BUSINESS IMPACT
93–98 The Future of the Office
With the explosion of mobile devices and social technologies, the office can be almost anywhere. How does that affect productivity and security?

REVIEWS
100 The Mind’s Eye
David Hockney is using high-definition cameras, screens, and software to capture the experience of seeing.
By Martin Gayford

106 Cryptocurrency
Bitcoin could be an alternative to government-issued money, but only if it survives hoarding.
By James Surowiecki

108 A Cloud over Ownership
Internet services set: books, CDs, and other media free from physical constraints—including those that have defined the very idea of possession.
By Simson Garfinkel

112 Pushing the Limits of the Touch Screen
An engineer rigs a touch screen so it can respond to more than just swipes and taps.
By Erica Neone

From the Labs
116 Materials
117 Information Technology
118 Biomedicine

DEMO
112 Printing Parts
New printing methods make it possible to create complex, durable parts for airplanes.
By Stuart Nathan

44 YEARS AGO IN TR
120 The Shrinkage Solution
A pair of civil engineers proposed that we genetically engineer shorter people to conserve resources.
By Timothy Maher

www.technologyreview.com/demo See a video of the printing machine at work.
Practical Invisibility Cloaks

Printing technique yields large sheets of light-bending materials

**MATERIALS**

**Practical Invisibility Cloaks**

Printing technique yields large sheets of light-bending materials.

**METHODS:** The researchers started with the design for a metamaterial that others had produced a few years ago, using slower methods. They made a hard plastic stamp patterned with the grid stipulated by the design. Then they “inked” the stamp in an evaporation chamber by depositing several thin films: first a sacrificial layer, then layers of the metal and dielectric materials that make up the metamaterial. Finally, they set the stamp on a surface and chemically treated it to dissolve away the sacrificial layer, freeing the metamaterial from the stamp. The stamp was pulled away, leaving the metamaterial on the surface. Each stamp is reusable and inexpensive to make.

**NEXT STEPS:** The researchers expect that by using more than one stamp, they will be able to make much larger metamaterial sheets. The method can also be adapted to work with other metamaterial designs, but the researchers hope other scientists will use it to make large amounts of this particular material for cloaking and other applications.

**Transparent Batteries**

Electrodes with features smaller than the eye can resolve could lead to see-through electrical devices.

**RESULTS:** Researchers have made fully transparent batteries and used them to power a light-emitting diode. The prototypes can store as much energy as a nickel-

**SOURCE:** "LARGE-AREA FLEXIBLE 3D OPTICAL NEGATIVE INDEX METAMATERIAL FORMED BY NANO TRANSFER PRINTING"  
John Rogers et al.  

**SOURCE:** "TRANSIENT LITHIUM-ION BATTERIES"  
Yi Cui et al.  
*Proceedings of the National Academies of Sciences*, published online July 25, 2011