

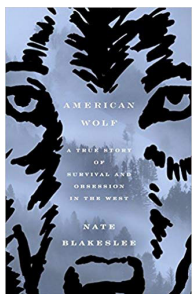
BOOK REVIEWS

American Wolf: A True Story of Survival and Obsession in the West

NATE BLAKESLEE

320 pp. 2017. Broadway Books.

9781101902806



In *American Wolf*, Nate Blakeslee presents the historic movement that led to what many have dubbed the greatest natural experiment of our time—the reintroduction of gray wolves (*Canis lupus*) to Yellowstone National Park. Blakeslee’s account details two complex landscapes: the 18-million-acre Greater Yellowstone Ecosystem, one of Earth’s largest intact temperate ecosystems, and the equally immense human cultural, political, and economic web into which the translocated animals were released. Unlike many accounts of this epic experiment, Blakeslee’s focuses not on the Yellowstone wolves broadly but rather on the story of alpha female “O-Six.” As he shares the natural history of O-Six and her kind, he weaves a parallel tale of the human communities that are at once removed from the wild wolves and yet absolutely tied to them. Chief among the human actors is Rick McIntyre, a now-retired National Park Service employee who for decades—and for countless visitors—was the interpretive

voice for the animals. Though arguably pro-wolf narratives dominate, particularly through accounts of wolf watchers who spend their vacations—and, in some cases, their retirements—following wolves, other perspectives, including those of citizens who opposed reintroduction and some who legally hunt wolves, are represented thoughtfully and meaningfully. Drawing on years of field notes, countless interviews with stakeholders, national and regional media, and scientific data on this well-studied population, Blakeslee exposes the harsh realities of these linked landscapes, both the almost unbelievable tales of wolf interactions and the equally fraught and often harsh environmental politics in the human sphere.

Our instructional team assigned this text as part of a collaborative program that for fourteen years has immersed students from across the majors in contentious stewardship issues in the Greater Yellowstone Ecosystem. The course uses real issues of our public lands to teach students majoring both in science and in other disciplines. For our students, *American Wolf* grounded the thrills of seeing wild wolves in Yellowstone in a much larger

context and longer narrative. It deepened students' engagement with both the Yellowstone landscape and that paired system of human politics, economics, history, and culture that created space for wolves within the boundaries of Yellowstone, but not always beyond. Blakeslee's exposition of these landscapes is transferrable to many teaching-and-learning contexts that seek to draw on

unresolved public issues and make explicit the ways in which science and citizens can and cannot affect them.

JoEllen Pederson, Jessi Znosko, Alton Coleman, Jennifer Cox, Alix Dowling Fink, Edward Kinman, Kevin Napier, and Phillip Poplin are all at Longwood University and are involved in the Greater Yellowstone Ecosystem educational experience offered by the institution.

She Has Her Mother's Laugh: The Powers, Perversions, and Potentials of Heredity

CARL ZIMMER

672 pp. 2018. Dutton.

ISBN 9781101984598



The subtitle of Carl Zimmer's latest work makes explicit reference to powers, perversions, and potentials in relation to heredity. But he could easily have added complexity and subtlety as descriptors: Zimmer's goal is to provide an overview of "heredity," which in this case is not simply

another word for "genetics." Certainly, the development of the concept of the gene and genetics as a mature science is an important part of the story Zimmer tells. But Zimmer weaves a far richer tapestry, looking not only at how characteristics get passed on from one generation of organisms to the next, but also how they can be passed on from one generation of cells to the next within the same organism. *She Has Her Mother's Laugh* takes the reader through Mendelian inheritance, genetic recombination and mosaicism, epigenetic inheritance in cells, and CRISPR technology, and even a fascinating exploration in one chapter of possible relationships between human biological evolution and how culture might be "inherited." The last pages make clear that the book was written to broaden how we think of heredity, and I was quite impressed at how Zimmer accomplishes this aim. He also does a masterful job of incorporating the process of science as well as societal contexts into the book. His description of efforts to find the genetic basis of intelligence

and race powerfully demonstrates how science can be influenced by social contexts and factors.

Zimmer's book is a wonderful resource for faculty members teaching in a variety of disciplines, including (but not limited to) the life sciences. One aspect of the book that I found particularly useful is the way that Zimmer documents the enormous number of sources he has drawn on. Rather than footnotes or numbered endnotes, the Notes section at the end of the book is organized by page, with a brief phrase allowing the reader to connect an idea to the source Zimmer used. With the notes section running more than 20 pages paired with a bibliography more than 40 pages in length, interested instructors will find themselves with a wealth of resources that they can track down.

We live in a time when genetic determinism still seems thoroughly entrenched in modern society. News stories regularly touch on issues such as criminal justice, health, medicine, and the alteration of the genomes of a variety of organisms, where heredity is an important consideration. In *She Has Her Mother's Laugh*, Carl Zimmer has provided us with a superb overview of the many facets of heredity, what we understand now, and what questions scientists still wrestle with today.

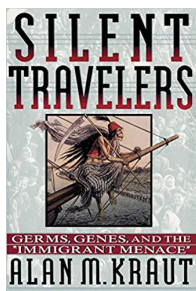
Matt Fisher is a chemistry professor at Saint Vincent College and co-editor-in-chief of Science Education and Civic Engagement: An International Journal.

Silent Travelers

ALAN M. KRAUT

384 pp. 1994. Johns Hopkins University Press.

ISBN 9780801850967



Alan M. Kraut's *Silent Travelers* describes the history of American immigration alongside medicine and science, emerging diseases, prejudice against outsiders, and nativism. With the Irish being blamed for cholera in New York in 1832, the Chinese in San Francisco deemed the source of bubonic plague in 1900, Jews the reservoirs of tuberculosis in the early 1900s, and Haitians being targeted as the source of HIV in the 1980s, outsiders and immigrants have long been linked to contagion and disease. Prejudices and the associated stigmatizing of groups greatly influenced public health and immigration policy and drove much of the change we see today in our schools, workplaces, hospitals, and clinics. Kraut's book presents accounts from all sides. The nativists rejected immigrants for fear of their genetic "inferiority," together with other flaws—vice, physical weakness, and crime—that were attributed to them. Public health activists sought to protect Americans through quarantine, internment, and forced inoculation. Others lobbied and pressured the establishment to improve the infrastructure and living and workplace conditions of immigrant communities. When all else failed, former immigrants, traveling nurses, religious orders, benevolent societies, and philanthropists did the work themselves; immigrant physicians such as Maurice Fishberg and Antonio Stella were able to navigate the cultural and local practices of their patients while maintaining their own up-to-date medical standards. *Silent*

Travelers is filled with evidence and data taken from government and medical records, along with personal anecdotes and detailed facts and figures in tables, appendices, and notes.

SENCER faculty teaching about public health and cultural and economic sensitivity through a civic lens will find a collection of photographic images depicting immigrants' daily lives and artwork, as well as posters and infographics that spread misinformation about the immigrant threat. In addition, *Silent Travelers* includes poetry and accounts from the lips of poor souls struggling to adapt to life in America. The book is filled with fascinating accounts of cultural differences regarding medicine and fear, as well as the acceptance of aid from nurses and physicians amid the shock and trauma of finding oneself in an alien world, without fluency in the language or understanding of the culture. While *Silent Travelers* was published 25 years ago in 1994, the landscape for today's immigrants—documented and undocumented alike, both here and abroad—is still much like that described in the book. Even today, we still see news outlets, political entities, and social media platforms continuing to spread myths of the immigrant menace and their silent travelers. As Kraut says, "The double helix of health and fear that accompanies immigration continues to mutate, producing malignancies on the culture, neither fatal nor readily eradicated." (p. 272)

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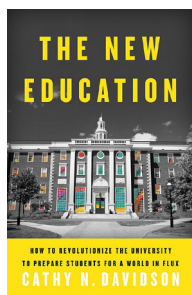
The New Education:

How to Revolutionize the University to Prepare Students for a World of Flux

CATHY N. DAVIDSON

336 pp. 2017. Basic Books.

9780465079728



In *The New Education*, the scholar and educational innovator Cathy Davidson provides a comprehensive portrait of U.S. higher education's past, a stringent critique of its present, and a vision of a better future. Winner of the 2018 Ness Book Award, *The New Education* begins with Charles W. Eliot's 1869 manifesto, also called "*The New Education*," a radical prescription for the reform of higher education that launched his appointment and 40-year tenure as president of Harvard University. Eliot was convinced, as the second industrial revolution took shape, that an educational system designed for ministers, scholars, and sole-proprietors required a radical overhaul if it was to produce the managers, supervisors, bureaucrats, and policy makers needed for the emerging industries and professions that would dominate the US for the next century. Eliot's visionary and radical reform effort produced the university we know today, with divisions and departments, majors, minors and electives, credit hours, letter grades, distribution requirements, and admission standards. Most significantly, Eliot departed from European models in making the undergraduate college separate, and a pre-requisite for, graduate and professional programs. His approach, formulated in collaboration with industrial titans, efficiency experts, and eugenicists, also reinforced social and economic hierarchies, prioritized research over teaching, institutionalized exclusionary rankings and testing regimes, promoted disciplinary silos, and calcified an undergraduate curriculum that no longer serves the needs of the workforce and civil society in the age of the internet, big data, and artificial intelligence.

Davidson's proposed correctives to this situation will be familiar to educators acquainted with current research

on learning and the "high-impact," problem-based approaches it advocates. However, her historically grounded analyses and case studies offer a tough-minded acknowledgement of the barriers to change, including shrinking financial support for students and institutions, the adjunctification of the faculty, outmoded and ineffective assessment strategies, and credential-centered, rather than student-centered, curricula. Fortunately, case studies also offer much-needed (and evidence-based) optimism regarding innovations and reforms that are taking place across a wide range of institutions. Davidson especially singles out community colleges, which educate more than half of all college students, for outperforming four-year colleges on the "social mobility index," for their integrative curricula, and for their rejection of the "tyranny of meritocracy," quoting LaGuardia Community College's president Gail Mellow's proud claim that "we take the top 100%."

For readers of this journal, her chapter dissecting reductionist, workforce-based arguments for STEM education may be of special interest. While she acknowledges the importance of, and national need for, more STEM graduates, she insists that the "hard" skills imputed to STEM may help graduates get their first job, but they are not enough for career advancement in what is now called "the fourth industrial revolution." Those "hard" skills, which could become irrelevant given the pace of technological change, must be integrated with transferable and enduring "soft" or "human" skills, such as communication, collaboration, critical thinking, historical analysis, and interpretation—all skills as important for civic agency and democracy as they are for employment. In fact, as AI and automation develop, "evidence suggests that over time the tortoise humanist may actually win the career race against the STEM hare" (p. 140)

In an age where so much of the blame for higher education's shortcomings falls on the faculty, or even on today's students themselves (branded as "excellent sheep," or "the dumbest generation" in recent polemics), Davidson's prescriptions, and her unflinching confidence in the transformative potential of higher education to prepare

us to survive and thrive in an uncertain future, is most energizing.

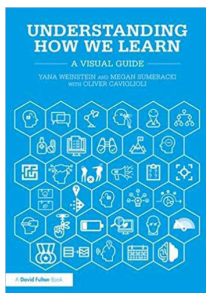
Eliza Reilly is the executive director of the National Center for Science and Civic Engagement and past co-editor-in-chief of Science Education and Civic Engagement: An International Journal.

Understanding How We Learn

Y. WEINSTEIN AND M. SUMERACKI WITH ILLUSTRATIONS BY O. CAVIGLIOLI

176 pp. 2018. Routledge Books.

ISBN 9781138561724



At only 165 pages, this well-organized book provides an accessible introduction to the cognitive processes underlying learning and presents clear, evidence-based strategies for improving learning. The strategies are explicitly tied both to the cognitive processes and to concrete recommendations for teachers and learners. The authors, Yana Weinstein and Megan Sumeracki, are cognitive psychologists and faculty members engaged in research that links teaching strategies to learning. Their prior experience in communicating research results to practitioners is the foundation for this solid overview of the recent literature in learning and teaching that is clear yet not condescending.

The book models their recommendations in many ways. For example, they suggest interleaving to increase learning and transfer, and throughout the book they explicitly refer back to or forecast content covered elsewhere. Most strikingly, they model their recommendation for dual coding (visual and text or auditory) by collaborating with illustrator Oliver Caviglioli to visually represent main concepts. I particularly appreciate the visual summaries of each of the four sections (the science of learning, cognitive processes, strategies for effective learning, and tips for teachers, students, and parents) and of each chapter. I expect these digests will be very useful when discussing active learning design with students as well as with other faculty members. Despite the book's brevity, the authors include thorough reviews of relevant

literature and clear indications of where we need further research in both cognitive psychology and curriculum design. Here again, Caviglioli's illustrations effectively convey the sometimes complex experiments and results summarized in the text.

There are only two points that I would like to see added. First, experimental results clearly indicate an advantage of handwritten notes and drawings, which would seem to tie in well with the cognitive approach these authors are using. Yet these studies are not mentioned even in the context of dual coding or the brief mention of multiple choice versus short-answer quizzes, a gap I find surprising. Second, perhaps reflecting the authors' research programs, the focus is entirely behavioral. I would have appreciated at least some connection to the issues of self-efficacy and epistemological development. My reasoning is that the "non-cognitive" components of self-efficacy combine with epistemological development to generate considerable variation among the students in our classrooms; including some brief introduction to both topics could help practitioners choose strategies appropriate for different students. These are, however, minor complaints in what is a thorough yet highly accessible introduction to the cognitive processes of learning and the educational implications of what we know (and do not know). I think that it will appeal to faculty in many disciplines at both the K-12 and college level.

Linden Higgins is a lecturer and research affiliate in the Department of Biology, University of Vermont, and founder of Education for Critical Learning LLC.