



The scene in Bethlem asylum, London, in William Hogarth's 1735 *A Rake's Progress*.

## GENETICS

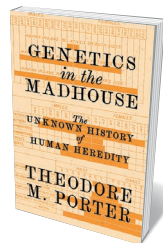
# The debt of genetics to mental illness

David Dobbs lauds a history tracing heredity science to statistics hoarded in asylums 250 years ago.

Who founded genetics? The line-up usually numbers four. William Bateson and Wilhelm Johannsen coined the terms genetics and gene, respectively, at the turn of the twentieth century. In 1910, Thomas Hunt Morgan began showing genetics at work in fruit flies (see E. Callaway *Nature* 516, 169; 2014). The runaway favourite is generally Gregor Mendel, who, in the mid-nineteenth century, crossbred pea plants to discover the basic rules of heredity.

Bosh, says historian Theodore Porter. These works are not the fount of genetics, but a rill distracting us from a much darker source: the statistical study of heredity in asylums for people with mental illnesses in late-eighteenth- and early-nineteenth-century Britain, wider Europe and the United States. There, “amid the moans, stench, and unruly despair of mostly hidden places where data were recorded, combined, and grouped into tables and graphs”, the first systematic theory of mental illness as hereditary emerged.

For more than 200 years, Porter argues in *Genetics in the Madhouse*, we have failed to recognize this wellspring of genetics — and thus to fully understand this discipline, which still dominates many individual and societal



**Genetics in the Madhouse: The Unknown History of Human Heredity**  
THEODORE M. PORTER  
Princeton University Press (2018)

Thurnam, who made the York Retreat in England a “model of statistical recording”. Better-known figures, such as statistician Karl Pearson and zoologist Charles Davenport — both ardent eugenicists — come later.

Inevitably, study methods changed over time. The early handwritten correlation tables and pedigrees of patients gave way to more elaborate statistical tools, genetic theory and today’s massive gene-association studies. Yet the imperatives and assumptions of that

responses to mental illness and diversity.

The study of heredity emerged, Porter argues, not as a science drawn to statistics, but as an international endeavour to mine data for associations to explain mental illness. Few recall most of the discipline’s early leaders, such as French psychiatrist, or ‘alienist’, Étienne Esquirol;

and physician John

scattered early network of alienists remain intact in the big-data genomics of precision medicine, asserts Porter. And whether applied in 1820 or 2018, this approach too readily elevates biology over culture and statistics over context — and opens the door to eugenics.

As Porter notes, alert readers might ask how a force so crucial in the birth of genetics remained hidden. His answer distills to three arguments. First, after the Second World War, geneticists took pains to distance themselves from asylum science and eugenics, and historians left this largely unquestioned. Second, the system’s influence is partly obscured by its cruelty and neglect; we must look past those to see its determination to use statistics to identify people as ‘defective’. Third, the asylum network was easy to overlook because it was loose and decentralized.

It started with fine intentions. Many asylum founders of the late eighteenth and early nineteenth centuries hoped to cure people of mental illness through a humane, psychosocial “moral therapy”. These included the York Retreat’s founder, William Tuke, and Esquirol and his mentor, Phillipe Pinel.

These asylums and their records soon received transformative scrutiny. In 1788, King George III of Britain, who since his coronation had sometimes displayed symptoms suggesting psychosis, had an extreme episode. Understanding mental illness became a national-security issue. The alienists’ assessment, bolstered by physician William Black’s “original, useful, and authentic” statistics from London’s Bethlem asylum, gave the government leverage to replace the king with a regent — his son, later King George IV.

This much-publicized process spurred a decades-long growth in asylums run by the “numerical method”, and the use of national censuses to measure what seemed an epidemic of ‘insanity’. At the time, this baggy term encompassed a range of behaviours deemed extreme. Similar developments elsewhere helped spread this methodology across most of the developed Western world.

From London and Paris to Schussenried, Germany, and Worcester, Massachusetts, asylums grew and new ones sprouted. Knitting them together was an active system of correspondence, travel, conferences and publications such as the *American Journal of Insanity* and the *Allgemeine Zeitschrift für Psychiatrie*.

At first, asylums claimed absurdly high ‘cure’ rates. Reports of 50% were routine. The Connecticut Retreat claimed 91.6% four years in a row. By the mid-nineteenth century, however, asylum directors realized that they could simply say, as some big-data psychiatric geneticists do now, that although a cure seems distant, statistical patterns discovered in ever-larger study populations will one day reveal a cause — and a cure will follow. Funders bought it. Asylum science grew apace.

Eventually, having eliminated religious fervour, heartbreak, financial strain and



masturbation as causes for mental illness, alienists fixed on the only pattern left: patients' pedigrees. Heredity was "the one great cause ... the cause of causes", as French surgeon Ulysse Trélat proclaimed in 1856.

Thus asylum scientists unwittingly laid a path to disaster. For if mental illness boiled down to heredity, the final cure — if you insisted on imposing one — became both obvious and unspeakable.

Porter's chapters, with titles smacking of gothic Victorian novels, trace the long walk to corruption. 'Narratives of mad despair accumulate as information' gives way to 'German doctors organize data to turn the tables on degeneration, a foretaste of horror. The final chapter, 'Psychiatric geneticists create colossal databases, some with horrifying purposes, 1920–1939', sees eugenics deployed en masse. After the 1927 Supreme Court decision *Buck v. Bell*, US programmes forced sterilization on tens of thousands of people deemed mentally deficient. The Nazis built on that example in the 1930s by sterilizing some 400,000 Germans labelled hereditarily 'defective'. In 1940, they launched their wider genocidal programme by gathering more than 10,000 people from asylums all over southern Germany and gassing them at Grafeneck Castle.

The story of the era, Porter insists, is not one "of isolated failings by a few bad scientists". Every genetic insight along the way was sucked into the stream. Many geneticists and alienists had invested too heavily to stop. Others had the task brought to them. It was not by chance that the Holocaust found its first victims in asylums, which also housed the rosters, records and rationale that doomed them.

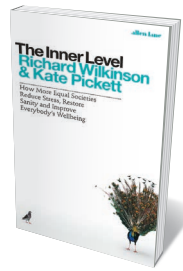
This matters for many reasons, according to Porter, the most immediate being the elemental links between this history and contemporary study of heredity. As Porter exposes strand after strand of connection, he draws sobering parallels between the motives, methods, obsessions and promises of bygone asylum directors, and those of the enormous human-genomics institutes that now enjoy unprecedented funding and power.

To Porter, these connections are roots, and today's genomics industry the tree. "Sold with a promise to find the genes for talents, diseases, and every kind of personal characteristic", he writes, genetics has returned to "the tradition of amassing, ordering, and depicting data of biological inheritance" that started more than two centuries ago, in squalor.

Some will reject this idea ferociously. But I suspect this bold, dauntingly well-documented book will prove difficult to dismiss. ■

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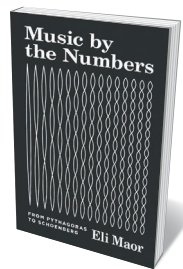
## Books in brief



### The Inner Level

Richard Wilkinson and Kate Pickett ALLEN LANE (2018)

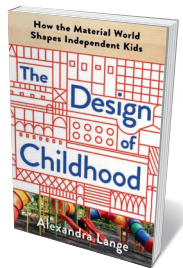
In *The Spirit Level* (2009), epidemiologists Richard Wilkinson and Kate Pickett probed the powerful correlation between a society's inequality and indices of well-being such as social mobility. Here, they narrow the focus to individuals. Drawing on wide-ranging research, they examine how inequity unsticks communities, leading to status anxiety, isolation, depression and rampant consumerism. They lay out pragmatic means of democratizing labour and dismantling class distinctions. And they put forth a salient point: that ability is generally a product, rather than a determinant, of social position.



### Music by the Numbers: from Pythagoras to Schoenberg

Eli Maor PRINCETON UNIVERSITY PRESS (2018)

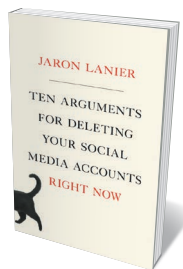
From precise notation to rhythmic patterns, music and mathematics often chime. In this intriguing study, maths historian Eli Maor traces those echoes, along with the trajectories of the "scientists, inventors, composers, and occasional eccentrics" behind them. We encounter the musical 'firsts' of classical philosopher Pythagoras; composer Arnold Schoenberg, whose "relativistic" music might have been influenced by the theories of Albert Einstein; the German musicians who in 2001 launched a 639-year performance of John Cage's composition 'As Slow as Possible'; and scores more.



### The Design of Childhood

Alexandra Lange BLOOMSBURY (2018)

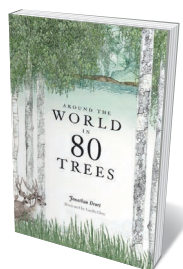
Millions of children are in digital overdrive, risking limited interaction with the material world (see B. Kiser *et al. Nature* **523**, 286–289; 2015). Alexandra Lange reminds us why that is an issue. Her captivating design history begins with construction toys such as Lego, Tubation and Zoob, and moves through home, school and playground as they morph to accommodate children's needs and inspire their creativity ever more fluidly and beautifully. She shows, too, how in mixed urban spaces, child-centred elements such as play areas and mental-mapping landmarks are often elbowed out.



### Ten Arguments for Deleting Your Social Media Accounts Right Now

Jaron Lanier HENRY HOLT (2018)

Fiercely unequivocal and utterly timely, Jaron Lanier's manifesto urges those still in thrall to social media to bin their accounts — now. The virtual-reality pioneer (see A. Faisal *Nature* **551**, 298–299; 2017) lays out ten rationales, starting baldly with "You are losing your free will". His argument, as an insider's insider, is that these "social modification empires" undermine truth, destroy empathy, promote unhappiness and make a joke of politics through constant surveillance and manipulation. As he puts it, it's better to be a cat, autonomous and in charge, than a subservient dog — or lab rat.



### Around the World in 80 Trees

Jonathan Drori and Lucille Clerc LAWRENCE KING (2018)

This tome, gorgeously illustrated by Lucille Clerc, pays homage to the tree as a scientific subject, a cultural mainstay and an exemplar of biological majesty. Educator Jonathan Drori has isolated 80 species for his global survey, each wreathed in intriguing tales. Blossoms of the long-lived lime (*Tilia x europaea*), for instance, exude the bee-befuddling sugar mannose, and seedpods of the Costa Rican sandbox (*Hura crepitans*) explode with the sound of a pistol shot, ejecting their load at up to 240 kilometres an hour. From upas to coco de mer, an arboreal odyssey. [Barbara Kiser](#)