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What’s the story with heredity? High-profile answers looked very different on either side of the 1960s. That decade generally saw evolutionary accounts of the scientific past give way to revolutionary ones, and observation take a backseat to theory. So it was with heredity. Between 1961 and 1966, as the centenary of Mendel’s famous paper loomed, a number of now-classic disciplinary histories of genetics came out, mainly charting the emergence of that science out of the accumulated factual knowledge of previous eras. Yet by 1970, François Jacob, in *The Logic of Life*, was insisting that all such ‘royal-road’ histories were misleading, since they ignored the larger conceptual transformations that successively determined what could be known about life. For Jacob, a key transformation was the shift, over the eighteenth century, from generation to heredity—from, that is, an understanding of each living thing as a one-off production, similar to its parents and its offspring only because similar ingredients under similar conditions went into their making, to an understanding of parents and offspring as linked chains of reproductions, resembling each other because of something transmitted, handed on, inherited, down the lineage.

In *A Cultural History of Heredity*, Staffan Müller-Wille and Hans-Jörg Rheinberger provide an immensely scholarly and stimulating update of the Jacobian story. The major theme remains the replacement of generation thinking by heredity thinking. But it is a replacement now treated as long, slow and piecemeal, depending on developments over the course of centuries and across a range of domains, including breeding, medicine, anthropology, natural history and natural philosophy. The growth of empire, far from furnishing a political-economic context to the conceptual action, here plays a decisive part in that action, since, according to Müller-Wille and Rheinberger, it was the imperially managed traffic in plants, animals and human races that first prompted questions about what, exactly, remains stable in organisms on the move, exposed to different environments. As their account reaches the close of the nineteenth century, they concentrate on the efforts of theorizers, trait-measurers and genealogy-makers in consolidating the new ‘knowledge regime’ of heredity. The final chapters amount to a bravura conceptual, technical and contextual survey of twentieth-century laboratory sciences of heredity, from Mendelian genetics to molecular genetics to genomics. Although the cultures under discussion tend to be the academic cultures of scientific investigators, due attention is paid throughout to worldly entanglements, in everything from eugenics to the ethics of embryonic stem-cell research.

Big-picture synthetic histories have a deserved reputation for being worthy but dull. *A Cultural History of Heredity* has escaped that fate entirely. From start to finish, this is history as argument, marshalling an astonishing amount of material in the service of a single and, even in this sophisticated form, simple thesis. Everyone interested in the long run of ‘heredity’—a word that indeed had no meaningful life in English until the likes of Herbert Spencer and Francis Galton gave it currency, adapting recent French usage—should be grateful to have had so much information and insight pulled together into such an economical (in both senses) package. But they should also ask themselves whether, for all its attractions, the thesis might be ready for retirement. Up to a point, the 1960s enthusiasm for seeing theory’s imprint on more or less everything scientific was useful. But pushed too far, it can itself be distorting, limiting options for interpretation and misdirecting explanatory ambition. Suppose you were to discover—and
you will—evidence appearing to show that, on the generation side of the supposed regime change, people found it utterly straightforward to talk of getting (even ‘inheriting’) looks, likes, liabilities and so on from this or that parent; while on the heredity side, even in the heyday of the gene concept, you discover—as, again, you will—serious and even influential biological thinkers engaging in what appears, for all the world, to be generation thinking. You could, of course, invent any number of ways of folding such evidence into the generation-to-heredity thesis, thereby saving the thesis. Alternatively, you could give up on the thesis, and start afresh on trying to understand the past without it, yet also without the anachronism that Jacob so rightly warned against.

Even those tempted by the latter route will remain permanently indebted, however, to Müller-Wille and Rheinberger’s example and erudition. That debt encompasses far more than A Cultural History of Heredity, which is one of a small shelf-full of volumes to have emerged from a project with that title which they ran together starting in 2001, headquartered in the Max Planck Institute for the History of Science in Berlin and the University of Exeter. In the generous Max Planck way, four volumes of conference proceedings are available as freely downloadable preprints from its website. A selection of the papers dealing with pre-1870 topics has appeared in more polished versions in an edited collection with MIT Press, Heredity Produced (2007), and a follow-up, Heredity Explored, is promised. In the meantime, we have Human Heredity in the Twentieth Century, deriving from a conference held in 2010 and edited by Müller-Wille, Bernd Gausemeier and Edmund Ramsden. Along with an excellent introduction by the editors, there are sixteen chapters, distributed among five sections: on heredity in medico-eugenics, on heredity in medico-anthropology, on the laboratory life of human genetics, on genetic diseases and on the public life of human genetics. Separately and collectively, the chapters succeed in showing that, even when just one (though, for humans, especially interesting) kind of organism is under consideration, the sciences of heredity have always been a motley, combining diverse practices, principles and priorities into forms that look very different across time, nation and discipline.

It is somewhat defeating of the object of such a volume to look for binding themes. Readers might nevertheless do well to track the range of institutions that come up as mattering to twentieth-century human heredity. In Gausemeier’s opening chapter alone, on hereditary susceptibility to tuberculosis as investigated in pre-1945 Germany, we encounter insurance companies, sanatoria, hospitals, medico-scientific professional societies and research centres. Notable among the latter are the Genealogical-Demographic Department of the German Research Institution for Psychiatry and the Kaiser-Wilhelm Institute for Anthropology, Human Heredity and Eugenics: names that go a long way to substantiating the editors’ warning against collapsing ‘human heredity’ down to ‘human genetics’. (The latter mainly got going only after the Second World War, as a euphemizing substitute for ‘eugenics’.) Other kinds of institution that come up in the chapters that follow include clinics (P.K. Wilson); homes for, in the language of the day, mental defectives (Ramsden); deep-pocketed foundations (V. Lipphardt); blood transfusion services (J. Bangham); the military (P. Germann); government agencies (E. Suárez-Diaz and A. Barahona); animal breeding facilities (A. von Schwerin); agricultural stations (M.J. Santesmases); the atomic-energy establishment (S. de Chadarevian); human-genetics textbooks (J.E. Friedman); medical schools (S. Pemberton); popular media (D.B. Paul); genetic counselling services (A. Cottebrune); public-health organizations (S. Lindee); and international congresses (F. Cassata). But whatever the preoccupations that individual readers bring to it, Human Heredity in the Twentieth Century provides splendidly expansive companionship to the coverage in A Cultural History of Heredity. No serious student of heredity’s long run should be without either.

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