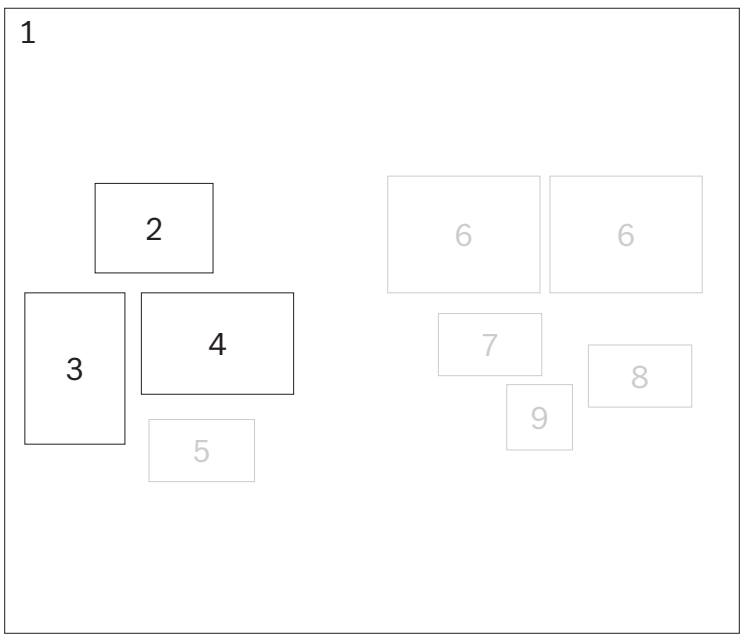
The Expression of Data

Please return after use



1 **Ben Fry**
American, born 1975

Aesthetics + Computation Group
United States, est. 1996

MIT Media Lab
United States, est. 1985

Genomic Cartography: Chromosome 18 2001

Digital image generated from Processing software

Gift of the designer, 2008

While pursuing his doctorate at the MIT Media Lab, Fry translated information about the human genome into a visual format. The genome, a complete set of genetic instructions, consists of twenty-three chromosome pairs made up of DNA, which is built from four chemical bases, represented by the letters A, G, C, and T. The entire human genome's genetic code comprises more than three billion letters. The wallpaper here features Fry's visualization of chromosome eighteen's seventy-five million letters of genetic code. Darker colors depict code sequences used by a cell as instructions for building a protein, medium tones portray the instructions interrupted by unused code, and gray areas currently have no known function.

2 **Muriel Cooper**
American, 1925–1994

David Small
American, born 1965

Suguru Ishizaki
American, born Japan 1963

Earl Rennison
American, born 1965

Robert Silvers
American, born 1968

Lisa Strausfeld
American, born 1964

Jeffrey Ventrella
American, born 1960

Yin Yin Wong
American, born Burma (now Myanmar) 1964

Information Landscapes 1994

Video (color, silent)
27 min.

Gift of Lisa Strausfeld and David Small, 2015

To explore graphic design's radical possibilities in the digital realm, Muriel Cooper developed the Information Landscapes project with her students and colleagues at MIT's Visual Language Workshop (VLW) in Cambridge, Massachusetts. The VLW, which Cooper cofounded in 1974, was one of the most fertile creative environments in interactive design and data visualization, then a nascent field. Information Landscapes comprised a graphic interface with interactive 3D visualizations of real-time financial, statistical, and engineering datasets, among other types of records. Marking a significant departure from pie charts and other traditional modes of information design, the software allowed users to literally move through the data, steer their exploration, and zero in on their focus at will.

3 **Ben Fry**
American, born 1975

Distellamap (Pac-Man) 2004

Digital image generated from Processing software

Gift of the designer, 2008

Fry's Distellamap visualizes the inner workings of a *Pac-Man* Atari 2600 game cartridge, revealing how the program is organized and how different parts of the game connect to one another. Fry's intent was not to analyze the software but rather to celebrate its elegance with an equally graceful portrait. Distellamap was designed using Processing, a landmark open-source programming language and development environment for creating interactive graphics that Fry launched with digital artist Casey Reas in 2001.

4 **Ben Fry**
American, born 1975

Aesthetics + Computation Group
United States, est. 1996

MIT Media Lab
United States, est. 1985

isometricblocks 2002–05

Digital image generated from Processing software

Gift of the designer, 2008

When comparing the genomes of two different organisms, single letter changes—shifts in the order of the genomes' three billion adenine (A), cytosine (C), guanine (G), and thymine (T) base components—appear every few thousand letters, often in consecutive sets easily rendered in blocks. In this image, Fry represents these blocks in the genetic profile of a selection of people with different ancestries: Yoruba (top row), Western European (middle), and Japanese and Han Chinese (bottom). Each column's height corresponds to the number of people in the group that has a specific set of changes, and the colors depict the two possible variations for each single letter change, with the more common in dark red and the less common in a paler color.

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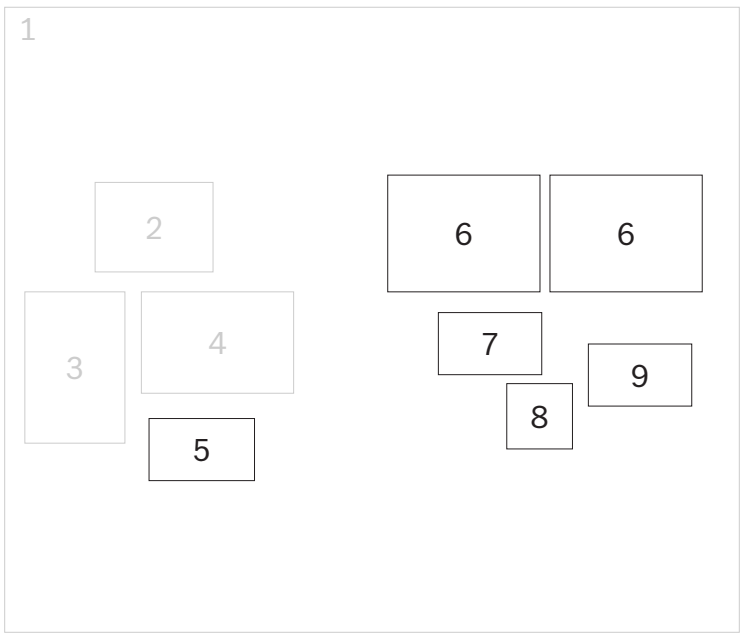

5 **Josh On**
New Zealander, born 1972

Futurefarmers
United States, est. 1995

They Rule 2004

Interactive software

Courtesy the designer

At first glance, They Rule resembles an innocuous corporate diagram. But as users trace overlapping connections between board members of major US corporations, a dense web of concentrated influence comes into focus. Launched in 2001 and continually updated since, the interactive project allows viewers to navigate networks linking companies across finance, media, manufacturing, and big tech. Before concerns about platform monopolies and corporations' far-reaching political influence seeped into everyday discourse, They Rule demonstrated that information design could promote civic literacy by exposing opaque systems of power.

6 **Fernanda Bertini Viégas**
Brazilian, born 1971

Martin Wattenberg
American, born 1970

IBM Thomas J. Watson Research Center
United States, est. 1961

History Flow 2003

Prints from Java software

Gift of the designers, 2008

In 2003, Viégas and Wattenberg set out to investigate the often-fiery dynamics behind the editing histories of some Wikipedia pages. In these two examples, the pink graph shows the history of modifications to the entry "chocolate," and the green one shows revisions to "abortion." Zigzag patterns represent back-and-forth changes, often disagreements between editors. Black gashes show points where the represented article was deleted and replaced with comments—an act of virtual vandalism.

7 **Aaron Koblin**
American, born 1982

Department of Design | Media Arts
United States, est. 1994

School of the Arts and Architecture at University of California, Los Angeles
United States, est. 1966

Flight Patterns 2005

Video (color, silent)
55 sec.

Gift of the designer, 2008

Before platforms like Flightradar24 made air traffic visible in real time, Koblin rendered archived flight data into luminous trajectories, revealing the hidden choreography of the skies. "Aircraft data collected by the Federal Aviation Administration was parsed and plotted to create animations of North American travel paths," Koblin explained. This video was extracted from Celestial Mechanics, an immersive installation at the University of California, Los Angeles, where it was projected onto a planetarium-like dome. The original installation's title refers to the branch of astronomy and physics that studies the motion of celestial bodies such as planets, moons, and stars.

8 **MW2MW**
United States, est. 2001

Martin Wattenberg
American, born 1970

Marek Walczak
British, born 1957

Thinking Machine 4

2003–04

Eclipse and Processing software

Gift of the designers, 2008

As Thinking Machine 4 plays a game of chess, its designers explain, its "evolving thought process becomes visible on the board before you." The computer considers thousands of possible sequences of moves and generates a map showing invisible lines of force, demonstrating myriad conceivable games and the power of its strategy.

9 **Stamen Design**
United States, est. 2001

Scott Snibbe
American, born 1969

Amy Balkin
American, born 1967

Eric Rodenbeck
American, born 1970

Michal Migurski
Polish, born 1977

Shawn Allen
American, born 1981

Tomas Apodaca
American, born 1970

Gabriel Dunne
American, born 1981

Cabspotting: New Year's Eve 2007 2005–07

Flash ActionScript, Processing, and Python software

Gift of Stamen Design, 2008

Stamen Design translated streams of GPS coordinates from San Francisco taxis into gleaming traces that exposed traffic bottlenecks, commuting patterns, and the city's density and daily rhythms. The work is a tribute to urban choreography and the ebb and flow of everyday life—or, as in this excerpted video, to the exceptional flurry of traffic that overtakes the city on New Year's Eve.