

**INTERVIEW BY STEVEN HELLER**

*Edward Tenner has drawn a singular path in academia that traces the practical and symbolic impact of design and technology on our lives, from revolutionary inventions to everyday objects. He received his Ph.D. in European history from the University of Chicago, was a book editor at Princeton University Press for 16 years, has held visiting appointments at the Institute for Advanced Study in New Jersey and in Princeton University's Geosciences and English departments. He is currently a visiting scholar in the University of Pennsylvania's History and Sociology of Science department and senior research associate at the National Museum of American History's Lemelson Center in Washington, D.C. Tenner's 1996 book, *Why Things Bite Back: Technology and the Revenge of Unintended Consequences*, discusses how many great innovations, such*

*as chairs, eyeglasses, helmets, and keyboards, have somehow altered our evolutionary course and, despite laudable intentions, have both helped and hurt us. Reclining chairs, for example, were originally promoted for their health benefits, but encouraged a sedentary lifestyle and obesity. In his latest book, *Our Own Devices: The Past and Future of Body Technology*, Tenner explores how human ingenuity often surprises—for good and ill—inventors and designers, as in the transformation of the common box cutter from a simple tool into a weapon. In this interview, Tenner discusses the role of the designer, the contribution of the user, and the importance of ingenuity, style, and pragmatic foresight in creating the things we just can't live without.*

**HELLER:** In the introduction to *Our Own Devices*, you write that a heckler at one of your lectures asked you to cite the most important of the world's countless inventions. I'll make my question a little easier: What is the most important advancement of the 20th century, and why has its design made such an impact on culture and society?

**TENNER:** I'd nominate the joystick, the work of the now-obscure French aviator Robert Esnault-Pelterie, who incidentally also popularized the idea and word "astronautics" and developed ideas key to spaceflight. The joystick was the first new controller in hundreds of years. It recognized the new degrees of freedom inherent in aviation, but it has also proved immensely adaptable in everything from microscopy to video gaming. Even some experimental cars now are managed with joysticks rather than nautically derived steering wheels.

**HELLER:** What do you consider the most significant graphic design of the past century?

**TENNER:** For lasting and positive influence, I doubt anything beats the London Transport's ensemble of structures, signs, posters, publications, and maps—largely the work of Frank Pick, Edward Johnston, and architect Charles Holden. It reflected an ideal of ultrarational, benignly hegemonic public authority, rather like the BBC's Broadcasting House of the time. [Architecture writer] Nikolaus Pevsner later called the Underground "England's greatest visual education center." The basics of the design have remained, but the system has not kept up, even if its great heritage has been largely preserved.

**HELLER:** *Our Own Devices* explores both inventive genius and "user ingenuity." How does the latter ultimately impact the design of things?

**TENNER:** I mention that after World War I, well before mine-owners required safety helmets, demobilized U.S. soldiers had brought their military models to the coal fields. There's also a great tradition of user-tinkering in sports: Children first started putting skateboards together in the 1950s. Today, BMW sells a

board for \$500. In California, another generation of kids began to modify their bikes to race on motocross tracks in the 1970s, eventually calling them "BMX." This type of bike came to dominate the industry, and one reason for Schwinn's financial troubles was its early dismissal of the movement.

**HELLER:** Are these ingenious users also inventors? Or are they adapters?

**TENNER:** Users are co-inventors. Sometimes they're anonymous innovators, and industrial designers refine those innovators' experiments and make them economical to produce in quantity. More commonly, it is the advanced customer who pushes designs to the limit and suggests improvements. The M.I.T. economist Eric von Hippel has found that in some industries, user requests account for over 70 percent of innovations.

**HELLER:** You wrote a fascinating essay on "deviant ingenuity," or how criminals have transformed innocently designed tools into efficient weapons or other threatening things. Should designers worry about an item's ancillary uses? Is there a way to prevent designs from being perverted?

**TENNER:** Abuse is hard to predict. Most of it probably begins not with systematic study but with a chance observation that spreads on the street—for example, ceramic fragments from spark plugs, or "ninja rocks," can be used to break automotive safety glass silently. And some safety modifications have adverse consequences, too. Think of the "child-proof" medicine containers that many older people find adult-proof. I think designers would be better off focusing on user safety and environmental consequences than trying to second-guess the criminal mind.

**HELLER:** In *Our Own Devices*, you describe how technology influences fashion, which influences politics, which influences the commonplace, which has symbolic as well as real impact on us all. You cite a particularly interesting example in shoelaces. Pragmatically and symbolically speaking, how has the design of shoelaces made a difference in our lives?

**TENNER:** Shoelaces initially had an ideological side: Thomas Jefferson consciously adopted them as democratic alternatives to the buckles worn by most 18th-century gentlemen. Probably, they have lasted as long as they have, not only because automated machinery was developed early in the 20th century to make excellent ones, but because the idea allows such variation in the geometry of the lace and the styles of lacing; experienced hikers tighten and loosen laces according to terrain. And in some places, even the colors of laces reflect identity. Here is the kind of ethical question you mentioned. Should a shoe-supply maker or vendor discontinue styles and colors if they become gang favorites? Or will the gangs just find some other form of identity?

**HELLER:** In addition to functionality, style hooks the consumer. Target stores, for example, sell generally what other mall emporia sell, only more attractively packaged. Does style have cultural value other than as a commercial hook?

**TENNER:** Absolutely. Works transcend the self-seeking motives of their patrons all the time. After all, countless Renaissance and early modern paintings and sculptures in today's museums were expressly conceived as image-building for royalty, peers, and prelates. So why deny illustrators and vehicle designers their due just because they're making money for their bourgeois employers and clients?

**HELLER:** In one of your essays, you show special interest in the breeding of "national" dogs—animals that symbolize a culture, a people, an ideology. You talk about a particular breed's functionality, but also its symbolic importance. In that vein, can design itself be seen as a function of nationalistic impulses?

**TENNER:** Designs may appear to begin in chauvinism, but they seem either to go international or to perish. The German shepherd dog was supposed to embody all the national virtues, but the German army preferred Airedale terriers until the First World War. Then, despite all the anti-German propaganda of the maelstrom, Rin Tin Tin became a global superstar, and English people and Americans wanted shepherds, even if they renamed them "Alsations" and "police dogs." Significantly, the Nazis abandoned their signature Fraktur [typeface] during the Second World War to govern their European conquests more efficiently. The Matryoshka nesting dolls—supposedly tokens of old Muscovy—were invented by a Russian nationalist in the late 19th century, taken from a Japanese set of hollow Buddhas. In turn, they have been reinterpreted in cultures around the world.

The real danger probably lies, not in nationalism as such, but in the excesses of design utopianism. The Russian-born critic Boris Groys wrote a wonderful book translated as *The Total Art of Stalinism*, arguing that esthetic dictatorship was what the Russian avant-garde had in mind all along, and that Stalin twisted their aspirations against them.

**HELLER:** Are you saying that design is often a political instrument?

**TENNER:** Yes, even though neither major U.S. party—nor the Green nor Right-to-Life—has a strong design identity. I'm not sure British politics did either, at least since the Wars of the Roses, although British uniforms from the Beefeaters to the Grenadier Guards continue to make powerful national statements, and London is the last holdout of the national procession. (Even Hitler wore a British military mustache—not the German handlebar style—and a Sam Browne belt.) In the U.S. now, even political cartoonists have lost interest in donkeys and elephants. The most powerful quasipolitical symbol of the moment, especially among youth, may be the Linux penguin.

**HELLER:** What is the role of "art" in a technological world? Can the expressionist influence the pragmatist in some way?

**TENNER:** When it comes to objects themselves, I confess to liking designs so usable that people forget all the hours that went into them. I wrote a piece for *The New York Times* Op-Ed page on the design philosophy of the original Dreyfuss Associates Bell System handset, observing how "liberated," post-breakup consumers went out and bought more expressive but less functional and durable equipment. Now they may be treating fonts similarly.

Expressionism in technology may be at its most powerful in the design of video games, and game enthusiasts have found ways to add automotive-style excitement to their CPUs with biomorphic shapes, transparent panels, and lighting effects. But there's also a temptation to sell a technically mediocre product with excellent expressionist design. Or a worse product.

I remember seeing Oskar Fischinger's brilliant film *Muratti Greift Ein* at the Museum of Modern Art a few years ago, with its flawlessly choreographed cigarette *Continued on page 120*

eras do not require film-advance systems.)

Being able to interchange film and digital-imaging capabilities at will is certainly a very useful feature, and the Digital Modul R exhibits all the traditional Leica quality and concern for the needs of users. The only reservation as far as I'm concerned is the price, estimated by Leica at \$5000. There is no doubt as to quality or convenience, but a user would have to be an extremely dedicated Leica devotee to select the Digital Modul R in place of a second digital SLR to provide all-round imaging capability.

Incidentally, the module can be used only with the two Leica models, R8 and R9. Design problems make the use of a similar unit on Leica range-finder cameras impractical.

*Canon's 'Bargain' Digital SLR.* Candor compels me to admit that the slightly carping comment at the end of my Digital Modul R report above was inspired by the introduction of the Canon Digital Rebel, an impressive 6.3-megapixel SLR at an even more impressive street price of \$899. The excitement generated by this new arrival is due to the fact that a single-lens digital camera with comparable resolution sold for over \$1500 only a year ago.

The sensor on the Digital Rebel is a 6.3 MP CMOS (complementary metal oxide) similar to that used on this model's more expensive sibling, the Canon EOS 10D. Another "expensive" feature of the Rebel is its use of DIGIC (digital integrated circuit) processing technology, which combines image processing and camera function control on a single chip. DIGIC technology offers fast display and write times for

each image as well as lower power consumption. The two cameras also share a seven-point autofocus system.

Another welcome feature of the Digital Rebel is a direct print option, making it possible to print pictures without having to use a computer as an intermediary. The camera's LCD monitor permits control of such functions as image cropping, data imprinting, paper selection, and number of prints to be printed. The camera supports ExifPrint 2.2, an international standard that can transfer camera settings and data from camera to printer.

The camera's features (including shutter speeds, autofocus, and exposure metering) and digital-imaging capabilities are state-of-the-art: There is very little that the average user would find wanting. The camera does, however, lack some of the custom controls incorporated in the Canon EOS 10D as well as a spot metering capability.

Still, the Canon Digital Rebel is an awful lot of camera for the money.

For more information on these cameras, go to: [leica-camera.com/index\\_e.html](http://leica-camera.com/index_e.html) and [usa.canon.com](http://usa.canon.com).

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*Harold Martin is a freelance photographer, writer, and editor.*

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## Edward Tenner

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maneuvers. Here was a genius of media technology, someone whose influence persists to this day, helping to peddle carcinogens, even if some defenders call the work a veiled send-up of Nazi regimentation—whatever his political intentions, it was stunning. In fact, the cigarette, once the very soul of 20th-century

modernity in the automated machinery that produced it and its short-term enhancement of mental performance, was also a triumph of packaging, magazine advertising, and posters. We have only started to explore the ethical side of technology and design.

**HELLER:** I've often wondered whether ethics inhibit design. Shouldn't freedom reign?

**TENNER:** Ethical goals have sometimes stimulated design. The philosopher Otto Neurath developed his Isotype system for presenting vital data in pictographs to enlighten the Viennese proletariat. But socially conscious design can also have unintended consequences. I've seen examples of the style adopted by the Nazis. [Design] went through a transitional stage in the 1950s and 1960s, when prominent idealists hoped that symbols could promote cooperation across cultures. Now it is merely the shorthand of global capitalism in airports and train stations and on packaging. More seriously, I'll bet many 20th-century graphic artists sincerely believed that supporting their dictatorial regimes was the highest ethical commandment.

I agree that designers and other creative people can never do their best work or help society in the shadow of a cloud of moral self-doubt or exaggerated political correctness. The results of utopianism have been so dismal that "do as thou wilt" may indeed be the better part of the law. But there are cautionary tales like that of the Soviet graphic pioneers who were killed in the purges of the 1930s. Patronage helped close their eyes to what was happening around them. Esthetization can be a form of anesthetization.

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## Pigeonhole

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hung from the ceiling contrasted with the light painted walls, which further varied in color from wall to wall. Even a photogram that hung in the main work area was a blend of contrasting abstract forms. Everything about the office symbolized the creative process.

Lustig left *Look* after two years and returned to Los Angeles to open a new Sunset Boulevard studio that expressed his immersion in modern art. His workroom was an array of harmonious modernist forms: The desk had cantilevered drawers that appeared to hang from space, and the chairs conveyed a futuristic, streamlined esthetic. The floor was a grid reminiscent of a de Stijl painting, with alternately colored intersecting lines that echoed the linearity of the design on the back wall, which was composed of parallel lines interrupted by a dark panel marked with numerical measurements. On the opposite white wall, an enlargement of one of Lustig's signature glyphs contrasted with a small African fertility god, the omnipresent Aztec god, and a few Mexican straw baskets. Lustig's affinities are also revealed on the bookshelves, which displayed books on Moholy-Nagy and Le Corbusier, plus some devoted to his favorite artists, such as Pablo Picasso and Henry Moore, who along with Paul Klee and Joan Miró influenced the textiles he was designing for commercial use (including *Incantation*, produced by Laverne Originals).

During this final California period, Lustig's interior commissions increased. With ar-