

supports a “theory of mind”, whereby individuals can form mental representations of the beliefs and intentions of others. This enables them to enter into complex agreements and coalitions, and to track multiple social relationships through time and space.

*Social Brain, Distributed Mind* is rather more detailed. It brings together an array of archaeologists, anthropologists, geographers, psychologists, palaeontologists, historians and philosophers involved in Lucy to Language, who together construct a plausible “cognitive anthropology” that defends the social brain hypothesis, while exploring the idea that the human mind is not confined to individual brains, but lives in a social network of minds across which cognition is distributed. They thus handle the problem of brain growth long preceding the emergence of material culture.

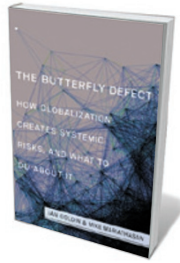
The contributors argue that long before material culture, early hominins developed a “material memory system” in the form of tokens and containers. This linked the mental power of many individuals, and led to a transition from knowledge acquisition and learning based on personal discovery to cognition based on social interaction and sharing. With distributed cognition, knowledge lies not only in the individual, but also in the social roles and iconic artefacts that link minds. For instance, humans have formed ‘fission–fusion’ social groupings in which kin relationships are maintained across subgroups, both males and females migrate to marry, and complex, powerful, fitness-enhancing familial alliances are sustained.

How plausible is the idea that we have big brains because we evolved to live in large groups, putting heavy cognitive demands on our ability to forge close social bonds with large numbers of individuals? My own view is that hunting required a high level of coordinated decision-making, and that the presence of lethal weapons undermined our ape ancestors’ characteristic social-dominance hierarchy, which was based on the physical prowess of the alpha male. This created a leadership void that could be filled not by appeal to physical strength, but rather by social persuasiveness and then a subtle ability to form effective coalitions.

The result was a political structure in which linguistic facility and cognitive skills were rewarded with enhanced reproductive fitness. The social brain, then, helped our ancestors to operate successfully in a proto-democratic framework. ■

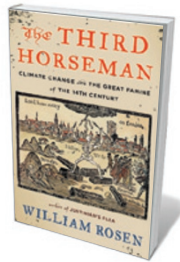
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## Books in brief



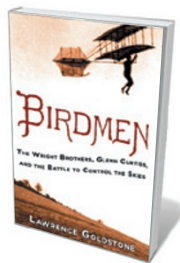
### The Butterfly Defect: How Globalization Creates Systemic Risks, and What to Do about It

Ian Goldin and Mike Mariathasan PRINCETON UNIVERSITY PRESS (2014)  
In a nod to chaos theory’s butterfly effect — in which tiny perturbations unhinge big non-linear systems — this treatise explores globalization’s built-in risks. Economists Ian Goldin and Mike Mariathasan analyse systemic vulnerabilities leading to cyber-attacks or pandemics, and look at the ecological risks integral to globalization. The sustainable management of such tangled interdependency, they argue, demands governance reform, including the setting up of research-led bodies to tackle big issues such as climate change.



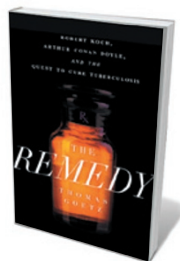
### The Third Horseman: Climate Change and the Great Famine of the 14th Century

William Rosen VIKING (2014)  
A kink in Europe’s climate during the fourteenth century indirectly triggered a seven-year cataclysm that left 6 million dead, William Rosen reveals in this rich interweaving of agronomy, meteorology, economics and history. The Great Famine ended the explosion in agricultural productivity of the 400-year Medieval Warm Period, which affected mainly North Atlantic civilizations. Rosen deftly delineates the backstory and the perfect storm of heavy rains, hard winters, livestock epidemics and war leading to the catastrophe.



### Birdmen: The Wright Brothers, Glenn Curtiss, and the Battle to Control the Skies

Lawrence Goldstone BALLANTINE BOOKS (2014)  
The daredevil scientists and engineers who forged the field of aeronautics spring vividly to life in Lawrence Goldstone’s history. Wilbur Wright is famed for cracking the conundrum of powered, controlled, heavier-than-air flight through leaps of intuition and reasoning. Less known is his and brother Orville’s feud with ace flyer and motor designer Glenn Curtiss. Goldstone never stints on the science in tracing the trio’s patent wars and struggles to monopolize the industry over a decade of dazzling innovation.



### The Remedy: Robert Koch, Arthur Conan Doyle, and the Quest to Cure Tuberculosis

Thomas Goetz GOTHAM BOOKS (2014)  
What does germ theory have to do with evergreen fictional sleuth Sherlock Holmes? Science writer Thomas Goetz reveals all in this history of the hunt to cure tuberculosis (TB), centring on young physician Arthur Conan Doyle’s 1890 trip to Berlin to report on bacteriologist Robert Koch’s TB remedy, tuberculin. Conan Doyle rightly doubted its efficacy. But, impressed by Koch’s postulates that particular organisms cause diseases, he intensified his focus on the scientific method and the hunting of other insidious villains in fiction.



### Cold Blood: Adventures with Reptiles and Amphibians

Richard Kerridge CHATTO AND WINDUS (2014)  
Nature writer Richard Kerridge fed, as a child, on accounts of black rhinoceroses, red river hogs and mandrills. His native Britain lacked such faunal glories — or so he thought, until he discovered the glistening hordes of amphibians and reptiles lurking in grass, bogs and leaf litter. In this mix of natural history, memoir and thoughts on the “cultural functions of wild animals for human beings”, captured moments such as the golden flash of a palmate newt delight the reader as much as they did Kerridge’s childhood self. [Barbara Kiser](#)