driven Design

PUNK MANUFACTURING

Punk graphics: A mashup between traditional imagery and skateboarding creates a layer of decorative narrative, exposing the connections between art and extreme sports. The skateboard communicates a combination of artistic detail and purposeful destruction.

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Kara Johnson has worked at IDEO since 2000 across a range of disciplines—materials, manufacturing, brand and business—to inspire people to think differently about products. She has evolved from a material scientist to a lover of materiality, claiming an obsession for materials you remember and media you can't forget.

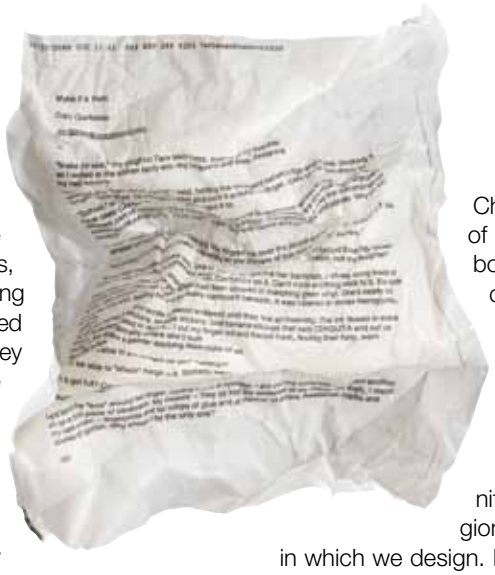
"The inertia of objects is deceptive. The inanimate world appears static, 'dead' to humans only because of our neuro-muscular chauvinism... We regard the objects that polka-dot our daily lives as if they were rigid, totally predictable solids, frozen inferiorly in time and space. Yet, how can we be so sure that we know what things are doing when we aren't looking at them? When our eyesight is inadequate to truly look at them?... On the atomic and sub-atomic levels, weird electrical forces are crackling and flaring, and amorphous particles are spinning simultaneously forward, backward, sideways and forever at speeds so incalculable that expressions such as 'arrival,' 'departure,' and 'have a nice day' become meaningless. It is on those levels that 'magic' occurs."

—Tom Robbins, *Skinny Legs and All*, 1990

I used to think about materials often. I studied material science in college, and my first years working in the design industry were driven by the opportunity to create products by communicating to designers the science and technology of substances like polyester, steel, concrete, felt, glass, aluminum, cork and polyethylene. At a higher level, beyond the intersection of materials and design, companies were building brands that made emotional connections and told new stories. There was a need to increase the level of tangibility in everything we did and in every industry we worked. This meant that *materiality* started to matter more than the actual materials: What polyethylene or aluminum meant to a person in a specific context was more important than what properties a given substance afforded the designer or manufacturer.

Breaking the Rules

In response to this trend and as an expression of our parallel obsessions with materials and materiality, Martin Bone and I wrote a book in 2009 called *I Miss My Pencil*. It was an extension of our need to experiment with the idea that objects tell stories that are inherently emotional, both immediate and tangible. Martin and I worked at IDEO, and we wanted to push the boundaries of our own design process, find new constraints and tell unexpected stories. We identified three significant areas of focus for the book—an exploration of the senses, the fetish of objects and *punk manufacturing*. Punk manufacturing is an idea based on the fact that the technology of rapid prototyping is evolving quickly. Consumers are asking and being asked to co-create their products and increasingly, designers are stepping away from their laptops, returning to—or finding—the craft of making stuff.



As designers, we need to rethink how things are made, what they are made of and what it all means. Yes, that's a task about as simple as defining the meaning of life. But objects are indeed an important part of our humanity. They are the stuff that surrounds us. And the sustainability of everything we make or do matters. At this moment, many designers are seeing the possibility to create products through a combination of physical and digital technologies and to create brands directly inspired by people and the market.

Punk manufacturing is an extension of craft. It's modern craft. It's the idea that people want, to some extent, to create the stuff that they buy or use, even if it is mass-produced. But, as Martin and I found while researching our book, punk manufacturing goes beyond personalization and customization to include actual participation. Everyone—from designers to consumers—wants to play a part in the process of creation, in the evolution of a product. The process is about building people's connections to products as they are made and used. In *I Miss My Pencil*, we focused our punk manufacturing experiments in four key areas: technology, craft, people and data. The book expressed our desire to experiment, and our experiments led to a portfolio of products driven by our own questions, assumptions and ideas (as opposed to those from a specific client or for a particular project).

Through user-generated projects, we applied our own point of view to ordinary objects. We asked, Can we imagine a future where architectural interfaces are built with 3D printing technology, where structures of plastic can be manipulated easily with the touch of a finger and where messages can be displayed on the surface of a building as easily as we type passwords into our smart phones? Can we imagine a future where high-end luxury audio speakers are made of intricate wire filigree crafted—not made—in China and sold to a new generation of luxury elite? Can we create a skateboard with detailed graphics that are delightfully precious, yet meant to be destroyed? Can we design a surveillance camera whose behavior, form, function and decoration is inspired by 300 words of science fiction written by Cory Doctorow (left)?

History tells us that there are significant shifts—in fashion, politics, religion and culture—that provide the context in which we design. **Between 1900 and 2000, we moved our sense of production from craft to mechanical to industrial to digital. And now we are in the age of punk, which is all about challenging the establishment and breaking the rules.**

Let's Get Punked

Of course, "punk" as a concept isn't new. It started with music, but many things have been "punked": sports, journalism, French cuisine, education, art and gardening. Jake Burton explored new ways of going downhill on snow in Vermont, and in doing so, he invented a sport—snowboarding—that is now both mainstream and edge (and an example of punk sports). *The Daily Show with Jon Stewart* created a new format that simultaneously entertains and challenges the status quo of news reporting—something I consider punk journalism. In France, two food journalists have created a movement called "Le Fooding" to counteract the tradition of haute cuisine supported by Michelin stars (a la punk French cuisine). Behind a pirate store in San Francisco, 826 Valencia has created a uniquely fun educational experience with a focus on teaching kids how to write (punk education). Banksy and Magda Sayeg have created graphic and knitted art on the streets (punk art). And in concrete cities everywhere, guerilla gardeners are planting seed bombs in open, unused spaces or hard-to-reach places (punk gardening).

Punk China: Inspired by traditional craft, these speakers are "Made-In-China" but are not cheap or mass-produced. Punk manufacturing of products—and even brands—is what many designers are seeing and experiencing right now in Asia. There are new constraints and that's inspiring.

But what gets created keeps moving and changing. Even one of our own experiments in the book, C60 (www.imissmypencil.com/#/crafts/24), has taken on a life of its own. What started as an expression of our lost love of the art of making mix tapes is now a mash-up of MP3 sound and thick vinyl. Inspired by the comments on labs.ideo.com, C60 REDUX—with its retro mix-tape charm and invisible RFID tags—shows the possibility of merging old and new into something familiar and meaningful. Construction is not complete, though. The original idea is evolving as the player is built (and rebuilt) at higher and higher resolution. Every experiment, every product, every idea, every material, every brand is a platform for the imagination of others. Nothing is static; that is what makes it beautiful.

One important role of design in the future is to create platforms that can be easily adopted and then capture the adaptations that people do. Like C60, the idea of punk manufacturing has taken on a life of its own. It has become an initiative intended to allow broader participation in the making of stuff: to build platforms that enable future stories and to mix digital and physical technologies and experiences.

Punk plastic: Rather than rely on strictly smooth or as-is plastic, we used 3D printing technology to form an impossible structure made of plastic. In this case, aspirations fell short of reality and the work never quite met expectations, making this particular quest unattainable.

Because it's a punk movement, there shouldn't be any rules. But constraints can push designers to break boundaries, and guidelines can inspire us as a collective of individuals, designers, brands, companies and factories. Here are some guidelines:

- **Invite participation:** Get designers and consumers inside the factory.
- **Break the rules:** Don't let today's expectations limit your imagination.
- **Go beyond technology:** Remember that technology is not what matters; think about people.
- **Stay networked:** Connect to partners and experts and individuals who know stuff that you don't.
- **Tell stories:** Put your ideas in context and make them meaningful.

Punk manufacturing is going to change not only the way we make things but also how we market them. If we connect supply and demand, then manufacturing and marketing merge. Now we can ask and answer new questions. From the perspective of manufacturing: What can we make and how might it change people's lives? From the perspective of marketing: What do people want and what's the story we want to tell? Design is the connection between these two disciplines. And designers will be asked to mediate individual and corporate participation in the techno-craft, data-driven movement toward manufactured brands. Punk manufacturing encourages designers to imagine the future and to build solutions that fit that vision.

As punk manufacturing continues to gain influence, it will help designers and the people they work with set a new standard for manufacturing and a new type of market. If manufacturers understand the consumer, then we can push technology in more human directions. If consumers are part of the manufacturing process, then we can create new markets. The output is *user-generated* products that are ready for mass production and can be easily modified for future scenarios. The wisdom of the crowd and the level of connectedness will enable us, as designers, to make better products. People and factories will be able to contribute together as a social network of consumers and a networked industry of making.

Make-your-own materials. Make-your-own products. Make-your-own stories. Sure, none of this is completely new, but it has more significant meaning as technology advances and the market changes. As designers, we can see it happening outside boutique experiments or niche markets. Punk manufacturing is finally happening across a range of industries and in some parts of the world (Asia, in particular). Better still, it's happening at increasingly fast speeds and large scales.

This is good news. As the connection between marketing and manufacturing, designers are the moderators of punk manufacturing. Materials are the ingredients; manufacturing is our craft. It is the role of design to imagine possibility and navigate constraints. Why shouldn't we get punked?

A decade since I began my career as a designer, I still think about materials often. As an expression of those thoughts, I am writing a series of children's books whose characters and adventures are inspired by the specific attributes of one material: Sandy is made of glass. Walter is made of concrete. Zippy is made of polyethylene. Rusty is made of steel. I love the idea that materials have personalities and that I might inspire children to look at concrete, steel, felt or polyethylene and see possibility, even adventure. It's the next generation that will create our future, and their knowledge and obsession with materials needs to be nurtured so that they can thrive in a world that will be equally physical and digital—and become better punk manufacturers. ■