

BOOK REVIEWS

Subcultures in Genetics

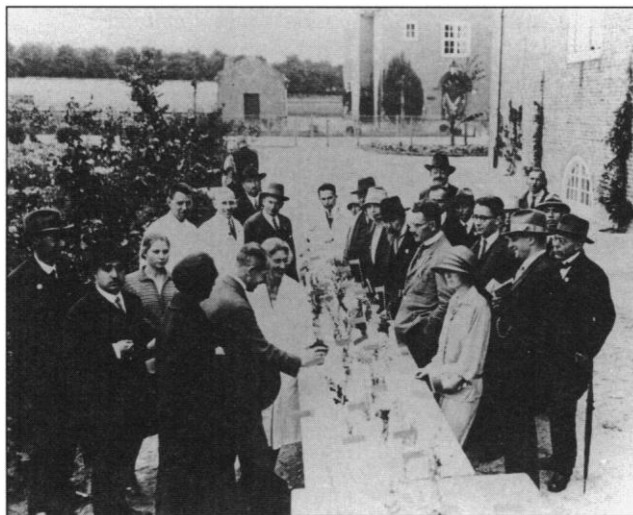
Styles of Scientific Thought. The German Genetics Community, 1900–1933. JONATHAN HARWOOD. University of Chicago Press, Chicago, 1993. xx, 423 pp., illus. \$65 or £51.95; paper, \$23.95 or £19.25. Science and Its Conceptual Foundations.

This book is one of the most interesting, stimulating, and readable books to appear in the history of science in some time. The first thorough, state-of-the-art history of modern German genetics, it is also much more. Harwood sheds new light on the phenomenon of national and regional styles in scientific thought. He shows how the structure and funding of institutions shape and channel individual scientists' careers and choice of problems. And, most intriguing, he shows how scientists' class and family backgrounds and their cultural and artistic activities were integral to their scientific thinking—not "contextual" but constitutive.

A good history of German geneticists has been long overdue. As Harwood observes, histories of genetics have for the most part been histories of mainstream American genetics—gene mapping and chromosomal mechanics. Transmission genetics, invented by Thomas Hunt Morgan and his students in the early 1910s, became the predominant style for generations and one of the great success stories of 20th-century science. German (and French) geneticists, who practiced a distinctly different style of genetics focusing on problems of development, physiology, and evolution, have figured in histories as deviants and latecomers to an obviously superior experimental mode. In a broader, comparative view, however, it is the predominance of the narrower style of genetics that might seem the historical oddity. One of Harwood's aims is to correct a one-sided historical view by taking German genetics on its own terms as equal in merit and interest to the "successful" style.

It is fashionable these days for historians and sociologists to deconstruct orthodoxies, turn success stories inside out, and celebrate losers in the name of cultural pluralism.

Harwood rides this fashion but is not ridden by it. Unlike many sociologists and historians, he respects the complexities and limitations of historical evidence and interpretation. His analysis is guided by theoretical works by sociologists of knowledge, especially Karl Mannheim, but he is not a slave to any. And, best of all, his writing is entirely free of the cliquish jargon that makes so much of contemporary history and sociology of science so annoying to read. Reading this book is like eavesdropping on an intense but friendly dialogue between two practical historians: one pushing big, bold ideas, the other pointing to the nitty-gritty problems of historical evidence. Practicing scientists, who engage daily in a



"Elisabeth Schiemann (in white coat to left of table) outside the Institute for Genetics at Berlin's Agricultural College, demonstrating snapdragon mutants to visitors from the International Genetics Congress in 1927." [From *Styles of Scientific Thought*; courtesy Prof. Hermann Kuckuck and Max-Planck-Gesellschaft]

similar creative struggle to impose order on messy experimental data, will find Harwood's manner of exposition familiar and engaging.

On the question of national styles, Harwood's exhaustive research in German sources confirms the common wisdom that German geneticists did mainly work on developmental or evolutionary problems, while he sees little evidence that American geneticists were much interested in these topics. The difficulty, however, is that both

the American and German genetics communities were far from homogeneous: some leading Germans became devotees of Morganian genetics, and a good many Americans shared Europeans' broader biological tastes—exactly how many we do not know, because no one has yet systematically surveyed the American scene as thoroughly as Harwood has the German. Reluctantly, Harwood concludes that the concept of "national style" is problematic and risky. He would not discourage historians from attempting transnational comparisons but personally finds a more tractable and interesting problem in the comparison of intranational or regional styles, for which the evidence is easier to obtain and interpret. Historians, like scientists, do what can be done and find it more interesting than posing questions the answers to which are out of reach.

In fact, the problem of defining national styles is even more problematic than Harwood says. I recently carried out a thorough survey of American *Drosophila* geneticists and found that the Morgan group, contrary to the received wisdom, worked actively and continuously on developmental and evolutionary genetics. Their activities in these lines have been missed by historians because most of their experiments failed to produce publishable results. (*Drosophila*, it turned out, was not so easily retrofitted for developmental and evolutionary work as the drosophilists hoped.) Perhaps, if national styles of science do exist, they are constituted less by intellectual interests and beliefs than by practical investments in different experimental organisms and systems of production. It makes sense that ideas travel more easily than the material culture of experimental production. In any case, I share Harwood's view that intranational styles are more significant for the daily practice of science.

That brings us to the second half of Harwood's book and his analysis of the different styles of genetics within the German genetics community. Harwood identifies two distinctive and quite different subcultures, which he calls the "comprehensives" and the "pragmatists." The comprehensives, exemplified by Richard Goldschmidt, Richard Kühn, and Fritz von Wettstein, prided themselves on their broad knowledge of all fields of biology. Genetics to them was a field that united heredity, morphology, development, and evolution. The comprehensives prided themselves no less on their broad cultural accomplishments in music, philosophy, and fine arts. In contrast, the "pragmatics," exemplified

fied by Erwin Bauer, Hans Stubbe, and other members of Bauer's circle, saw genetics more as Americans did, as a specialized field. They prided themselves on their specialized expertise and their ability to use that expertise to solve practical problems in agriculture, industry, and social engineering. Similarly, they did not put a high value on possessing and displaying artistic or literary culture, preferring outdoor activities like gardening or mountaineering to visiting museums and art galleries. They also were more likely than the comprehensives to get involved in the eugenics and race hygiene movements.

Comprehensives and pragmatics also differed in their attitudes to politics, in surprising ways. They did not divide along the traditional line between right and left, as Harwood expected. Rather, pragmatics tended to participate in formal party political organization of either right or left, whereas comprehensives tended to shun party and parliamentary politics of all sorts—a nice historical insight.

But do the geneticists' artistic and political activities have anything really to do with their science? Harwood argues boldly that in fact their cultural interests are the key to understanding scientific styles. The comprehensives' delight in visual arts was one, in Harwood's view, with their fascination, as biologists, with form and with their intuitive, holistic approach to living creatures. In science as in art, comprehensives like Goldschmidt and Kühn were first and foremost *Augenmenschen*, in love with form. Science and culture together constituted coherent and stable configurations of values and habits—real cultural styles.

What caused and sustained these different styles through wars and cultural revolutions, generation after generation? Institutions are part of Harwood's explanation. Comprehensives and pragmatics had quite different locations in the institutional geography of German science. Kühn's circle took shape in the University of Göttingen, then migrated to the Kaiser Wilhelm Institute for Biology in Berlin; Bauer's group formed in the Berlin Agricultural College and moved to the Kaiser Wilhelm Institute for Breeding Research at Münchberg. As a university professor, Kühn was expected to teach and to represent all of zoology,

whereas Bauer, as a professor in a technical college, was expected to be an expert and to solve practical problems. The particular structure and values of German scientific institutions sustained different professional roles and ideals.

Yet institutions alone cannot explain the cultural sides of the comprehensive and pragmatic styles. Harwood also connects



"Karl Henke in 1937, newly appointed to the chair of zoology and Göttingen and delighted that a butterfly has just settled upon his hat." [From *Styles of Scientific Thought*, courtesy Frau Maria Henke]

science to the wrenching social, political, and cultural changes of the Wilhelmian and Weimer years. Drawing on work by the historian Fritz Ringer and others on modernization and academic culture, Harwood explains that German geneticists, like other segments of the educated middle class, were trying to cope with economic and political changes that were fast eroding the traditional authority of professional and bureaucratic elites. Scientific and cultural styles were strategies for maintaining social position in a revolutionary world. Harwood builds on the insight of Karl Mannheim (who lived

through it) that "styles of thought are fashioned by groups in action."

Many factors—class and family, training, employment—caused comprehensives and pragmatics to choose different social strategies. Those, like Kühn, who came from professional families and were trained in classical gymnasias and universities for cultural leadership preserved the comprehensive, mandarin style. Those, like Erwin Bauer, who came from lower-middle-class families and were trained for practical careers in Realgymnasias and technical schools tended to embrace the new order and the new role of expert problem-solver—the pragmatic style. Harwood's rich and subtle social analysis fits his principals—Bauer, Kühn, Goldschmidt—very well, but is harder to test for the lesser known members of their groups, because so little is known about their lives and values. The evidence that Harwood has managed to glean suggests, however, that his account will survive the discovery of further empirical data.

Harwood's book has some faults: for example, it relies too uncritically on conventional views of American genetics and neglects the Russian-German school of N. W. Timofeef-Ressovsky (which complicates the picture). It also deals too exclusive-

ly with thought and misses the role of practice and material culture. But it pursues big ideas and is chock-full of insights into the meaning of actions and events. Historians and sociologists of science may learn from Harwood's example how to do cultural history without throwing intellectual and institutional history overboard. Biologists who are interested in the history of their science but have been repelled by the obscurity and mean spirit of recent science studies will rejoice in this sign of a return to sanity. They will find this book fun to read and illuminating of their own professional experience.

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Mergings and Divergings

Gender Play. Girls and Boys in School. **BARRIE THORNE.** Rutgers University Press, New Brunswick, NJ, 1993. xiv, 237 pp. \$35; paper, \$12.95.

In the combined fourth and fifth grade of a California classroom, the teacher lets the children choose their seats. The girls sit on the left side, the boys on the right. In a second-grade Michigan lunchroom, a popular boy walks up to a table with a scattering of boys and girls, saying "ooh, too many girls" as he heads for a seat at an empty table. The other boys move to join him. On the playgrounds of both schools, where adults exert minimal control, boys play football, soccer, or baseball on the large fixed spaces; girls play foursquare, jump rope, or hopscotch closer to the school building.

Observing these scenes in two mostly white working-class schools, Barrie Thorne is traveling familiar ground: in nearly every school situation, from age three to junior high, girls often show a preference to be with girls and boys with boys. However, such scenes are far from invariant, and Thorne's *Gender Play* is far from a simple replication.

Like most scholars studying gender, Thorne (a sociologist) began her research noticing the separation of boys and girls. But she gradually came to observe that groups of boys and girls sometimes ignore or relax the gender divide. Jessie, the only African-American girl in the fourth-fifth grade class, is one of the most talented and practiced players of soccer and football, basketball and kickball. Referring to the boys as her "buddies," she acts out the boys' culture even more dramatically than most of the