The world of modern scholarship is ever more specialized, and that hyper-specialization is not without its costs. Even those working in what are apparently closely related fields are often in the dark about what their neighbours are up to. What is obvious and old hat to one group of specialists may be unknown to their colleagues. If those barriers are somehow breached, the trespassers into alien fields of knowledge can find, to their obvious surprise, that materials of great relevance to their usual preoccupations are lying there in plain sight, offering novel opportunities for reinterpretation through a different scholarly lens. Theodore Porter’s *Genetics in the Madhouse: The Unknown History of Human Heredity* illustrates this point perfectly.

Theodore Porter is a distinguished historian of science who has spent virtually his entire career at the University of California at Los Angeles. He has become one of the world’s leading scholars working on the rise of statistical thinking and examining how quantification has informed our understanding of the world, both natural and social. His first book, *The Rise of Statistical Thinking*, appeared in 1986, and was followed, almost a decade later, by a study *Trust in Numbers: The Pursuit of Objectivity in Science and Public Life* (1995). How was it, he asked, that we came to embrace a form of ‘thin description’, to idealize a view of the world that stressed a sort of mechanical objectivity, and to reduce the personal and the subjective to tables and measures that acquired the appearance of standardization and objectivity? It was an emergent sensibility, he argued, that could be found in fields as diverse as social science and physics, and one that came to dominate everyday life via the rise of accounting and of cost-benefit analysis.

Porter’s first two books sought to capture the origins of the change in the zeitgeist, and to illuminate some of the major implications that flowed from this change of perspective. Porter’s next major book, *Karl Pearson: The Scientific Life in a Statistical Age* (2004), built upon his earlier work, employing biography to provide a complex portrait of one of the major contributors to statistical thinking. Porter stressed how different Pearson was from our stereotyped picture of people like him as desiccated calculating machines. Pearson was a distinguished English mathematician and biostatistician who is often credited with founding the discipline of mathematical statistics. He was instrumental, for example, in the development of linear regression and correlation, and did pioneering work on classifying probability distributions. (A protégé of Darwin’s cousin Francis Galton, whom he worshipped, Pearson founded the world’s first university statistics department at University College London in 1911.) But Pearson was a Renaissance man, who had studied medieval and 16th century German literature and metaphysics, wrote on Goethe, was for a time an accomplished historian, and qualified (though he did not practice) as a barrister. Philosophy and poetry engaged him every bit as much as did science and statistics. No wonder he proved an attractive subject, though Porter has confessed ruefully that his book on Pearson is the least-loved of those he has written. Perhaps this reflects the fact that Pearson is best-remembered among non-statisticians these days for still another aspect of his intellectual life: his commitment to eugenics. When Francis Galton died in 1911, he left the residue of his estate to the University of London to fund a chair in...
Eugenics, and Pearson was the first to hold this post. The later links of eugenics to the Nazi programme of racial ‘purity’ and extermination would provide sufficient reason for modern readers to approach this aspect of Pearson’s career somewhat gingerly, but closer acquaintance with Pearson’s views would likely only heighten their distaste. Though he proclaimed himself a socialist and a free-thinker, Pearson was also a prominent social Darwinist. A proponent of the superiority of the Aryan race, he pronounced that ‘no degenerate and feeble stock will ever be converted into healthy and sound stock’ (Pearson, 1892 p. 32) and argued that the advance of civilization required ‘war with inferior races’ (Pearson, 1900 pp. 43–44): ‘History shows me one way, and one way only, in which a high state of civilization has been produced, namely the struggle of race...’ (Pearson, 1892 p. 32). And in the first edition of his journal *Annals of Eugenics*, he denounced Jewish immigration into Britain, claiming that the new arrivals would inevitably ‘develop into a parasitic race...’Taken on the average, and regarding both sexes, this alien Jewish population is somewhat inferior physically and mentally to the native population’ (Pearson and Moul, 1927). Nazi ideologues clearly had a friend in Pearson.

Porter’s work on Pearson and on eugenics inevitably led him to consider questions of genetics and heredity, initially in this rather singular intellectual context. The science of genetics had acquired increased salience in the early 20th century when the profound significance of Mendel’s 1866 work on pea plants belatedly became a focus of scientific attention. Genetics as a field depended on precisely the sorts of statistical and quantitative thinking that Pearson had helped to develop, and that had long been the central focus of Porter’s work (though ironically, Pearson’s work on heredity focused on the phenotype, not the genotype). Following the publication of Porter’s book on Pearson, he was commissioned to write an essay on the history of heredity, something that he undertook thinking, correctly, that ‘an inquiry into the sources of Pearson’s data might open up broader cultural dimensions’. So, indeed, it proved.

For most attention in the history of genetics since the discovery of the double helix by James Watson, Francis Crick and Rosalind Franklin has focused on DNA, and on genetic factors that code for particular traits, ‘a focus on discrete nuggets of heredity causation for which Wilhelm Johannsen in 1909 coined the term “gene”’ (Porter, 2018 p. 2). It was work that depended heavily on statistical analysis of precisely the sort on which Porter had spent much of his scholarly career: correlations, regressions, ordered lists and cluster analysis. But rather than leading Porter down this pathway, his examination of the sources of Pearson’s data led him to enter an alien world—indeed a world of people who called themselves alienists, who only in the early 20th century were beginning to accept a different German label and call themselves psychiatrists. And moving into the world of the asylum and its administrators at once brought Porter into contact with historians of psychiatry.

Porter’s subtitle invokes a portrait of an ‘unknown history of heredity’. He has in mind here work that was the province of medical specialists on insanity, men whose endeavours have long been the focus of social historians unconcerned with the history of quantification and statistics. If it was news to Porter, and presumably to other historians of statistics, that alienists had long invoked heredity as a primary cause of insanity and had collected vast amounts of what purported to be data on the hereditary transmission of madness, this was hardly news to historians of psychiatry. Many of them, indeed, had made it their business to trace the hardening conviction among asylum superintendents during the last third of the 19th century that madness was almost an exclusively hereditary disorder, rooted in the degeneration of portions of the human race. On what was increasingly the professionally orthodox view, mental illness was but one manifestation of evolution run in reverse, the catastrophic consequence of biological defect and decay transmitted across the generations.

Historians of psychiatry were not just intimately familiar with this ‘unknown’ history of human heredity, but had devoted considerable attention to alienists’ recurrent fascination with the idea that madness was an inherited disorder. A family history of insanity was one of the most common explanations they proffered to explain mental disorder even in the 18th and early 19th centuries, and by the 1870s, it had become the ruling orthodoxy in the profession. It was an account asylum superintendents had long sought to buttress by collecting and compiling statistical data, and presenting the results in tabular form in the annual reports they dutifully filed each year. At the outset, they contented themselves with asking whether relatives of those being admitted had also suffered from insanity, but soon the more ambitious among them had begun to compile other data to support their conviction that madness was passed down from parent to child. Forms were developed to spell out in increasing detail family histories and the existence of insane relatives. Filing systems were elaborated and systematized to allow compilation of such data over time, nowhere more extensively than in Germany. Everywhere, mounds of data accumulated. Though based on haphazard and anecdotal reports, once reduced to the impersonal, standardized form of numbers, these statistics acquired the status of facts, ‘facts’ that were mobilized in politically potent ways. Anxieties about degeneration and the prospect of a vast increase in the ranks of the ‘feeble-minded’ pervaded discussions of public policy in this period.

It was this treasure trove of data that Theodore Porter stumbled across when he began to investigate how Karl Pearson had come to embrace eugenic ideas, and that launched him upon the decade and more of research that has produced *Genetics in the Madhouse*. In the years since, Porter has read voluminously in the secondary literature historians of psychiatry have produced. But more
importantly, having done so, he has engaged in a positively prodigious amount of work in the archives. One can only admire the persistence and the diligence with which he has combed through an extraordinary array of materials that appeared in many different languages and across many different national settings. Porter commands an impressive array of languages, and where his own knowledge falters, he has employed assistance to allow him to survey other sources that would otherwise have remained out of reach. Norwegians, for example, compiled vast amounts of family data and wrote extensively about heredity and madness. Like most North American scholars, Porter could not directly inspect these materials by himself, but he has found ways to burrow deeply into these sources, and the results enrich and broaden the scope of his findings.

When historians of psychiatry have approached the question of genetics and psychiatry, they have generally framed their analysis around issues having to do with the professionalization of psychiatry and the legitimization of asylums. They have shown, for example, how rooting madness in defective bodies helped to advance the idea that its treatment belonged exclusively to those with medical training. The early promises alienists made that asylum treatment would cure the great majority of lunatics proved remarkably (and sadly) wide of the mark, though only after such claims had done much to fuel the 19th century great confinement of the mentally ill. Alienists’ later revisions of their ideas about the hereditary origins of mental disorder, and most especially their embrace of the doctrine of degeneration, helped to explain away their own manifest failures, and to legitimate the asylum on a wholly new basis. If madness had its origins in an ineluctable process of biological decay, of evolution run in reverse, then the physical specimens who bore its taint could not be expected to recover. Indeed, it was as well that they did not do so, as otherwise they would multiply their defective germ plasm and increase the burdens such defective creatures imposed on healthy society. Likewise, the asylum, which could no longer be justified as the moral machinery for transforming mad raw materials into sane citizens, acquired a new importance for its role in segregating the defective and preventing them from propagating more of their kind.

Porter is aware of and acknowledges these interpretations of the 19th century focus on the familial transmission of mental illness, but he brings to his examination of the phenomenon a very different set of intellectual objectives and questions. For him, alienists’ preoccupation with the genetics of madness, and their compilation of early forms of ‘big data’ on the subject are of interest for their bearing on the history of genetics. Long before Mendel began breeding his peas, and even longer before his work achieved scientific notice, alienists were compiling vast amounts of data purporting to document the hereditarian origins of madness. How were initial notions about how family medical histories might increase the chances of mental breakdown transformed into steadily more elaborate accounts of the alleged causal power of faulty genetics? How were these data manufactured, in more than one sense of that term? How widespread and international was this emphasis on human genetics? What were some of the human consequences of these theories and the data they generated? And how does the existence of this powerful body of work complicate our sense of the history of genetics, broadening our understanding of that history beyond its contemporary focus on the gene and on the implications of the discovery of the double helix? These are among the large questions that attract Porter’s attention and that structure the account he offers of this different strand of the history of human heredity.

*Genetics in the Madhouse* is gracefully written, and Porter only occasionally gets bogged down in the minutiae of the archival materials he has spent so much time exploring. For much of the period he examines, asylum professionals pursued their researches, such as they were, largely unaware of the fact that biologists and statisticians shared their concerns. Only at the end of the 19th century did the two worlds converge. That convergence occurred, in no small measure, because ‘the terrible failure of asylum medicine to halt the growth of insanity inspired desperate calls to block somehow the terrible force of degeneration’ (Porter, 2018 p. 224) and inspired people like Karl Pearson to turn his wide-ranging intellect towards the examination of the world of the asylum, the special schools for the feeble-minded, and the prison.

Porter’s concluding chapters are among the most powerful in his book. His discussion of the American eugenicist Charles Davenport, for example, nicely encompasses the way his ideas enjoyed widespread currency, even in the face of withering criticism of his careless and superficial work, and then rapidly passed from being seen as ‘a remarkable success story’ to becoming ‘one of the best-known tales of eugenic and genetic hubris’ (Porter, 2018 p. 252). Davenport had warned of a satanic enemy: ‘Society must protect itself; as it claims the right to deprive the murderer of his life so it may also annihilate the hideous serpent of hopelessly vicious protoplasms’ (Davenport, quoted in Porter, 2018 p. 256). And plutocrats like Mary Harriman, heiress to a railroad fortune, munificently funded his efforts. But in the end, the data fell apart, and, as Porter records, ‘The reshaping of psychiatric heredity by Mendelian genetics was dubious and fleeting’ (Porter, 2018 p. 280). By 1935, the Carnegie Institution had funded an inquiry into the work of Davenport and his associates which concluded that ‘all those files on ordinary behaviors and personality traits, gathered up [by Davenport’s associates] in family pedigrees to demonstrate genetic causation, now seemed ridiculous’ (Porter, 2018 p. 322).

If Davenport spoke of ‘annihilating … vicious protoplasm’, his German contemporaries set about doing just that. In two chapters, Porter meticulously records how *fin de siècle* German scientists embraced statistics and the idea of genetic causation. The early 20th century brought ‘a frenzy of projects for centralized data collection’ (Porter,
Geneticists like Wilhelm Weinberg and later Ernst Rüdin (Fig. 1) compiled vast troves of material, both medical and psychiatric, based on institutional data and population surveys. With striking ease, the eugenic and genetic research found its way in the 1930s into Nazi programmes of forced sterilization and then mass murder of the mentally defective (Fig. 2). ‘Genetic research’ Porter concludes, ‘was a leading site of murderous science’ (Porter, 2018 p. 330). It was not a matter of scientific incompetence. Those involved were ‘at the top of their fields…These were in part immoral experiments in the service of an evil state, in part the exploitation of moral breakdown in pursuit of recognized scientific goals’ (Porter, 2018 p. 331).

Porter is unsparing in his dissection of international scientific response to these horrors. Throughout the 1930s, Ernst Rüdin, who had actively welcomed the Nazi triumph in 1933, continued to be funded by the Rockefeller Foundation. As late as 1972, the prominent American genetic psychiatrist John Rainer ‘commended Rüdin as the source of his methods and bemoaned the flight from Rüdin’s science owing to the unfortunate associations with forced sterilizations and murder’ (Porter, 2018 p. 336). In Britain, ‘two of the most prominent British researchers on psychiatric heredity, Aubrey Lewis and Eliot Slater, studied in Munich with Rüdin’. They carried on using statistics of inheritance of mental illness in the 1940s and 1950s and taught it to their students—one of whom, in 1996, praised Rüdin for methods and data that have ‘stood the test of time’ (Porter, 2018 p. 39).

In a brief Afterword, Porter reflects on the history he has uncovered, and on the contemporary scene in genetics. His account, he rightly concludes, has complicated the genealogy of the discipline, and has helped to discredit attempts to attribute its excesses to bad science or to argue that greater scientific rigour would necessarily serve as an effective antidote to some of the horrors he has discussed. Nor is he convinced that all error lies in the past. He denounces ‘genetic astrology’ and notes the enormous gap that persists between promises of genetic solutions to medical problems and actual payoffs. Much of the science remains ‘deeply problematical’. The ‘exaggerated scientific promises’ associated with DNA were supercharged, since they not only

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**Figure 1** Ernst Rüdin. From the Schweizer Archiv für Neurologie und Psychiatrie, 1937. (Wikipedia).

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**Figure 2** Murderous psychiatry. (A) Cemetery at Hadamar (April 1945). Hadamar was one of the major extermination centres in the Nazi T-4 programme. What appear to be individual graves camouflage mass graves of thousands of patients with mental disorders. Image courtesy of the United States Holocaust Memorial Museum Photo Archives, National Archives and Records Administration. (B) A gas chamber at Hadamar disguised as a shower. Image credit: Frank Winkelmann [CC BY 3.0 (https://creativecommons.org/licenses/by/3.0)].
attracted research funding, but fuelled high-tech business models and capital raising:

‘Informed critics articulated compelling reasons why the promise of finding genes to explain complex maladies and behaviours was unlikely to be fulfilled. There were, however, compelling financial incentives to redirect the genomic gaze beyond rare genetic diseases ... to those that affected vast populations and offered the prospect of unlimited markets. In relation to ambitions like these, the return of genomics has so far been as meager as the skeptics imagined’ (Porter, 2018 pp. 343, 346).

History, Porter concludes, provides a vital corrective to naïve presentism. One could as well dispense with the importance of biological evolution as disregard human activity in times gone by. Rather than dismissing reconstructions of the past ‘as lacking contemporary relevance ... I would rather say that nothing in our world makes sense without history’ (Porter, 2018 p. 347). It is a sentiment that the analysis he has provided in Genetics in the Madhouse does much to justify.

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