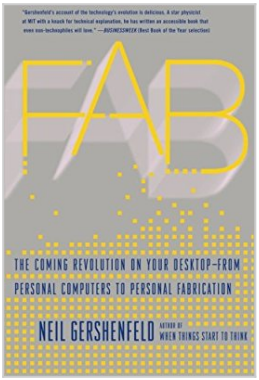

Fab: The Coming Revolution on Your Desktop--from Personal Computers to Personal Fabrication

By Neil Gershenfeld

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What if you could someday put the manufacturing power of an automobile plant on your desktop? According to Neil Gershenfeld, the renowned MIT scientist and inventor, the next big thing is personal fabrication-the ability to design and produce your own products, in your own home, with a machine that combines consumer electronics and industrial tools. Personal fabricators are about to revolutionize the world just as personal computers did a generation ago, and *Fab* shows us how.

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Fab: The Coming Revolution on Your Desktop--from Personal Computers to Personal Fabrication By Neil Gershenfeld Bibliography

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Editorial Review

From Publishers Weekly
Gershenfeld, who runs MIT's Center for Bits and Atoms, foresees a time when computers will upgrade from PCs to PFs, or personal fabricators. This eye-opening survey of "fab labs" completes the progression in Gershenfeld's earlier studies of the overlapping of computer science and physical science, such as When Things Start to Think (1999). A programmable PF, predicts Gershenfeld, will make it possible for users to design and create their own objects, instead of shopping for existing products. Interest in such cybercrafting became evident in 1998, Gershenfeld says, when an overwhelming number of students took MIT's How to Make (Almost) Anything course, aimed at "fulfilling individual desires rather than merely meeting mass-market needs." After inspecting those students' unique creations, Gershenfeld offers a history of how things are designed and made, from the Renaissance to industrialized automation, and then offers an overview of the technology and social implications this science involves. The 150 illustrations aid in clarifying some abstract concepts. Gershenfeld's extrapolation of these futuristic wonders is a visionary tour of technology, tools and pioneering PFers, making this an important update to Stewart Brand's 1987 The Media Lab. However, a "self-reproducing" PF that can make anything, including itself, is a chilling reminder of Philip K. Dick's 1955 Autofac, with its frightening prospect of an automated factory system beyond human control. Agent, John Brockman.

From Scientific American
Thirteen years ago I unboxed my new Apple Macintosh, plugged it into the phone line, and discovered the existence of another world. Spirited, unruly discussions on everything from quantum physics to punk rock ebbed and flowed across a borderless electronic forum called Usenet. Anyone anywhere could join in. More definitive sources of information--how to combat an infestation of pine-tip moths, join two boards with a dado joint or locate the great nebula in Orion--resided among a far-flung collection of computers called Gopher servers, a precursor to the World Wide Web. So much had been happening beyond my awareness. I felt like an African bushman turning on a radio for the first time. It wasn't just words and pictures that had been lurking out there. With the chirps and squawks of modem tones, I could download animated clocks, perpetual calendars, a gizmo that made my keyboard clack and ding like an old Smith Corona typewriter. Legions of amateur programmers were creating and distributing, largely for their own amusement, a multitude of virtual machines. I hadn't thought of it this way until I read Neil Gershenfeld's new book, Fab: The Coming Revolution on Your Desktop--From Personal Computers to Personal Fabrication, but I was witnessing the revival of a spirit that had been fading since the Industrial Revolution: that of the artisan. While corporations like Microsoft and Oracle were employing droves of programmers to homogenize products for the mass market, these technological craftsmen were working on a personal scale. Crafting their code in home workshops, they enjoyed the same satisfaction that comes from building a bookshelf or caning a chair. Gershenfeld, director of the Center for Bits and Atoms at the Massachusetts Institute of Technology--the futuristic name is quintessential M.I.T.--believes that what is true now for virtual commodities will soon apply to physical ones. Give people personal computers and they can write their own software. Give them devices called personal fabricators and they can make their own things. What this will mark, he predicts, is a return to the days before "art became separated from artisans and mass manufacturing turned individuals from creators to consumers." Turning the pages, I could barely wait for the revolution to begin. With a smattering of Unix, I have been able to custom-tailor my own virtual machinery--an algorithm that checks in hourly with Amazon, recording the sales rank of my newest book; another that intercepts unwanted e-mail press releases, dispatching to persistent senders increasingly testier replies. But what about more solid stuff,

like the knob that broke off the toaster? Or, even more annoying, all the extraneous, cryptically labeled buttons cluttering the TV remote control, when all I really want is On, Off, Channel, Volume and Mute? With mouse and keyboard, I could describe my needs to a personal replicator, hit enter, and wait for the product to emerge. If it wasn't quite right, I could tinker and try again. If someone else wanted to make one, I could post the code--the input for the fabricator--on my Web site or e-mail it to friends. The physical world, Gershenfeld promises, will become as malleable as the digital world, and we will no longer have to settle for the imperfect cobbling together of compromises available at the mall. It was a little disappointing to learn that for now personal fabricators are actually rooms full of expensive equipment called "fab labs." But be patient: a few decades ago a computer equivalent to a laptop weighed tons. In a class Gershenfeld teaches called "How to Make (Almost) Anything," laser cutters, water-jet cutters, numerically controlled milling machines--the kind of tools used in CAD-CAM (computer-aided design and manufacture)--give students the feeling of mastery that comes from taking an idea into the real world. Industrialists use this equipment to make prototypes, exact replicas of items they intend to manufacture. In the fab labs, as Gershenfeld puts it, the prototype is the product. Each is designed for a customer base of one. A student who had trouble getting up in the morning made her own fiendish alarm clock. Silencing it required touching a series of sensors in exactly the right order, a task certain to rouse her awake. A visitor to the lab, the actor Alan Alda, fabricated an accessory for his digital camera: a flash periscope that raises the bulb high enough that his subjects don't come out looking like red-eyed children of the damned. Even when a fab lab can be shrunk to the size of a suitcase, most people will probably content themselves with what is offered at Wal-Mart, just as they do with what's on TV. Where the revolution seems likelier to find traction is in the developing world. The best parts of Gershenfeld's book describe his adventures setting up experimental fab labs in places like Ghana and India, encouraging locals to try making tools that are unavailable or unaffordable: portable solar collectors that can turn shafts and wheels, inexpensive electronic gauges farmers can use to measure the quality of their crops, giving them an edge when they haggle with the brokers. All this may sound utopian, but it is hard not to be taken with Gershenfeld's enthusiasm. Today we have open-source software--all these free Unix and Linux programs streaming through the Net. Imagine a world with open-source hardware. Come up with a really great product, and you can share it with the world--to be hacked and modified by the people who actually use it, warrantied against obsolescence by the irrepressible nature of human ingenuity.

George Johnson is a science writer based in Santa Fe, N.M. His recent books include Miss Leavitt's Stars: The Untold Story of the Woman Who Discovered How to Measure the Universe and A Shortcut through Time: The Path to the Quantum Computer.

From Booklist

What if you could design a bicycle on your computer and e-mail the file to a friend halfway across the globe, who could then "print" it out of solid materials and ride it? This scenario is not only possible some day in the future, it can be done right now. Gershenfeld is the director of MIT's Center for Bits and Atoms, where he teaches an extremely popular course called "How to Make (Almost) Anything." He says that the next phase beyond personal laser and ink-jet printers is personal fabrication, where devices will be able to output three-dimensional materials, such as plastics, glass, and metals, in precise tolerances, so that you will literally be able to make anything you can dream of. To illustrate this primer in computer-aided design (CAD) and computer-aided manufacturing (CAM), Gershenfeld shows numerous examples of how to create the 3-D letters "HELLO WORLD" in different materials. He also profiles a number of creative individuals who are leading the way in this field. It's an interesting mix of technical computer theory and fun real-world examples. *David Siegfried*

Users Review

From reader reviews:

Brian Price:

Do you have something that you like such as book? The guide lovers usually prefer to select book like comic, limited story and the biggest one is novel. Now, why not trying Fab: The Coming Revolution on Your Desktop--from Personal Computers to Personal Fabrication that give your satisfaction preference will be satisfied by reading this book. Reading habit all over the world can be said as the method for people to know world considerably better then how they react in the direction of the world. It can't be said constantly that reading habit only for the geeky particular person but for all of you who wants to be success person. So , for every you who want to start looking at as your good habit, you may pick Fab: The Coming Revolution on Your Desktop--from Personal Computers to Personal Fabrication become your personal starter.

Carole Garner:

Your reading 6th sense will not betray you, why because this Fab: The Coming Revolution on Your Desktop--from Personal Computers to Personal Fabrication book written by well-known writer who knows well how to make book which might be understand by anyone who all read the book. Written with good manner for you, leaking every ideas and composing skill only for eliminate your own personal hunger then you still hesitation Fab: The Coming Revolution on Your Desktop--from Personal Computers to Personal Fabrication as good book not merely by the cover but also through the content. This is one book that can break don't judge book by its cover, so do you still needing a different sixth sense to pick this particular!? Oh come on your examining sixth sense already alerted you so why you have to listening to yet another sixth sense.

Dwight Ivers:

Do you like reading a e-book? Confuse to looking for your favorite book? Or your book has been rare? Why so many query for the book? But any people feel that they enjoy regarding reading. Some people likes reading through, not only science book but additionally novel and Fab: The Coming Revolution on Your Desktop--from Personal Computers to Personal Fabrication as well as others sources were given understanding for you. After you know how the fantastic a book, you feel need to read more and more. Science reserve was created for teacher or students especially. Those books are helping them to add their knowledge. In some other case, beside science guide, any other book likes Fab: The Coming Revolution on Your Desktop--from Personal Computers to Personal Fabrication to make your spare time a lot more colorful. Many types of book like this one.

Dennis Rodriguez:

What is your hobby? Have you heard that will question when you got college students? We believe that that concern was given by teacher for their students. Many kinds of hobby, All people has different hobby. Therefore you know that little person such as reading or as examining become their hobby. You need to know that reading is very important as well as book as to be the issue. Book is important thing to provide you knowledge, except your own teacher or lecturer. You will find good news or update with regards to something by book. A substantial number of sorts of books that can you choose to adopt be your object. One of them is this Fab: The Coming Revolution on Your Desktop--from Personal Computers to Personal Fabrication.

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