WIRED

IDEAS TEC SCIENCE

FACEBOOK'S NEXT BIG MOVE

MARK ZUCKERBERG'S PLAN TO TRANSFORM *EVERY* BUSINESS

...PLUS 24 OTHER MUST-KNOW IDEAS FOR 2012

EXCLUSIVE INTERVIEW

AMAZON'S JEFF BEZOS: CEO OF THE INTERNET

VROOM! THE CARS THAT DRIVE THEMSELVES P.124

UK EDITION
JAN 12 £3.99 wired.co.uk

The future as it happens

25 BIG IDEAS FOR 2012

COMPILED BY CHARLIE BURTON AND GREG WILLIAMS

ILLUSTRATIONS BY VESA SAMMALISTO

WIRED HAS SCOURED THE CLOUD AND RANSACKED LABS TO FIND OUT WHAT COULD TRANSFORM OUR LIVES IN 2012 AND BEYOND

UBIQUITOUS FACE RECOGNITION

EPIGENETICS

FREE-TO-PLAY

ROBO WRITERS

THE LAB ON A POSTAGE STAMP

OPEN-SOURCE CONSTRUCTION

ALWAYS-ON SOUSVEILLANCE

WI-FI CARS

CROWD RESTORATION

WIRELESS MIND CONTROL

THE CAR AS APP

INNER TEXTING

CONNECTED CONSERVATION

RETROFITTING THE CITY

DRONE HACKING

CLOUD GAMING

NEUROCINEMA

THE OPEN-DATA ECONOMY

THE NEW HAPTICS

SOCIAL DESIGN

BIOART

GENOME HACKING

BIOMECHANICS

3D SURFACES

CORPORATE LONG-TERMISM

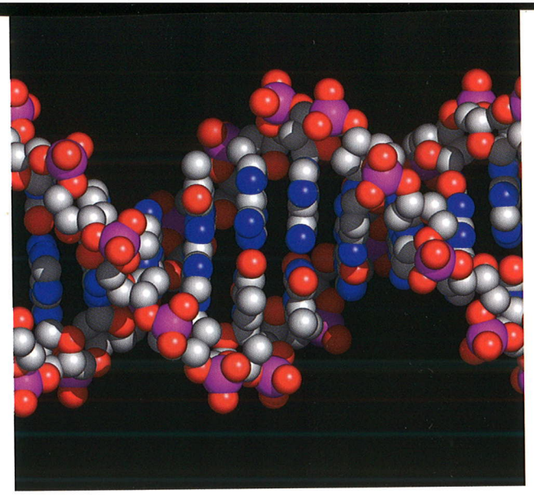
6

CROWD RESTORATION

As digital production becomes standard in Hollywood, many classic films are being left to rot in archives around the world. But Mark Cousins, a film writer and documentary director, has a plan to save them from obscurity: crowdsourced restoration, whereby volunteers use their personal computers to return damaged films to their former glories.

"Film restoration is incredibly labour-intensive, as the average movie contains 140,000 individual frames," Cousins explains. "But we could take a film, find 10,000 people around the world to jointly restore it, send each of them 14 frames and ask them to erase scratches and increase chroma levels."

As with all self-respecting directors, Cousins has a wish list: the 1950 East German film *Das Kalte Herz* (*Heart of Stone*), the 1926 Japanese horror *Kurutta Ippêji* (*A Page of Madness*), and the work of the great Indian director Mani Kaul, who died earlier this year. **Adam Dawtrey**



7 / EPIGENETICS

Is it nature or nurture that determines who we are? For years, geneticists would answer the former, but the scientific community is beginning to agree that an amalgam of environment and behaviour affects how our genes act, in a process known as epigenetics.

Studies show that a gene's expression can be amplified or dampened by prolonged exposure to a stressor or catalyst, such as obesity, starvation, smoking or alcohol abuse. These changes happen outside of, or above (hence *epi-*), the genome – without altering it – yet it appears the changes can be passed on to subsequent generations. Lars Olov Bygren, a preventive-health specialist, found that children of parents who suffered famine in their childhoods had shorter lifespans. He also found this to be the case for the children of fathers who smoked in their teens, despite giving up before conceiving. This phenomenon is explained by the memory or "mark" of the epigenetic alteration being passed on to the successive generation, not changes to the DNA coding.

Scientists are learning to manipulate these marks, by silencing "bad" genes and kick-starting others. They should soon be able to focus on genes that trigger diseases such as cancer, schizophrenia and Alzheimer's. An analogy in the field is: if the genome is the hardware, the epigenome is the software. All we need are the right coders. **DS**

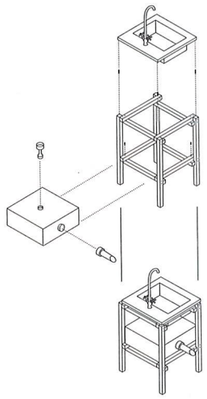
8

OPEN-SOURCED CONSTRUCTION

Think you can offer an alternative to IKEA's flat-pack hegemony? OpenStructures, created by Belgian designer Thomas Lommee, is a furniture-construction model that enables collaborative design. The company lets users share a base grid online on which they can contribute suggestions, from design to construction.

In this spirit, Holland-based company Droog has launched Design for download, a web portal where users can download designs, adapt them, then upload them to be built.

"I don't think that it will become the dominant way of buying furniture, but it could develop," says Renny Ramakers, a Droog director. **Tim Abrahams**



Right
OpenStructures aims to "enable collaborative innovation, stimulate reuse cycles of parts and components, and generate flexible puzzle structures"

PHOTOGRAPHY: CORBIS

9

OLYMPIAN BIOMECHANICS

Biomechanics trainers are on hand to ensure Olympians will shape up and be in absolute peak condition for London 2012. "There are two types of biomechanics," says Martin Haines, chairman of the UK Biomechanics Coaching Association (UKBCA). "Extrinsic biomechanics assess how well you perform a task or movement; intrinsic biomechanics shows how the body is stacked up in mechanical terms and determines your capacity to perform extrinsic movements."

UKBCA teaches the coaches and trainers working with Team GB's gymnastics and triathlon teams. Along with using super-slow-motion video, their techniques for extrinsic biomechanics include using robots to measure muscle force, and lumbar monitors to display how the spine is functioning.

Using these, coaches can spot areas in which a javelin thrower, for example, could better align themselves to throw further. But intrinsically, they may also be able to discover old injuries that need care or sensitive nerves to treat. "You'll hear athletes say 'my training was going well then this injury came out of nowhere,'" says Haines. "But the injury often comes from their poor intrinsic biomechanics and was a problem waiting to happen." DS

10 3D SURFACES

Imagine you are a firefighter called out on an emergency; or you are a soldier tasked with raiding a dark, labyrinthine compound; or you are simply an architect supervising a project that requires constant communication with multiple teams of contractors.

You reach not for blueprints, maps or aerial photographs but for a roll of highly accurate holographs printed on photopolymer film. Architectural interiors, city streetscapes, even underground infrastructure all appear, like stills from a 3D movie. Your eye processes these simulations as it would physical space itself.

Founded in 1996 by graduates of the MIT Media Lab, where they studied under founder Nicholas Negroponte, Zebra Imaging is making waves in laser-printing. Fuelled by contracts from the US Army and by research funds from the Defense Advanced Research Projects Agency (Darpa), Zebra has been quietly changing the world of printable holographs from its headquarters in Austin, Texas. The company's chief technology officer Michael Klug describes Zebra's images as "geospatial prints" that "reproduce light-fields in space". All you need is a high-speed holographic printer and 3D data sets manipulated by ZScape software, which the company gives away for free.

For now, Zebra's machines cost around £650,000, and a 60cm by 91cm print, the firm's largest option, will cost you £3,000. But Klug expects these prices to fall dramatically, which means that, within two or three years, those of you not planning the invasion of a foreign capital will encounter printed holographs on the billboards, books, wallpaper and architectural blueprints of tomorrow. **Geoff Manaugh** *www.zebraimaging.com*